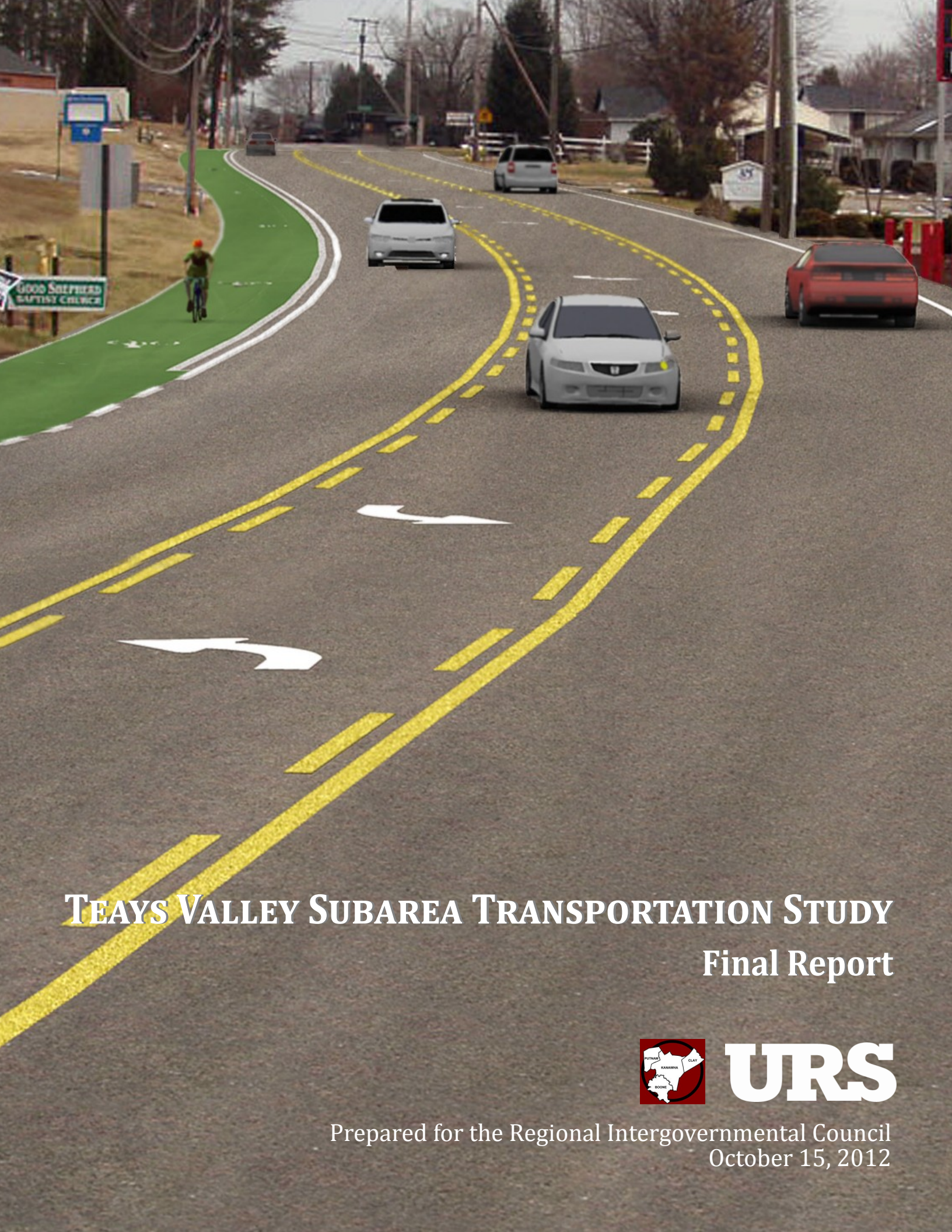


Teays Valley Subarea Transportation Study

Final Report

URS

Prepared for the Regional Intergovernmental Council
October 15, 2012

CONTENTS

APPENDICES

INTRODUCTION

The Teays Valley Subarea Transportation Study (TVSTS) included analysis of existing conditions, transportation and socioeconomic data collection, traffic operations analysis, alternatives screening, development of a preferred design concept, and final recommendations.

The Regional Intergovernmental Council (RIC), with the assistance of URS, worked closely with an organized steering committee, citizen groups, the general public, and public officials to develop all components of the project. A project blog, Facebook page, and Twitter account was developed to share ideas and comments on current planning. At public meetings and workshops held at the beginning of the planning process, participants identified issues with motorized and non-motorized transportation as well as land development constraints that affect the ability to travel from place to place across the region.

The consultant team developed alternative scenarios for testing in TransCAD and TransModeler across a wide range of price points and community impact. A second public meeting was held to gauge public response to the slate of alternatives. Following the public meetings, the scenarios were further developed through working with RIC staff to establish a set of recommendations for approval.

PLANNING CONTEXT

The Teays Valley Subarea Transportation Study is a regional study that was originally initiated through RIC in the 1985 Teays Valley / Hurricane Subarea Transportation Study. The 2040 RIC Long Range Transportation Plan (LRTP) again highlights the Teays Valley region and establishes projects in the area as well as access management strategies that emphasize mobility and safety.

The completion of US 35 has brought about concerns that existing plans and policies need to be updated to reflect the current condition of the Teays Valley network. Through this study, a fresh look at the transportation systems in Teays Valley has been conducted, with deference to the plans and recommendations that have come before. This subarea study is intended to serve as a feeder plan for the larger RIC Long Range Transportation Plan that covers all of Kanawha and Putnam counties, currently in development for 2040.

As a foundation to the Teays Valley Subarea Transportation Study, existing conditions were documented for the study area. These existing conditions define a baseline for the alternatives and recommendations made as a part of the planning process. These existing conditions are contained in Appendix E.

Implementation recommendations are presented through this document that reflect short (0-5 years), medium (6-10 years), and long term (11-20 years) improvements. The Teays Valley Subarea Transportation Study Area is shown in Figure 2 on page three.

TRANSPORTATION PLANNING PROCESS

In general, the Teays Valley Subarea Transportation Study encompasses the transportation system components of the Teays Valley area of Putnam County that are eligible for federal funding as well as the state transportation system located within the planning area. The Subarea Study considers the multimodal, interdependent nature of the region's transportation system and addresses highways, public transportation, bicycle and pedestrian facilities, as well as projects and programs to better manage transportation demand and congestion.

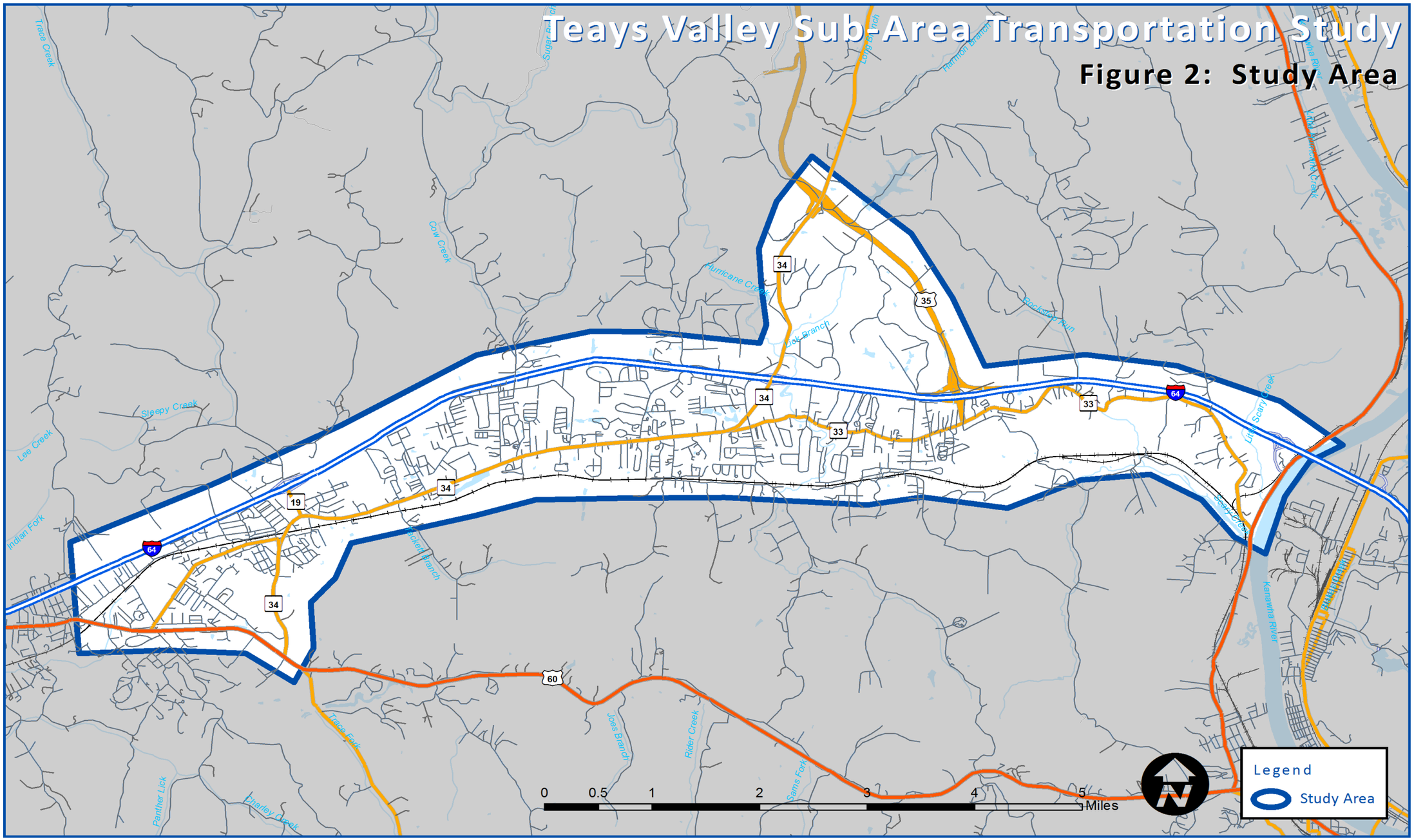
The RIC Long Range Transportation Plan developed in 2009 consisted of several major components. These included the preparation of:

- Transportation system goals, objectives, and measures of effectiveness.
- Travel demand model update and validation to 2009.
- Land use and traffic forecasts through 2040.
- Multi-modal transportation needs.
- Multi-modal alternative analysis.
- 2040 Fundable Improvement Plan and Future Needs Plan (project lists).

The transportation plan goals and objectives were developed through an open meeting/workshop process involving the public, the project Steering Committee, key stakeholders and RIC staff.

The first step in developing a long-range transportation plan is to define the goals and objectives that provide direction for the plan. These goals and objectives reflect a community vision of what the transportation system should provide. By using goals and objectives, measures can be developed that assist in the evaluation and selection of the recommended transportation projects. The goals and objectives also help to prioritize potential recommendations, an important step as the region faces a shortfall of transportation funds and a host of needs.

The process of establishing the study goals and objectives was not intended, nor did it end up being, a wholesale change in theme from the existing RIC transportation plan. Updating the goals and objectives began with a review of the 2040 Long Range Transportation Plan goals and objectives. The preliminary draft goals/objectives were distributed to members of the Steering Committee for comment and input. After receiving input from these groups, a revised draft of the goals and objectives was prepared and presented to the public for comment/input. Through the public input process, refinement of the goals and objectives were completed until the recommended study goals were developed.


Teays Valley Sub-Area Transportation Study
Figure 2: Study Area
Trace Creek
Sugar Branch
Long Lynch
Harmon Branch
Cow Creek
Hurricane Creek
Lick Branch
Rockslide Run
Sleepy Creek
Lee Creek
Indian Fork
Pocket Branch
Scary Creek
Sleepy Creek
Kanawha River
Trace Fork
Joes Branch
Rider Creek
Sams Fork
Panther Lick
Charley Creek
34
35
33
64
19
60
0
0.5
1
2
3
4
5
Miles
Legend
Study Area

GOALS & OBJECTIVES

This section outlines the foundational goals and objectives established for this planning process.

The goals and objectives below were developed as part of the update to the 2040 Long Range Transportation Plan and verified as part of the overall public participation process for the 2040 Long Range Plan as described earlier in this chapter. The goals and objectives are as follows:

GOAL 1: DECREASE TRAVEL TIME FROM HOME TO WORK, SCHOOL, SHOPPING AND OTHER IMPORTANT DESTINATIONS.

Objectives:

1. Preserve, promote, and develop a transportation system complementary to existing and proposed land uses.
2. Improve access to and from commercial districts, residential areas, and other existing and proposed activity centers.
3. Improve local circulation to avoid conflicts with through traffic.
4. Improve ability to handle through traffic.
5. Minimize traffic congestion.
6. Improve mobility for elderly/handicapped.

GOAL 2: REDUCE PEAK PERIOD TRAFFIC CONGESTION AND FUEL CONSUMPTION IN THE STUDY AREA AND CREATE AN ENERGY EFFICIENT TRANSPORTATION SYSTEM.

Objectives:

1. Promote increase in vehicle occupancy rate and reduction in single occupant vehicles (SOVs).
2. Better accommodate truck traffic.
3. Improve capacity for through (i.e. freight) traffic.
4. Preserve and enhance the existing network of highways, streets, and roads, as well as the traffic management system (i.e., connecting dead-end streets).
5. Deploy intelligent transportation systems (ITS).
6. Minimize fuel consumption by minimizing vehicles miles traveled.
7. Encourage use of mass transit.
8. Encourage pedestrian and bicycle activity by providing adequate pedestrian and bicycle facilities at high volume locations.

GOAL 3: IMPROVE SURFACE TRANSPORTATION SAFETY IN TEAYS VALLEY.

Objectives:

1. Maintain a coordinated effort to reduce fatalities, injuries, property damage, and hazardous material spills.
2. Reduce the number of high-incident accident locations (i.e., intersections and at-grade railway crossings) at identified problem locations.
3. Assure adequacy of evacuation routes in the immediate vicinity of chemical manufacturing plants and storage facilities (i.e. warehouses and bulk storage sites).
4. Provide adequate pedestrian and bicycle facilities at high volume locations.
5. Reduce potential for conflicts between rail and highway modes (i.e. at grade RR crossings).

GOAL 4: PROVIDE A TRANSPORTATION SYSTEM COMPLEMENTARY TO EXISTING AND PROPOSED LAND USES; PROMOTE ECONOMIC DEVELOPMENT.

Objectives:

1. Minimize negative impact on existing land uses.
2. Preserve, promote or provide desirable land for other productive uses.
3. Maintain consistency with existing land use plans.
4. Provide adequate access to traveler information regarding existing and proposed ports, airports and intermodal facilities.

GOAL 5: MINIMIZE ADVERSE ENVIRONMENTAL IMPACTS AND PROVIDE FOR THE BEAUTIFICATION OF THE COMMUNITY.

Objectives:

1. Encourage a transportation system of high aesthetic quality that blends well with the existing landscape.
2. Avoid areas of fragile natural environments or unique historic value.
3. Minimize effects of noise pollution.
4. Reduce air pollution, with particular emphasis on ozone precursors (VOC and NOX).

5. Identify potential "transportation enhancement" activities.
6. Reduce automobile dependency.
7. Improve existing and create more facilities for bicycles and pedestrians.
8. Improve public transit.
9. Minimize displacement of people and facilities.

GOAL 6: MINIMIZE COSTS CONSISTENT WITH AVAILABLE FINANCIAL RESOURCES AND IMPLEMENTATION CAPABILITY.

Objectives:

1. Minimize capital costs.
2. Minimize operating costs.

CURRENT PLANNING: TRANSPORTATION OPTIONS

The following section reviews the current status of system recommendations from four planning sources – Transit development, the RIC 2040 Long Range Transportation Plan, the Bicycle and Pedestrian Plan for Kanawha and Putnam counties, and the public involvement process for the Teays Valley Subarea Transportation Study. The recommendations made in these plans were assessed along with new ideas developed as the public participation process continued.

TRANSIT DEVELOPMENT

In RIC's previous Long Range Transportation Plan, adding a commuter rail operation between Charleston and Huntington was explored. Currently there is insufficient interest or potential ridership to develop this idea. On January 5, 2009 KVRTA and TTA (Tri-State Transit Authority in Huntington) joined together to begin operation of a commuter bus route between Huntington and Charleston.

A morning bus travels from Huntington, stopping at the Crooked Creek Park and Ride in Putnam County along the way to Charleston; it then makes the same trip in reverse. In the evening the bus travels from Charleston to Huntington in the same manner. A round trip fee is currently $8, or $6 if traveling from the Crooked Creek stop into Charleston. Monthly bus passes are available. Complimentary newspapers and wireless internet are provided on the bus. The commuter bus averages 30 to 40 riders daily.

In addition to the established fixed route service and paratransit services, some grassroots efforts may also improve the accessibility of transit for all users. Transportation Demand Management initiatives such as volunteer driving programs, shared-ride programs, and the enhanced integration and coordination of existing paratransit and human services transportation can help create a more comprehensive and integrated transit network. In addition, it is important to consider the needs of disabled persons or those with limited mobility by adhering to and implementing ADA-compliant facilities.

WVDOT currently is identifying local park and ride lots to develop and promote car-pooling. Through future improvements to the fleet of KVRTA vehicles and facilities, it will also be important to provide amenities for bicyclists. Features such as bicycle racks on buses (already accomplished) and secured bicycle parking at transit stops are essential in promoting the use of both transit service and bicycles. The integration of these amenities into the fabric of the roadway network will help the Kanawha and Putnam County area move toward a system of complete streets.

2040 LONG RANGE TRANSPORTATION PLAN

The following section highlights recommended projects that were developed as part of the adopted RIC 2040 Long Range Transportation Plan and adjusted to fit current demands on the transportation system in Teays Valley. These projects were tested against current conditions and public preference through the planning process.

WV 34 (Teays Valley Road) from I-64 to CR 19 (Hurricane Creek Road)	
1	Construct a connector road around the CVS Pharmacy (southeast corner of Teays Lane and Teays Valley Road) to create a northbound approach to the Hospital Drive intersection.

CR 33 (Teays Valley Road) from WV 34 to WV 817 (Winfield Road)	
1	Improve the intersection with Maplewood Estates, aligning entrance with Erskine Lane and better delineating and consolidating the entrance to Maplewood Estates neighborhood.
2	Construct an exclusive southbound right-turn lane on WV 817 at the Teays Valley Road intersection.

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CR 19 (Hurricane Creek Road) from WV 34 (Teays Valley Road) to I-64	
1	Consolidate and delineate commercial and industrial business driveways along the corridor.
2	Construct a connector road to provide access between Virginia Avenue and AEP Way.

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BICYCLE AND PEDESTRIAN PLAN FOR KANAWHA AND PUTNAM COUNTIES

The following section highlights recommended projects that were developed as part of the Bicycle and Pedestrian Plan for Kanawha and Putnam counties. These projects were tested against current conditions and public preference in Teays Valley.

WV 34, WV 817 to I-64 (Teays Valley)	
1	Install sidewalk from Putnam Village Drive to Stonegate Drive on east side of roadway.
2	Widen shoulders by 2' to 4' to accommodate bicycle traffic.

South Poplar Fork Rd, Teays Valley Rd (CR 33) to CSX Railroad (Teays Valley)	
1	Install 5' sidewalk with 2' to 3' buffer
2	Widen shoulders to provide 4' to 6' shoulders for bicyclists.

Intersection of WV 34 and CR 19 (Hurricane)	
1	Relocate stop bars and install high visibility crosswalks.
2	Replace gore striping on CR 19 at approach to intersection with Concrete Island and depressed curb to accommodate crosswalk.
3	Install curb ramp on missing corner.
4	Install pedestrian push buttons and countdown signals.

WV 34, Lynn St to Main St (Hurricane)	
1	Install sidewalk from Lynn Street to Main Street (except where existing bridge), approximately 585 feet of sidewalk needed.

Hurricane Creek Rd (CR 19), I-64 to Wal-Mart (Hurricane)	
1	Install sidewalk where missing from Saturn Way to the entrance of Wal-Mart.

Intersection of I-64 and Hurricane Creek Rd (CR 19) - North side of Interstate (Hurricane)	
1	Upgrade the intersection, and the intersection of Saturn Way, to accommodate pedestrians, including crosswalks, pedestrian signals, curb ramps and push buttons on pedestrian activity approaches.

WV 34, Great Teays Blvd to Putnam County Library (Teays Valley)	
1	Install sidewalk where missing on WV 34 (approximately 3,300 feet).

Great Teays Blvd, WV 34 to CR 33 (Teays Valley)	
1	Install sidewalk the entire length of Great Teays Boulevard, install streetscape amenities and traffic calming devices.

TYPES OF SYSTEM IMPROVEMENTS, STRATEGIES, AND APPROACHES

There are a number of different approaches to address deficiencies in a multimodal transportation network. As in most realistic analyses, a combination of these approaches would most likely provide the best options for the study area.

The following section addresses each of the different types of improvement and includes a description of the option and a general discussion of strategies that may be applicable in the Teays Valley area.

SP: SYSTEM PRESERVATION

Description: System Preservation relates to improvements that prevent the existing transportation system from deteriorating and reducing current levels of service. System Preservation improvements include pavement resurfacing and reconstruction of existing facilities.

Preserving the existing system to ensure that current infrastructure and services do not deteriorate system wide should be the first priority. This alternative includes:

- Maintaining existing roadway surfaces and infrastructure (measured by surface pavement ratings, signals, striping, etc.)
- Maintaining existing public transit services (measured by revenue hours, revenue miles, etc). The existing services in Teays Valley are minimal at this point.
- Maintaining existing trails, sidewalks, and related pedestrian and bicycle infrastructure (measured by surface conditions, etc.)

STRATEGIES

Strategies for this type are basic in concept: Address existing system deficiencies and focus at the state level on maintaining service for corridors through inspection and continuous contact with local government leaders and RIC.

The current Transportation Improvement Program (TIP) of RIC outlines roadways that are programmed for improvements in the near future. A list of the proposed improvements can be found on RIC's website at www.wvregion3.org/Transportation/tip.htm.

TDM: TRAVEL DEMAND MANAGEMENT

Description: Travel Demand Management (TDM) strategies are designed to reduce the demand for roadway capacity through increasing transit usage and pedestrian and bicycle travel, reducing peak hour automobile travel, and encouraging fewer and shorter vehicle trips.

TDM targets factors that affect how and when individuals choose to travel, such as price, convenience and awareness of alternatives to driving alone. TDM strategies increase the human capacity of the transportation system by affecting:

Vehicle Occupancy: The number of people per car, van, or bus

Size and Impact of Vehicles: Reducing impacts by substituting bicycle and pedestrian, carpooling, or transit trips for auto trips

$$\left[Bus\ substitution: \frac{54\ seat\ capacity}{vehicle(transit\ bus)} \frac{vehicle\ (commuter\ car)}{1.2\ persons} = 45\ cars \right]$$

$$\left[Vanpool\ substitution: \frac{15\ seat\ capacity}{vehicle(vanpool)} \frac{vehicle\ (commuter\ car)}{1.2\ persons} = 12.5\ cars \right]$$

Time Demand for Travel: Shifting travel to off-peak time periods and lessening the vehicle load at traditional morning and evening rush hours.

Three kinds of TDM strategies can greatly impact the return on investment in transportation infrastructure – Individual incentives, employer programs, and parking policies.

1. Individual incentives – When commuters understand the full accurate value and costs associated with different travel options, they may decide to change existing travel choices. Current impacts from external influences such as congestion delays and air pollution create a tendency towards making hard choices related to travel method. Financial incentives, most often through collaboration with employers, can also nudge commuters towards choosing other types of travel.
2. Employer programs – Employer decisions can greatly affect worker's travel behaviors. Company decisions related to work location, shift times, etc. can be combined with employer TDM programs to offer alternatives to the regular commute. These programs can include public-private partnerships that promote commuting alternatives. Large area employers are noted in Table 1 below – these employers may be a good place to begin marketing a TDM program.
3. Parking policies – The supply and cost of parking provides a substantial impact on the decision to drive or use alternative modes of travel. When the financial costs (impacts to pocketbook) or human costs (location and time delay of finding available spaces) of parking are higher, decisions to use alternative modes of travel are easier to make.

Public policy decisions such as setting minimum parking requirements or subsidizing parking lots create an incentive to drive. Many communities are now considering changes to their parking policies that will discourage single-driver commuting.

Table 1: Large Putnam County Employers, 2010

Employer	Number of Employees
Putnam County Board of Education	1265
Toyota	1100-1400
Appalachian Power	240
CAMC Teays Valley Hospital	425
Rite Aid of WV	400
Wal-Mart	300+
Diamond Electric	295+
AEP Service	245
John Amos Power Plant	320
Jefferds Corp	225
Kanawha Stone	141

Source: Putnam County Development Authority

Traffic management under the TDM umbrella means:

Focusing on the work commute (rather than all other trips including errands and recreation). Work trips tend to be longer, time concentrated, and more congested than other trips and they substantially impact other trip choices. In addition, focusing TDM marketing at the workplace takes advantage of company-wide outreach to employees.

Focusing on land use at suburban trip destinations. Expanding bus options to larger markets will require transforming suburban trip destinations more like downtown destinations, with increased employment density and employer contributions to make bus service more cost effective.

Filling empty seats. With average commuter capacity of 1.2 persons per vehicle, the average driver commutes alone. Filling buses to capacity rather than the typical ridership and putting a body in the other three seats in the commuter automobile can achieve the same impacts as capacity expansion at a fraction of the cost. Trading automobiles for bicycles can also greatly increase the carrying capacity of the corridor.

Spread out the demand for travel. Financial incentives such as congestion pricing can have a dramatic effect on commuter travel choice. Another, less politically charged option would involve employers altering shift hours and permitting flexible work hours or telecommuting.

Changing the commuter experience. Reducing the stress of the commute may help to balance out the perceived costs of congestion. Being able to read, relax, exercise, or even work as we commute via bus, carpool, or walk/bike to work might be attractive to some commuters.

STRATEGIES

The following are several TDM strategies that could be considered for the Teays Valley area.

Public education and promotion – One of the major barriers to alternative mode usage is a lack of knowledge of available options. Providing people with information, such as transit schedules, bike maps, and rideshare programs, helps to overcome this barrier. Other efforts, like bike to work week, can help foster a community of participants. Public education complements every other TDM strategy by creating a climate of public acceptance and awareness of alternative travel modes.

Ride-Matching Service – Most carpooling and vanpooling arrangements take place between family, friends, and co-workers. Ridesharing services are often run by transit / rideshare agencies, which maintain large databases of interested commuters in order to coordinate potential ridesharers. The Morgantown Monongalia Metropolitan Planning Organization (www.plantogether.org) serves as this coordinating agency in Morgantown, WV.

Employers not served well by fixed route transit, such as those employers in Teays Valley, can benefit the most as this may be the best public transit option available. Developing a critical mass of participants is necessary to identify successful matches. If combined with financial incentives, ridesharing can be effective, or where carpooling has a time benefit like access to special travel lanes or preferred parking at the workplace. Without incentives, those who drive alone have little reason to change their current travel choice.

Transit Services – To reduce single occupancy vehicles, it is essential to have viable transportation solutions. Transit service can be a very capable transportation alternative if it can compete with single driver automobiles. In order to do that, transit services generally need to be improved by making them faster, more reliable, adding new routes, extending operating hours and decreasing headways (wait times). The closer transit can come to matching the benefits of private automobiles, the more effective it will be. However, the cost and effectiveness of providing better transit service vary greatly and expected costs need to be carefully considered.

Transit agencies continue to look for custom solutions that fit the needs of their particular markets. In an area like Teays Valley where fixed route service is not cost effective, there may be some alternative types of service that make more sense. Some of these strategies include:

Circulators and Feeder Buses – Typically smaller vehicles that provide flexible services within and around neighborhoods, activity centers, or in a corridor or make connections to express bus services.

Dial-a-ride (Paratransit) Services – These types of services reach the elderly and disabled populations and provide a curb-to-curb service. There are already Paratransit services in the greater Charleston area that may be expandable to serve more of Teays Valley.

Vanpooling – Vanpools are groups of commuters, usually seven to fifteen commuting together in a van, which may be privately owned by an individual or employer or publicly owned by a transit agency, operating as a public transit service. Where vans are a part of a public transit service, riders typically pay a fare that helps to cover the cost of purchase and maintenance for the vehicle. The driver is a fellow commuter who, as compensation for driving, pays no fare and may be allowed a set amount of personal use of the vans for non-commuting purposes. Employers may subsidize vanpool fares for their employees.

> *Guaranteed Ride Home* – This is a companion strategy to carpool, vanpool, and transit services, which allows employees to take a free taxi home in case of emergencies. This service attempts to remove one of the barriers to using these alternative travel modes.

Non-motorized mode support – The 2005-2009 American Community Survey reported that for the Teays Valley Census Designated Place (CDP), only 0.8% of workers walked to work and 0.0% rode a bike to work. Nationally, about 2.9% walked to work and 0.5% rode a bike.

ASSESSMENT OF STRATEGIES FOR TDM

1. Increase Transit Use: Suburb-to-suburb transit services have increased in importance due to the amount of the population residing and living in areas such as these. Providing bus service to suburban location is very difficult because the lack of density makes the ridership capture very tricky. It is much easier to provide service to somewhere like the Capitol Complex in Charleston because the employment density is so much higher and riders are clustered together in a more centralized location. It is unrealistic to expect bus riders to either walk long distances or transfer between a number of different services to reach a worksite in a low-density location.

   Current land use plans for the Teays Valley and Hurricane areas do not indicate significant changes in residential development that would create an environment more conducive to transit use. Household growth is projected to occur at densities that are difficult to serve effectively with regular fixed transit.

2. Reduce Single-Occupant Driving: There are few incentives for individuals to stop driving alone to work. Car ownership is practically ubiquitous. Automobile costs are mostly fixed costs that do not vary with use. At this point, gas and maintenance (variable costs) tend to account for a relatively small percentage of total car costs. Fuel costs, even at $4.00 per gallon, are still a small fraction of total ownership costs.

   Road and street infrastructure are predominantly fixed costs paid through vehicle registration fees, taxes, and State funding. While gas tax is a variable cost tied to use, nationally, it represents about 30% of road and street infrastructure funding.

3. Increase Car and Van-Pooling: This travel mode offers the most viable alternative to driving alone and strategies that promote car and van pooling have proven to be effective elsewhere. These strategies tend to be most effective at the employer level, where there are large concentrations of potential ridesharers, working similar hours at the same destination. Several of the larger employers in Teays Valley or in Charleston (similar destinations for workers residing in the Valley) may be interested in implementing TDM strategies.

4. Encourage Bicycling and Walking: In Teays Valley, the bicycle network does not provide a comprehensive system for commuters to utilize. However, the continued development of trails and on-road facilities will make bicycling a more viable option in the future. Particular emphasis needs to be given to creating connections to existing facilities and between neighborhoods.

   On-street facilities, particularly if provided along arterials and major collectors, are a very important component to the larger transportation network. On-street accommodations should be considered everywhere in Teays Valley and Hurricane except for the limited access Interstate 64, where a separate facility could be considered in the right-of-way. These types of facilities may be viable commuter routes in the area.

TSM: TRANSPORTATION SYSTEM MANAGEMENT

TSM is the process of modifying or optimizing the existing transportation system through low cost means in order to maximize system efficiency. This category includes resurfacing, spot intersection improvements, signal / intersection traffic modifications, pavement restriping to change lane assignments and width, and the use of Intelligent Transportation Systems (ITS) technology.

STRATEGIES

Potential strategies include the following:

Traffic signal synchronization – The process of coordinating a group of signals to provide efficient vehicle progression along a corridor

Intersection improvements – Strategies that include changes in traffic control, signal phasing, pedestrian crossings, safety improvements, and dimensional work that adds turn lanes and other traffic treatments

Roundabouts – An intersection improvement which is gaining popularity throughout the United States is adding a roundabout at intersections rather than a signal. These designs have been shown to reduce delay and improve safety at roughly the same or less capital cost than traditional traffic signals.

Roundabouts are making a foray into the traffic design process in West Virginia. The Gateway Connector project connecting I-79 to Fairmont employs the use of two roundabouts. A roundabout is currently being designed at the intersection of the Mileground (US 119) and WV 705 in Morgantown.

Roundabouts provide safe and efficient traffic flow and make use of extensive safety and traffic research over the past 30 years in other countries. Roundabouts move traffic safely through an intersection because of the following:

- Slower speeds
- Fewer conflict points
- Easier decision-making

Geometric Improvements – Spot roadway and lane improvements that target specific bottlenecks along a corridor

Peak period parking restrictions – Locations along high-volume corridors where parking is restricted during peak hours and in the peak travel direction in order to create additional travel lanes.

Access Management – Access management involves the control and regulation of the spacing and design of driveways, medians, median openings and traffic signals. These strategies can increase capacity, improve traffic flow, and improve safety while maintaining appropriate speeds compatible with adjacent land uses. Access levels are defined based on the function of the road. Access management will protect safety, capacity, and traffic flow on the transportation network while providing access to adjacent property as appropriate and necessary.

Access management strategies should be considered as part of minor and principal arterial reconstruction projects. Combining and controlling access points, constructing raised medians and channeling left turns to controlled intersection can enhance traffic flow, increase functional capacity, and improve safety, without adding additional traffic lanes or requiring substantial increases in right of way.

All levels of government within the region should continue efforts to implement access management plans for principal and minor arterial streets. Local governments should consider adopting an access management ordnance to ensure a comprehensive approach to access management. A sample turn lane warrant worksheet is in Appendix B and sample access management ordinance language is contained in Appendix C.

The following strategies should be considered along congested corridors and as part of an overall access management plan:

- Controlled left turns
- Raised medians
- Combined driveways
- Driveways located away from intersections
- Driveway accesses from cross streets where possible

ITS: INTELLIGENT TRANSPORTATION SYSTEMS

ITS represents the latest advances in information technology and electronics as applied to transportation systems. ITS uses advanced computing, information systems, and communications technology and applies them to the control, monitoring and management of traffic and infrastructure to achieve (1) a safer transportation system, (2) better informed travelers, (3) improved traffic control systems, and (4) increased efficiency of transit systems and traffic infrastructure. The benefits of ITS include reduced congestion, fewer transportation-related deaths and injuries, and reduced energy consumption and pollution.

STRATEGIES

Potential ITS strategies include the following:

- *Transit Management:* hardware and software that collects ridership data and real-time travel information to identify current operations from which to program changes in routes and stops. This strategy would prove more beneficial in the long term as transit usage grows.
- *Incident Management:* hardware and software that alleviates the impacts of incidents (traffic accidents) on travel using quick detection and response techniques so that the vehicles involved can be removed from the roadway or intersection.
- *Emergency Response:* systems using global positioning system (GPS) information that allows accidents and incidents to be located and facilitated quickly to minimize travel delay.
- *Regional Multimodal Traveler Information:* direct communication that is provided to travelers over personal mobile devices, the Internet, on message signs, or via radio and television.
- *Changeable Message Signs:* a system of interconnected signs that can be updated as information is received in real time to inform drivers of congestion trouble spots in the system. Some are already in place but could be supplemented in other locations.

CE: CONSTRUCTION / EXPANSION

This category of improvement includes the construction of new corridors, the addition of through-traffic lanes to existing facilities, and the addition of new interchanges. Of the improvement categories described thus far, only construction and expansion improvements are appropriate for travel demand forecasting model analysis.

A list of projects identified as warranting further analysis, and contained on the following page, was developed by the Study Steering Committee, MPO staff and through public involvement via the project blog and two public meetings at Mountain View Elementary School.

The recommended construction / expansion projects for inclusion in the Teays Valley Subarea Transportation Study are contained in the following sections.

MULTIMODAL IMPROVEMENT ALTERNATIVES IDENTIFIED THROUGH THE TEAYS VALLEY SUBAREA STUDY PUBLIC INVOLVEMENT PROCESS

Through several public involvement activities, a list of transportation improvement alternatives was identified that were tested through RIC's travel demand forecast model. Several of the alternatives focused on providing alternative routes and connections in order to divert traffic away from congested corridors. A full listing of comments from stakeholders is contained in Appendix A.

Roadway Options:

1. Connector from Hurricane Creek Road to Virginia Avenue in Hurricane: Provide a connection between Hurricane Creek Road at Davis Ct. through to Washington Avenue and through to Virginia Avenue.
2. Upgrade and widen Sleepy Hollow Road including construction of a 4-foot sidewalk along entire length
3. Upgrade and widen Mt. Vernon Road including construction of a 4-foot sidewalk along entire length
4. Widen CR 33 to three lanes between WV 34 and Crooked Creek interchange
5. Improve sight distance and entrance at Saddledown subdivision
6. Add a signal and turn lane on CR 33 at Scott Lane.
7. Improve Intersection at Liberty Square shopping center by better separating traffic movements to avoid turning conflicts and adding additional landscaping and other design amenities.

Multimodal options:

1. Develop sidewalks on Virginia Avenue between US 60 and Cardinal Lane
2. Develop regular transit service between downtown Hurricane and Liberty Square Shopping Center
3. Develop a bicycle lane along CR 33 in conjunction with its widening to three lanes between WV 34 and US 35.

The aforementioned options were all combined for analysis as part of the planning process and as a group, considered to be the "universe" of potential projects for the Teays Valley Subarea Transportation Study. This universe would then be narrowed down to include projects that are considered worthy of inclusion in the final recommended plan.

Using the weighting criteria in the following section, study team members were able to assist the steering committee in narrowing down the universe of alternatives to a reasonable ranking for implementation.

MODEL DEVELOPMENT

A screening process was developed to prioritize alternatives as they are introduced and tested against the universe of recommended options. This screening process can be found in Appendix F. The resulting prioritization can be used to help develop an implementation strategy that is cognizant of funding realities, construction schedules, and local need.

After consultation with RIC Staff and local officials, a number of modifications were made to reach the final model-tested plan.

1. The Virginia Avenue Connector (11a) was changed to a right-in right-out to reduce neighborhood impacts.
2. The Hurricane Creek Road Connector (8c) was altered to extend from CR19 south to US 60 rather than Midland Trail.
3. The Valley Connector (12a) was eliminated due to high cost relative to impact on traffic.
4. The Lynn Street closure (10a) was taken out after consultation with Hurricane officials.
5. The roundabout at US 35 and CR33 (6a) was removed after testing in TransModeler showed adverse impacts on surrounding traffic loads.

RECOMMENDED PLAN

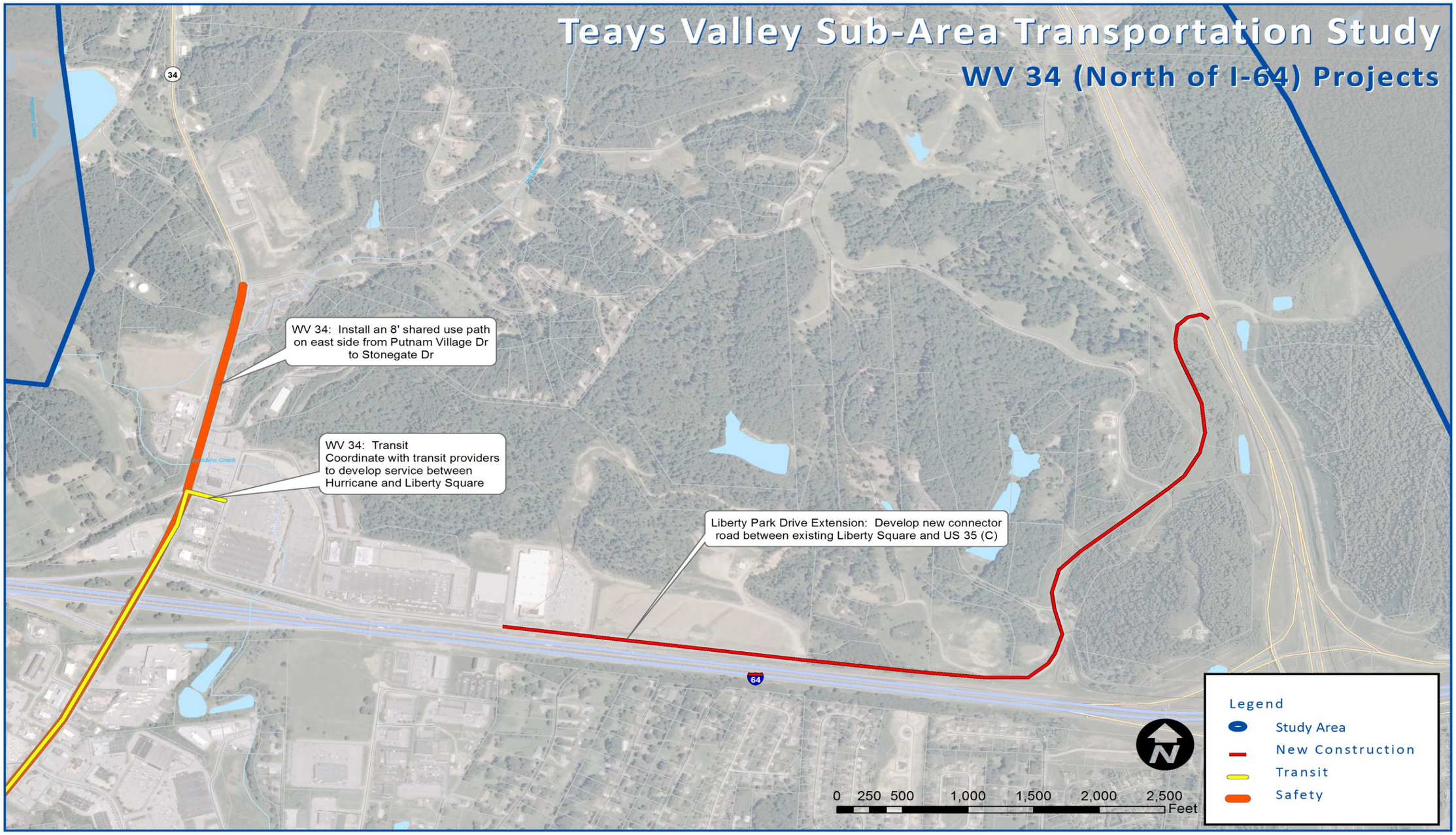
Based on the foundation of the 2040 RIC Long-Range Transportation Plan, the Bicycle and Pedestrian Plan for Kanawha and Putnam counties, stakeholder input, resident input and feedback, advice from the study steering committee, and final review and approvals by RIC staff, the recommended action plan for the Teays Valley Subarea Transportation Study is presented in the following section.

The following options represent the recommended alternatives for development that will have a positive impact on traffic and transportation effectiveness in Teays Valley. Projects are ordered according to each unique travel corridor in the study area and can be viewed on the map preceding each outlined project listing.

Projects are sorted under each corridor into distinct categories including System Preservation, Transportation System Management, Travel Demand Management, Intelligent Transportation Systems, and Construction/Expansion.

Those projects listed under Construction/Expansion have been tested using the Regional Intergovernmental Council transportation travel model developed in TransCad (See Appendix D for a full description of the system evaluation). Projects shown under other categories are not effectively tested through a model and have been assessed through a higher weighting of policy implications and public affinity for recommendation.

Special consideration should be given to further study of a new interchange development in the Culloden area. This location is outside the RIC study area but warrants further investigation to gauge impacts on travel in the Hurricane area.


Teays Valley Sub-Area Transportation Study
WV 34 (North of I-64) Projects
WV 34: Install an 8' shared use path on east side from Putnam Village Dr to Stonegate Dr
WV 34: Transit
Coordinate with transit providers to develop service between Hurricane and Liberty Square
Liberty Park Drive Extension: Develop new connector road between existing Liberty Square and US 35 (C)
34
64
Legend
Study Area
New Construction
Transit
Safety
0 250 500 1,000 1,500 2,000 2,500
Feet

WV 34 (I-64 NORTH TO STUDY AREA BOUNDARY)

TRAVEL DEMAND MANAGEMENT

a. Coordinate with Kanawha Regional Transit to develop regular bus service between downtown Hurricane and Liberty Square Shopping Center. Putnam County should consider subsidies to offset the cost of service expansion through sources such as general fund revenues or additional fees.

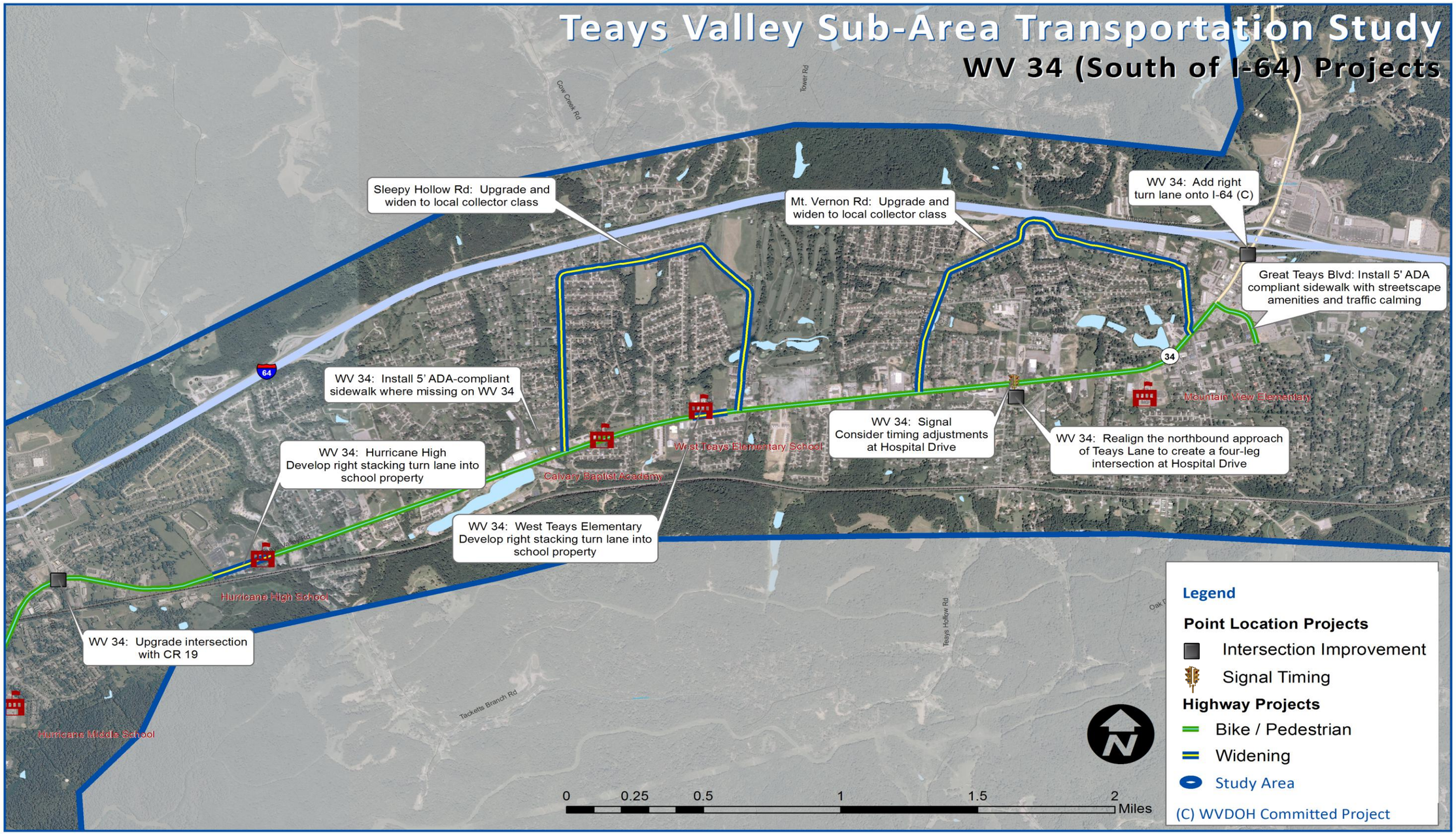
CONSTRUCTION / EXPANSION

CAPACITY IMPROVEMENT

1. Liberty Park Drive Extension (C): Develop a new connector road between Liberty Square Shopping Center and US 35

BICYCLE / PEDESTRIAN IMPROVEMENT

1. WV 34, Stonegate Drive to I-64:
   - Install an 8' wide shared use path on east side from Putnam Village Dr. to Stonegate Drive.


Teays Valley Sub-Area Transportation Study
WV 34 (South of I-64) Projects
Sleepy Hollow Rd: Upgrade and widen to local collector class
Mt. Vernon Rd: Upgrade and widen to local collector class
WV 34: Add right turn lane onto I-64 (C)
Great Teays Blvd: Install 5' ADA compliant sidewalk with streetscape amenities and traffic calming
WV 34: Install 5' ADA-compliant sidewalk where missing on WV 34
WV 34: Signal Consider timing adjustments at Hospital Drive
WV 34: Realign the northbound approach of Teays Lane to create a four-leg intersection at Hospital Drive
WV 34: Hurricane High Develop right stacking turn lane into school property
WV 34: West Teays Elementary Develop right stacking turn lane into school property
WV 34: Upgrade intersection with CR 19
Mountain View Elementary
West Teays Elementary School
Calvary Baptist Academy
Hurricane High School
Hurricane Middle School
Cow Creek Rd
Tower Rd
Teays Hollow Rd
Tackett's Branch Rd
64
34
0
0.25
0.5
1
1.5
2
Miles
Legend
Point Location Projects
Intersection Improvement
Signal Timing
Highway Projects
Bike / Pedestrian
Widening
Study Area
(C) WVDOH Committed Project

WV 34 (I-64 SOUTH TO CR 19)

System Preservation

1. WV 34 – Teays Valley Interchange – Add right turn lane (C): Add a dedicated right turn lane from WV 34 northbound onto I-64 eastbound that will address congestion queuing for the interstate in the commercial section of WV 34 near McDonalds and the TA Travel Center.

Transportation System Management

1. Consider signal timing adjustments at Hospital Drive

Construction / Expansion

CAPACITY IMPROVEMENT

1. Develop a right stacking turn lane into West Teays Elementary School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times. The stacking lane should extend as far as possible along the school property to allow the maximum amount of vehicles egress from the WV 34 travel lanes.
2. Develop a right stacking turn lane into Hurricane High School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times. The stacking lane should extend as far as possible along the school property to allow the maximum amount of vehicles egress from the WV 34 travel lanes.
3. Upgrade and widen Mt. Vernon Road to a full two-lane local collector classification and install a four-foot sidewalk along its entire length.
4. Upgrade and widen Sleepy Hollow Road to a full two-lane local collector classification and install a four-foot sidewalk along its entire length.

INTERSECTION IMPROVEMENT

1. Realign the northbound approach of Teays Lane with Hospital Drive to create a four-leg intersection with Teays Valley Road.

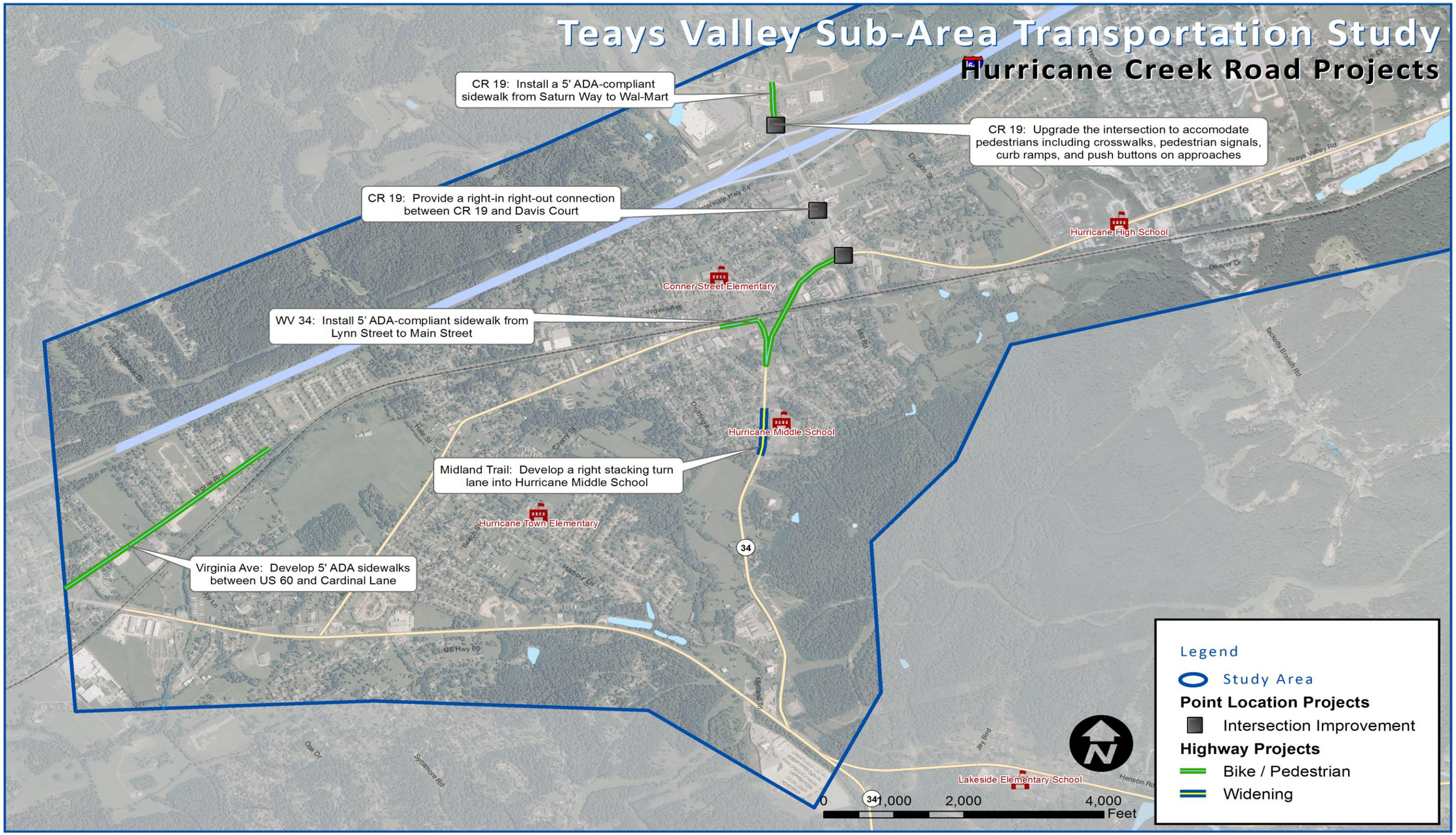
BICYCLE / PEDESTRIAN IMPROVEMENT

2. Intersection of Teays Valley Road (WV 34) and Hurricane Creek Road (CR 19):
   - Upgrade the intersection to accommodate pedestrians, including crosswalks, pedestrian signals, curb ramps and push buttons on pedestrian activity approaches.
3. Teays Valley Road (WV 34), Great Teays Blvd to Putnam County Library:

- △ Install 5' ADA-compliant sidewalk where missing on WV 34 (approximately 3,300 feet).

4. Great Teays Blvd, WV 34 to Teays Valley Road (CR 33):
   - △ Install 5' ADA-compliant sidewalk the entire length of Great Teays Boulevard, install streetscape amenities and traffic calming devices.

(C) WVDOH Committed Project


Teays Valley Sub-Area Transportation Study
Hurricane Creek Road Projects
CR 19: Install a 5' ADA-compliant sidewalk from Saturn Way to Wal-Mart
CR 19: Upgrade the intersection to accomodate pedestrians including crosswalks, pedestrian signals, curb ramps, and push buttons on approaches
CR 19: Provide a right-in right-out connection between CR 19 and Davis Court
WV 34: Install 5' ADA-compliant sidewalk from Lynn Street to Main Street
Midland Trail: Develop a right stacking turn lane into Hurricane Middle School
Virginia Ave: Develop 5' ADA sidewalks between US 60 and Cardinal Lane
Hurricane High School
Conner Street Elementary
Hurricane Middle School
Hurricane Town Elementary
Lakeside Elementary School
Teays Valley Rd
Beaver Dr
Virginia Ave
US Hwy 60
Interstate Hwy 64
Davis St
Mill Rd
Hale St
Cherry St
Hampton Ln
Midland Tr
Jay Bird
Henson Rd
Oak Dr
Sycamore Rd
Tackett's Branch Rd
Elm Dr
34
0
1,000
2,000
4,000
Feet
Legend
Study Area
Point Location Projects
Intersection Improvement
Highway Projects
Bike / Pedestrian
Widening

CR 19 AND MIDLAND TRAIL (WV 34 NORTH TO I-64)

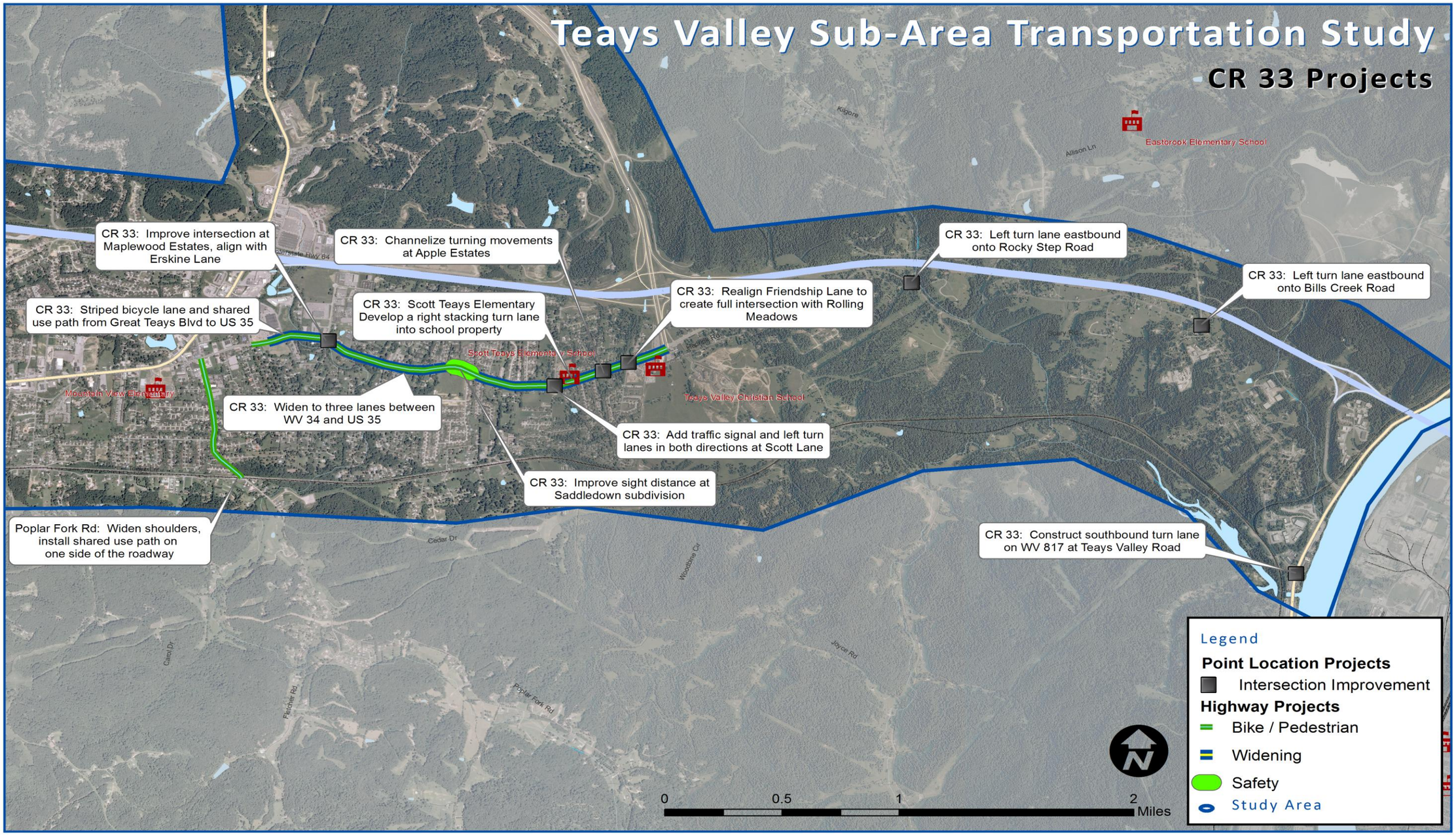
CONSTRUCTION / EXPANSION

CAPACITY IMPROVEMENT

1. Provide a right-in / right-out connection between Hurricane Creek Road at Davis Court through to Washington Avenue and onto Virginia Avenue.
2. Develop a right stacking turn lane into Hurricane Middle School to pull standing vehicles off Midland Trail during morning and evening peak travel times.

BICYCLE / PEDESTRIAN IMPROVEMENT

1. Hurricane Creek Rd (CR 19), I-64 to Wal-Mart:
   - Install 5' ADA-compliant sidewalk where missing from Saturn Way to the entrance of Wal-Mart.
2. Intersection of I-64 and Hurricane Creek Rd (CR 19) - North side of Interstate:
   - Upgrade the intersection, and the intersection of Saturn Way, to accommodate pedestrians, including crosswalks, pedestrian signals, curb ramps and push buttons on pedestrian activity approaches.
3. Virginia Avenue:
   - Develop sidewalks between US 60 and Cardinal Lane (approximately 3,875 feet)
4. Midland Trail (WV 34), Lynn St to Main St:
   - Install 5' ADA-compliant sidewalk from Lynn Street to Main Street (except where existing bridge), approximately 585 feet of sidewalk needed.


Teays Valley Sub-Area Transportation Study
CR 33 Projects
CR 33: Improve intersection at Maplewood Estates, align with Erskine Lane
CR 33: Channelize turning movements at Apple Estates
CR 33: Left turn lane eastbound onto Rocky Step Road
CR 33: Left turn lane eastbound onto Bills Creek Road
CR 33: Striped bicycle lane and shared use path from Great Teays Blvd to US 35
CR 33: Scott Teays Elementary Develop a right stacking turn lane into school property
CR 33: Realign Friendship Lane to create full intersection with Rolling Meadows
CR 33: Widen to three lanes between WV 34 and US 35
CR 33: Add traffic signal and left turn lanes in both directions at Scott Lane
CR 33: Improve sight distance at Saddledown subdivision
Poplar Fork Rd: Widen shoulders, install shared use path on one side of the roadway
CR 33: Construct southbound turn lane on WV 817 at Teays Valley Road
Eastbrook Elementary School
Scott Teays Elementary School
Mountain View Elementary
Teays Valley Christian School
Kilgore
Allison Ln
Cedar Dr
Woodbine Cir
Joyce Rd
Poplar Fork Rd
Fletcher Rd
Carol Dr
0
0.5
1
2
Miles
Legend
Point Location Projects
Intersection Improvement
Highway Projects
Bike / Pedestrian
Widening
Safety
Study Area

CR 33 (WV 34 EAST TO WV 817)

CONSTRUCTION / EXPANSION

CAPACITY IMPROVEMENT

1. Widen Teays Valley Road (CR 33) to three lanes between WV 34 and US 35 in areas where two lanes currently exist.
2. Develop a right stacking turn lane into Scott Teays Elementary School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times.

INTERSECTION IMPROVEMENT

1. Construct a left turn lane eastbound onto Rocky Step Road
2. Construct a left turn lane eastbound onto Bills Creek Road
3. Improve the right-turnlane geometry at Apple Estates to channelize turning movement
4. Realign Friendship Lane with Rolling Meadows Road to create a four-leg intersection with CR 33.
5. Construct an exclusive southbound right-turn lane on WV 817 at the Teays Valley Road intersection
6. Realign the entrance to Maplewood Estates with Erskine Lane to create a four-leg intersection on CR 33.
7. Add a signal and left turn lanes in both directions on CR 33 at Scott Lane.

SAFETY IMPROVEMENT

1. Improve sight distance at sight distance and entrance to Saddledown subdivision.

BICYCLE / PEDESTRIAN IMPROVEMENT

1. South Poplar Fork Rd, Teays Valley Rd (CR 33) to CSX Railroad (connection to Teays Lane and future Hurricane connector trail):
   - Install an 8' shared use path on one side of the roadway.
   - Widen shoulders to provide 4' to 6' shoulders for bicyclists.
2. Teays Valley Road (CR 33), Great Teays Blvd to US 35:
   - Develop a striped bicycle lane along Teays Valley Road (CR 33) as well as an 8' multi-use path in conjunction with its widening to three lanes between WV 34 and US 35.

IMPLEMENTATION

The following section highlights the implementation strategy for the recommended Teays Valley Subarea Study. Table 2 summarizes each implementable project included in the final RIC-approved plan. Appendix G summarizes every implementable project and identifies possible funding sources and responsible parties.

Funding estimates were prepared based on the availability of credible data to support design and construction of each project as envisioned. The following components, when applicable, were taken into account in the estimate:

- Pavement
- Excavation
- Right of way
- Drainage
- Maintenance and Protection of Traffic
- Mobilization
- Rail Crossing
- Shoulders
- Landscaping
- Bikeway
- Sawcutting

Right-of-way figures were obtained through consultation with WVDOH. Estimates of $9 per square foot were considered consistent with the local area and were utilized in the calculations. No utility unit estimates were available for the study area without detailed analysis of individual project locations. In order for utilities to be properly accounted for in this study, a 30% contingency was included in each project cost. The 2011-2012 unit prices used in developing estimates are shown below.

Type	Unit	Unit Price	
Excavation	CY	$	15
Shoulders	SY	$	30
Pavement	SY	$	45
Bikeway	SY	$	40
Landscaping	SY	$	25
Sawcutting	LF	$	2
Drainage	LF	$	15
ROW	sf	$	9

Table 2	Implementation Project	Length (mi)	FY 2011-2012 Estimated Cost	Description
	Short Range (1-5 years)			
	WV 34, Stonegate Drive to I-64: Install an 8' wide shared use path on east side from Putnam Village Dr. to Stonegate Drive (p. 22)	N/A	$ 772,000	1770 feet - ROW - Driveways
	WV 34 – Teays Valley Interchange – Add right turn lane (p. 24)	N/A	$ 266,600	SB on 34 for 270 feet
	Consider signal timing adjustments at Hospital Drive (p. 24)	N/A	$ 23,500	Counts, Analysis, Implementation, Monitoring
	Develop a right stacking turn lane into West Teays Elementary School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times. The stacking lane should extend as far as possible along the school property to allow the maximum amount of vehicles egress from the WV 34 travel lanes. (p. 24)	0.13	$ 273,400	500 feet
	Develop a right stacking turn lane into Hurricane High School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times. The stacking lane should extend as far as possible along the school property to allow the maximum amount of vehicles egress from the WV 34 travel lanes. (p. 24)	0.23	$ 372,000	700 feet.
	Realign the northbound approach of Teays Lane at the pharmacy (southeast corner of Teays Lane and Teays Valley Road) to create a four-leg intersection at Hospital Drive (p. 24)	N/A	$ 134,900	Match on to existing drive adjacent to CVS 600 feet long - 300 new align and 300 on exsiting, 40 feet wide
	Intersection of Teays Valley Road (WV 34) and Hurricane Creek Road (CR 19): Upgrade the intersection, and the intersection to accommodate pedestrians, including crosswalks, pedestrian signals, curb ramps and push buttons on pedestrian activity approaches (p. 24)	N/A	$ 46,100	6 heads, 6 buttons, 6 ramps, 3 xwalks
	Develop a right stacking turn lane into Hurricane Middle School to pull standing vehicles off Midland Trail during morning and evening peak travel times. The stacking lane should extend as far as possible along the school property to allow the maximum amount of vehicles egress from Midland Trail travel lanes. (p. 27)	0.14	$ 199,000	Restriping and minor widening, curb and sidewalk
	Midland Trail (WV 34), Lynn St to Main St: Install 5' ADA-compliant sidewalk from Lynn Street to Main Street (except where existing bridge), approximately 585 feet of sidewalk needed. (p. 27)	0.65	$ 191,900	585 feet sidewalk - 485 feet bridge. Shoulder and Guardrail.
	Provide a right-in / right-out connection between Hurricane Creek Road at Davis Ct. through to Washington Avenue and onto Virginia Avenue. (p. 27)	0.12	$ 414,100	650 feet new road
	Hurricane Creek Rd (CR 19), I-64 to Wal-Mart: Install 5' ADA-compliant sidewalk where missing from Saturn Way to the entrance of Wal-Mart. (p. 27)	0.13	$ 62,300	650 feet new sidewalk on exisitng grade

Implementation Project	Length (mi)	FY 2011-2012 Estimated Cost	Description
Short Range Continued (1-5 years)			
Intersection of I-64 and Hurricane Creek Rd (CR 19) - North side of Interstate: Upgrade the intersection, and the intersection of Saturn Way, to accommodate pedestrians, including crosswalks, pedestrian signals, curb ramps and push buttons on pedestrian activity approaches. (p. 27)	N/A	$ 18,400	Assume Ped Facilities on the East Side Only At Ramp - 2 Poles, 2 heads and 2 push buttons plus x-walk = 60' At Saturn - Just x-walks across Saturn Way = 35' (No Signal) All SW Ramps in Place
Develop a right stacking turn lane into Scott Teays Elementary School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times (p. 29)	N/A	$ 124,200	300 Feet long, back to oposite Country Side Estates
Construct a left turn lane eastbound onto Rocky Step Road (p. 29)	N/A	$ 615,900	150 feet approach and 50 feet opposite Need Walls
Construct a left turn lane eastbound onto Bills Creek Road (p. 29)	N/A	$ 57,400	150 feet approach and 50 feet opposite
Improve the right turn-lane geometry at Apple Estates to channelize turning movement (p. 29)	N/A	$ 86,800	300 feet curb and long island (150 feet)
Add a signal and left turn lanes in both directions on CR 33 at Scott Lane (p. 29)	N/A	$ 218,100	200 LF on feet both approaches 400 feet Total 4 way 2 Phase Signal / With Pedestrians
Improve sight distance at the blind curve and entrance to Saddledown subdivision (p. 29)	0.08	$ 390,700	Will have to cut back bank and move two poles, Reconstruct 100 feet @30' wide
Mid Range (6-10 years)			
Coordinate with Kanawha Regional Transit to develop regular bus service between downtown Hurricane and Liberty Square for shopping and appointments (p. 22)	6.07	N/A	
Upgrade and widen Mt. Vernon Road to a full two-lane local collector classification (p. 24)	1.77	$ 4,501,000	Assume reconstruction with widening by 2' each side (to 24 feet) and new 4' shoulders (1.8 miles Total Length)
Upgrade and widen Sleepy Hollow Road to a full two-lane local collector classification (p. 24)	1.98	$ 4,981,000	Assume reconstruction with widening by 4' each side (to 24 feet) and new 4' shoulders (2 miles Total Length)
Teays Valley Road (WV 34), Great Teays Blvd to Putnam County Library: Install 5' ADA-compliant sidewalk where missing on WV 34 (approximately 3,300 feet) (p. 24)	N/A	$ 415,700	Driveway crossings and ROW
Great Teays Blvd, WV 34 to Teays Valley Road (CR 33): Install 5' ADA-compliant sidewalk the entire length of Great Teays Boulevard, install streetscape amenities and traffic calming devices (p. 24)	0.24	$ 215,600	Driveway crossings and ROW, 1,270 feet

Project ID	Implementation Project	Length (mi)	FY 2011-2012 Estimated Cost	Description
	Mid Range Continued (6-10 years)			
	Virginia Avenue: Develop sidewalks between US 60 and Cardinal Lane (approximately 3,875 feet) (p. 27)	0.70	$ 271,700	Sidwalks on one side
	Realign Friendship Lane to create an intersection with Rolling Meadows Road (p. 29)	N/A	$ 134,900	Roadway for connection - 150 feet long x 40 feet wide, average fill depth of 2 feet, curb both sides. Extend Culvert and grade so guard rail is not needed
	Construct an exclusive southbound right-turn lane on WV 817 at the Teays Valley Road intersection (p. 29)	N/A	$ 230,000	500 feet long half flat, half heavy grading
	Improve the intersection with Maplewood Estates, aligning entrance with Erskine Lane and better delineating and consolidating the entrance to Maplewood Estates neighborhood (p. 29)	N/A	$ 568,700	Relocate 200 feet of Maplewood Drive 32 feet wide (4-24-4) with New Bridge (30 x 32)
	South Poplar Fork Rd, Teays Valley Rd (CR 33) to CSX Railroad: Install a 8' shared use path on one side of the roadway. (p. 29)	0.62	$ 1,320,800	Driveway crossings, grading and Drainage and ROW
	South Poplar Fork Rd, Teays Valley Rd (CR 33) to CSX Railroad: Widen shoulders to provide 4' to 6' shoulders for bicyclists. (p. 29)	0.62	$ 542,900	No Right-of Way
	Long Range (11-20 years)			
	Widen Teays Valley Road (CR 33) to three lanes between WV 34 and US 35 in areas where two lanes currently exist (p. 29)	1.79	$ 2,300,000	1.5 miles need to have a third lane added, assume 14 feet pavement and 4' shoulders in area
	Teays Valley Road (CR 33), Great Teays Blvd to US 35: Develop a striped bicycle lane along Teays Valley Road (CR 33) as well as an 8' multi-use path in conjunction with its widening to three lanes between WV 34 and US 35. (p. 29)	1.86	$ 7,300,000	Adding 22' + 2-4' shoulders for 1.5 miles - Adding 8' + 2-4' shoulders for 0.4 miles -- Adding 10' Bikeway for 1.9 miles - 10' strip ROW acquisitons

APPENDIX A: STAKEHOLDER PROJECT IDEAS

Stakeholder Project Ideas

- Widening Cow Creek to allow for future development
- Crosswalks, sidewalks
    - Rt. 19/34 intersection (would like pedestrian crossing)
    - Need crossing at new wave pool
    - Orchard Park Rd enhancements
    - Pedestrian Heads at lights
    - Pedestrian bridge over 34 to city park (replace / add to current 1 lane bridge) put in for $113K in funding
    - Pedestrian issues near Walmart
- Traffic near high school bad in evening - from HS to Rite Aid
- Bypass from Walgreen to Virginia Ave - US foods may help
- 5 lane Rt. 19 & 34 - Originally called for in 1984 Teays valley study
- Little / no transit interest from citizens
- Maybe a "Mileground" solution (4 lane roundabout)
- Interconnect community roadways
- Extension of 35 to 60 (years away)
- 6 lane interstate long term plan
- Proposed signal at Cow Creek
- Proposed signal at Mt Vernon
- Transit interest (for county to take over)?
- Identify short operational improvements
- TDM (telecommuting, work center thoughts?)
- Hurricane Creek Rd
    - Big congestion issue back to interchange in PM and also in the morning
    - Ramp backup
    - Possible bypass from 34 to 34
- Lack of sidewalks Hurricane to Walmart
- Bike Trail concept plan
    - HS to Valley Park
- North south access to 60 - Poplar fork upgrade
- Need frontage road missing link to be put in before development occurs near New 35
- 90 degree turn at Liberty square needs straightened out
- US Food Service truck traffic in Hurricane
- Extend 3 lanes @ Scott Teays
- Active participation at school to get kids out of vehicle faster - function of the principal
- Need frontage roads down the valley, behind theater

Public Meeting #1: March 3, 2011

- Turning right off of 34 3rd lane left turn only "right 34"
- Main problem areas for me include Teays Valley Road beginning at Hospital Drive to the interstate and continuing on the interstate until the lanes widen past the Nitro exit.
- I live in the Saddledown subdivision near Scott Teays elementary. We have a few issues: 1. the school bus will not enter due to a blind curve. If upgrades were to be done in our area discussions with the school board on what can be done to allow bus entry would help. 2. A second entrance would help. 3. The road level was raised which resulted in a large dip upon entrance to TV Road causing vehicles to drag. 4. Our road sign was destroyed and needs to be replaced but if something was to be done to the road we don't want to fix it beforehand because any construction on the road would certainly remove our sign.
- Scott Teays Elementary – 7:15 a.m. mess 1. Ultimate solution is center turn lane from Kmart to Scott Teays. Please make this a priority when recommending projects. This two lane section between three lane sections needs upgraded. It will solve Scott Teays problem plus others. 2. School drop off procedures. Please use two lanes in front of school. While sitting in traffic that uses narrow alley behind school, I always wonder why two lanes in front never have a car or bus using them. Also sidewalks at school need extended to facilitate drop offs. 3. Sidewalks from Kmart to Scott Teays would be helpful. In addition, sidewalk connectivity between subdivisions in and around Scott Teays would provide small amount of relief. Anything would help. 4. There is also an issue in stopped traffic with motorists on main roadway letting side street traffic into flow. This crushes flow on Teays Valley Road and needs to be regulated with a signal or some other means. I vote roundabout.
- Access mgt. along WV34 needs improved. 2. Proposed road widening should accommodate wider lanes for bicyclists and separate sidewalks for pedestrians. 3. Better coordination with schools and traffic congestion is needed, i.e. too many children are driven to school and are not walking or taking bus, thus creating major traffic congestion. 4. Additional parallel routes are needed east/west to reduce strain on WV34. 5. Interconnectivity of subdivisions would improve walkability including walking to school.
- Transportation for elderly with visual/physical impairments
- Lack of transportation in county (talked with Putnam County, only has one van)
- We have property at Culloden on the county line, 187 acres that is being looked at for assisted living complex ad as much as a hundred homes. This property has all utilities available.
- Interchange at Benedict Road and Cow Creek. The Benedict Road interchange opens up a lot of real estate that has the water and sanitary sewer in place. This would take a lot of traffic from Rt. 34 (South) and a lot of housing developments to the south of Hurricane to Culloden and on the interstate.
- Walking and bike trails that will allow residents to get from either end of the valley to the parks without being on Rt. 34 should be considered

- I think an additional interchange somewhere between Hurricane town and Teays Valley would help alleviate a lot of the congestion. In Teays Valley around McDonald's area and the truck stop it is very dangerous to cross traffic. Also the trucks coming out of the truck stop are a source for congestion.
- Any upgrades to Rt. 34 from Exit 39 to Hurricane are short-term in consideration of businesses, homes affected in convenience to residents during construction and to future (controlled) growth. A key concentration should be on a southern ring road (2 or 3 lane), possibly from the Hedrick Road intersection at the new US 35 interchange, south and around and across the railroad tracks, reconnecting at the Hurricane Ck. Road intersection with Rt. 34. This not only creates alleviation for traffic, but also opens up the south f/new development and also the potential for a sidewalk and/or bike lane. Connections to Rt. 34 could exist through intersections with county routes such as Joyce Road, Scott Depot Road, Co. Rt. 32 (at Tim Horton's) and at Tackett's Branch.
- Teays Valley Road from Great Teays Blvd. to Rocky Step Rd. could be widened to three lanes with sidewalks on one side and bike lane on the other. Granted, this would create nightmares in construction traffic. To me, at least, on sidewalk would suffice on this stretch. Some roads, especially due to the amount of residential development helping congest the road further, should remain as they are (hence the above point).
- Complete the frontage road from US 35 to Liberty Square…also, an overpass from that frontage road connecting ultimately to the road with Teays Cinemas, Strayer U, etc. This would offer a 2nd way out of the cinemas, etc. and bring reason and foresight to locating a place of entertainment in such an odd and inconvenient spot.
- Create a new main entrance driveway to Mountain View Elem. from Scott Depot Road and eliminate the entrance along WV Rt. 34. This was an asinine concession from day 1 and has only exacerbated traffic problems.
- After ½ mile N. Poplar fork turns away from its parallel with I-64. I suggest creating a frontage road connection to Cow Creek Road and beyond, potentially to the Wal-Mart intersection (near there) at Hurricane Ck. Road….i.e. a northern frontage road.
- Instead of widening Rt. 34 from Teays Valley Road to Hurricane, just concentrate on a potential bike lane or at least a few traffic signals at Mt. Vernon Rd., Cow Creek and my subdivision
- Long-term – a more direct connection from Hurricane/Culloden to Buffalo Bridge
- There is congestion between exit 40 and the Kmart on TV Road.
- Electronic changeable lanes to allow turn lane to be used for one direction at certain peak times each way. (Like Green Tree)
- Look up "ITN America" have one in Lexington i.e. dialysis services, doctor, grocery
- Would like to see Route 33 widened to at least three lanes and some of the curves straightened out between the Crooked Creek interchange and Mountain View Elementary School. Could also like to see traffic lights placed in strategic locations of congestion along this same stretch.

- Hurricane Creek Road to Wal-Mart – re-stripping for turning lane from Hurricane. Cr. Rd. to I-64 West. Also continuous turning lanes from Hurricane. Cr. Rd. to I-64 East.
- Teays Valley continuous turning lane from Rt. 34 to I-64 East.
- The Crooked Creek exchange greatly improved the congestion at Teays Valley exit. My suggestion is a new I-64 exchange of Teays Valley Road, maybe around Cow Creek area to alleviate congestion.
- Would like bus to Charleston. Bike trail along r/r track, etc. away from homes and businesses.

APPENDIX B: MODEL TURN LANE WARRANTS

PUTNAM COUNTY TRIP DISTRIBUTION AND TURN LANE WORKSHEET

Step

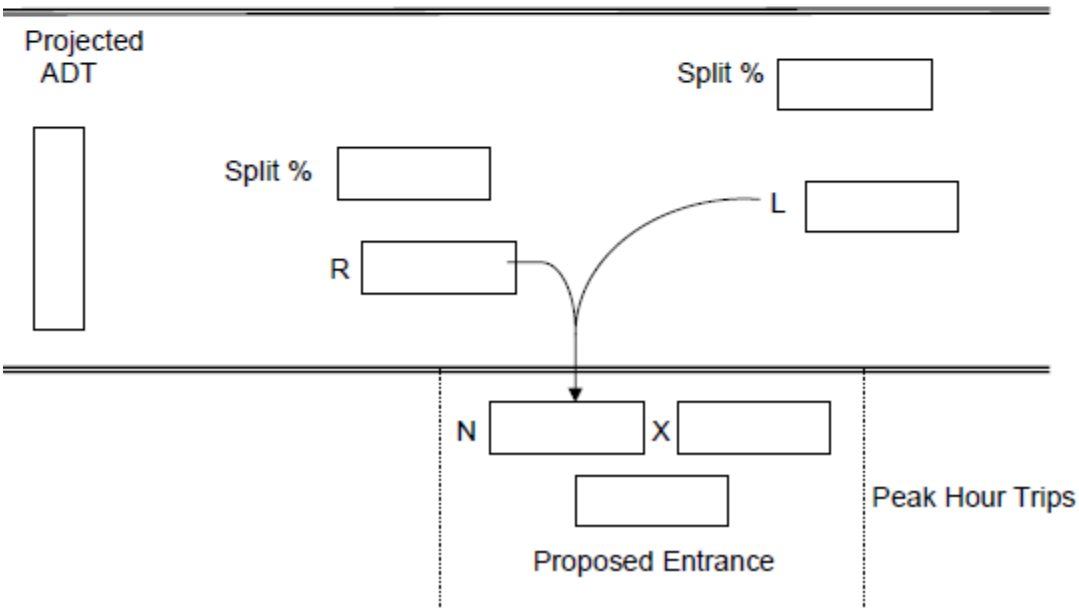
1- Define the land use and the peak hour trips generated by the site at full build-out from ITE's Trip Generation Manual or other recognized source.

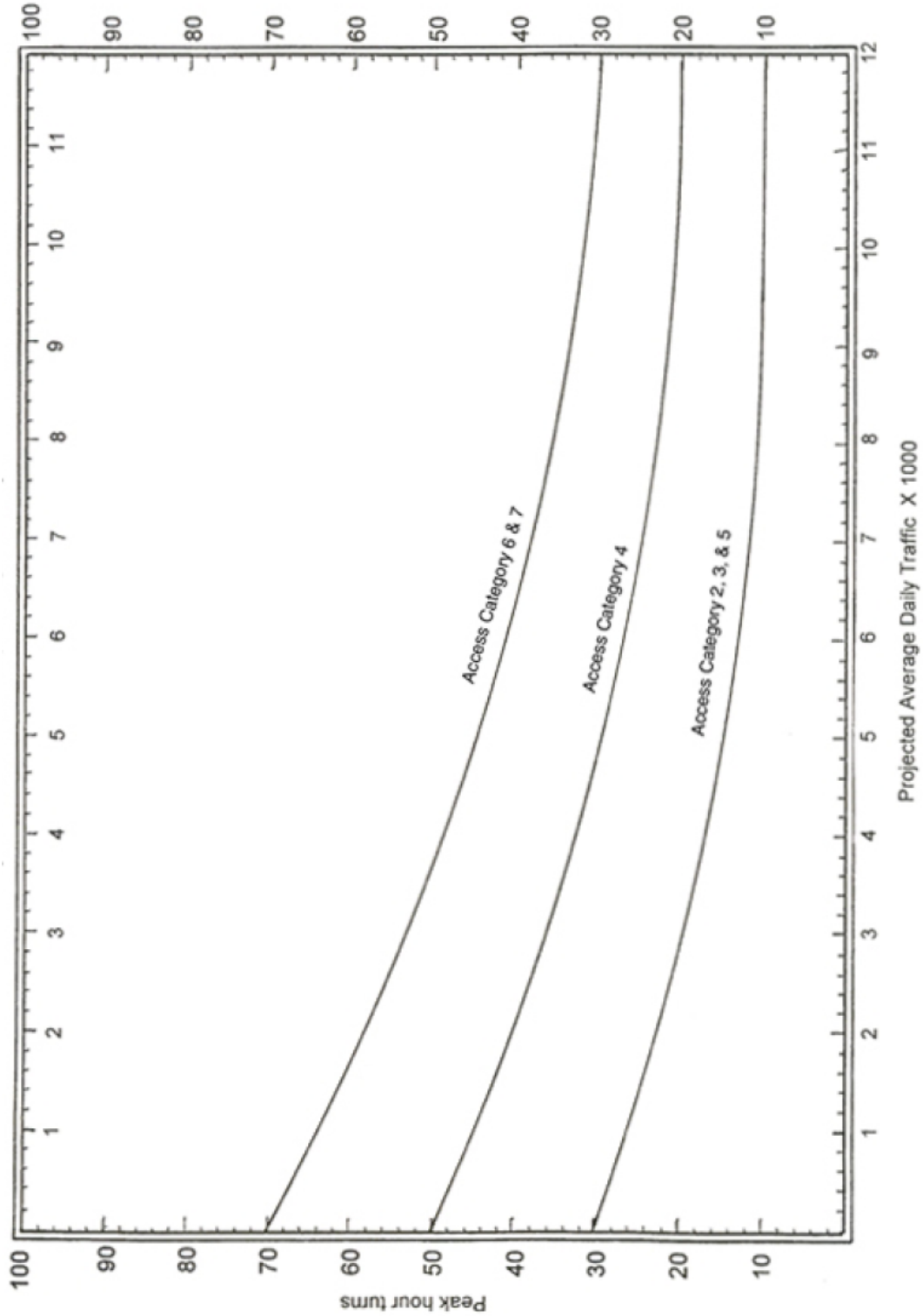
2- Calculate the trips entering (Box N) and exiting (Box X) the site during the AM and PM peak hours, using the directional distribution found in the Trip Generation Manual. Round up to the next whole number.

3- Determine the number of right turn and left turn entry movements by using the split percentage (Split %) of the background traffic. If the background traffic is unknown, use 60%/40% as a rough estimate. Multiply the number of entering vehicles (Box N) by the Split% to obtain the peak hour site-generated left and right turns (Box L and Box R).

4- Right and left turn analyses may now be made by plotting Box L and Box R on the Y axis, labeled "Peak Hour Turns". Plot the projected ADT on the X axis of the Auxiliary Lane Analysis graph labeled "Projected Average Daily traffic X 1000". The Projected ADT and the road's access category are available from the Goochland County Planning Department. (See graph on next page.)

5- If the intersection of the lines for the peak hour turns and projected ADT falls above the graph's line for the fronting road's access category, the auxiliary lane(s) is justified. If the intersecting lines fall below the fronting road's access category, then the auxiliary lane(s) is not justified.




Peak hour turns
100
90
80
70
60
50
40
30
20
10
Access Category 6 & 7
Access Category 4
Access Category 2, 3, & 5
1
2
3
4
5
6
7
8
9
10
11
12
Projected Average Daily Traffic X 1000

APPENDIX C: MODEL ACCESS MANAGEMENT ORDINANCE LANGUAGE

MODEL LANGUAGE

The following section contains model language outlining the tools available through access management. This section could be adapted as part of the zoning or subdivision ordinance or contained within a county comprehensive plan. One of the major components of this section is the assignment of access categories to each of the major roads in Teays Valley. This categorization can be used to define the development options available for different corridors in the region.

INTENT AND PURPOSE. The intent of these regulations and standards is to provide and manage access to land development, while preserving traffic flow in terms of safety, capacity, and speed. Major thoroughfares, including highways and other arterials, serve as the primary network for moving people and goods. These transportation corridors also provide access to businesses and homes and have served as the focus for commercial and residential development. If access systems are not properly designed, these thoroughfares will be unable to accommodate the access needs of development and retain their primary transportation function. These regulations and standards balance the right of access to private property, with the right of the public to safe and efficient travel. State and local thoroughfares have been categorized by function and classified for access purposes based upon their level of importance. Regulations have been applied to these thoroughfares for the purpose of reducing traffic accidents, personal injury, and property damage and to thereby improve the safety and operation of the roadway network. This will protect the substantial public investment in the existing transportation system and reduce the need for expensive remedial measures. These regulations also further the orderly layout and use of land, protect community character, and conserve natural resources by promoting well-designed road and access systems.

APPLICABILITY. These access management regulations and standards shall apply to all arterials, collectors, and local roadways within the county and to all properties that abut these roadways. The access classification system and standards shall apply to all roadways in the county.

CONFORMANCE WITH PLANS, REGULATIONS, AND STATUTES. These access regulations and standards are adopted to supplement Article 1600 – Road Access, of the Putnam County Zoning Ordinance. They include:

1) Managing vehicular access and land use changes along all major public roadways, particularly collectors and arterial roads in order to maintain suitable level of capacity and safety on roads.

2) Maintaining the overall efficiency and viability of the county's road network by creating and maintaining an interconnected system made up of hierarchy of local, collector, arterial and limited access roads.

3) Implementing standards and regulations to enhance access policies along Route 34.

4) Encouraging the consolidation and assemblage of existing small parcels along all major arterial and collector roadways, in order to achieve coordinated development with fewer entrances and greater setback.

ACCESS CATEGORIES. Since different roads serve different purposes, a ranking system for roadways in Putnam County has been developed to determine the appropriate application of designs and strategies. These categories are based on the adopted functional classification of roadways, which are assigned to one of five access categories with Access Category 1 being the most restrictive and Access Category 5 being the least restrictive. The categories are as follows:

Access Category 1: Interstate and Limited Access/Primary Systems

Characteristics:

- High speed
- High traffic volumes
- Strong emphasis on mobility for through traffic
- Long distance travel
- No right to direct access

Access Category 2: Major Arterials/Primary System

Characteristics:

- Highways that supplement the federal interstate system
- High speed
- High traffic volume
- Controlled access
- Rural areas
- Serves regional traffic
- Emphasis on mobility

Access Category 3: Minor Arterials /Primary, Secondary Systems

Characteristics:

- Emphasis on preserving safety and capacity of roadway
- High speeds
- Moderate traffic volumes
- Rural areas
- Emphasis on mobility
- Serves regional and local traffic

Access Category 4: Collectors /Primary, Secondary Systems

Characteristics:

- High speed
- Lower volumes
- Rural areas
- Serves primarily local traffic

Access Category 5: Collectors/Primary, Secondary Systems

Characteristics:

- High traffic volumes
- Low speeds
- Focus is on balancing mobility and access with emphasis on access
- Located in village areas

Access Category 6: Local Roads /Secondary System

Characteristics:

- Provide access to arterials and collectors
- Focus is on mobility and access but mostly access
- Trips are local in nature
- Moderate traffic volumes
- Within designated villages

Access Category 7: Local Roads/Secondary System

Characteristics:

- Low speed
- Low volume
- Serves local traffic
- Focus is on access
- Within designated villages

ACCESS STANDARDS: DRIVEWAY, CORNER CLEARANCE, CROSSOVER, AND SIGNALIZED INTERSECTION SPACING. All access connections on roadway segments that have been assigned an access category shall meet the minimum connection spacing requirements of that category, as specified in Table 2. The access standards presented in Table 2 limit the number of driveways/crossovers/signalized intersections on a road by mandating minimum separation distances between them. This reduces the potential for collisions as travelers enter or exit the roadway and encourages sharing of access, where appropriate. The spacing standards in Table 2 have been designed to provide adequate sight distance, stopping response times, and stacking space for turning movements. Table 3 identifies all road segments in the Teays Valley Study Area that have been assigned an access category.

Separation between access classifications on all collectors and arterials under local jurisdiction that have not been assigned an access classification shall be based upon the posted speed limit in accordance with Table 1.

Table 1: Driveway Spacing for Non-classified Roadways

Posted Speed Limit (mph)	Driveway Spacing (feet)
≤ 35	125
36 - 45	245

Driveway spacing shall be measured from the closest edge of the pavement to the next closest edge of the pavement. The projected future edge of the pavement of the intersecting road shall be used in measuring corner clearance, where widening, relocation, or other improvement is indicated in an adopted local thoroughfare plan or five-year transportation plan of the metropolitan planning organization.

Table 2: Recommended Access Design Standards

Access Class	Characteristics	Posted Speed (mph)	ADT	Land Use Characteristics	Driveway Spacing	Corner Clearance	Cross-over Spacing	Signal Spacing	*Turn Lanes
1	High speeds and volumes, limited access. Serves regional traffic. **Focus is mobility.**	55 or Higher	Over 4,000	Existing rural/suburban but chance of land use change in future is high					
2	High speeds and volumes, controlled access. Serves regional traffic. **Focus is mobility.**	45-55	Over 4,000	Existing rural/suburban but chance of land use change in future is high	660	660	2640	2640	200 – Storage 200 – Taper
3	High speeds and moderate volumes. Serves regional and local traffic. **Focus is mobility.**	45-55	501-4,000	Rural	660	660	1320	2640	200 – Storage 200 – Taper
4	High speeds and lower volumes. Serves local traffic. **Focus is balancing mobility and access.**	45-55	Under 500	Rural	440	440	1320	1320	200 – Storage 200 – Taper
5	Lower speed and high volumes. Serves local traffic. **Focus is on access and mobility but mostly access.**	Under 45	Over 4,000	Village	245	245	1320	1320	200 – Storage 200 – Taper
6	Lower speed and moderate volumes. Serves local traffic. **Focus is on access and mobility but mostly access.**	Under 45	501-4,000	Village	245	245	660	1320	100 – Storage 200 – Taper (100 Taper if speed>35)
7	Lower speed and lower volumes. Roadway sections are built out and major land use changes or roadway widening is limited. Serves local traffic. **Focus is on access.**	Under 45	Under 500	Village	125	125	330	1320	100 – Storage 200 – Taper (100 Taper if speed>35)

Table 3: Teays Valley Roadway Classifications

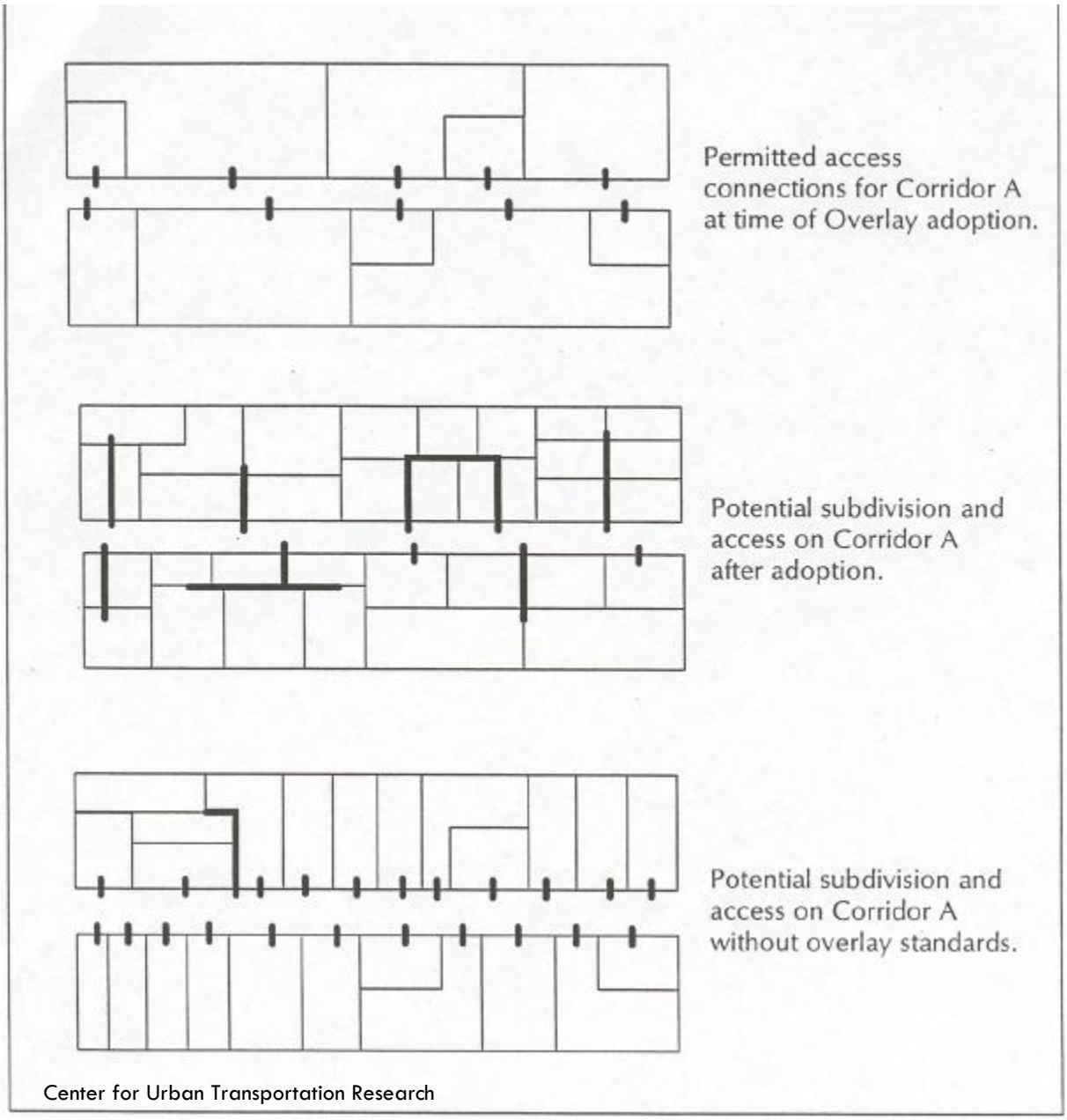
Route	Segment	Access Class
I-64	All	1
US 35	All	1
US 60	County line to Stewart Rd	2
WV 34	US 60 to Midland Trail (Main St Hurricane)	5
WV 34	US 60 to Teays Valley Road (Midland Trail)	5
WV 34	Midland Trail to Rt. 33	5
WV 34	Rt. 33 to I-64	5
WV 34	I-64 to Stonegate Drive	5
WV 34	Stonegate Drive to US 35	5
WV 34	US 60 to Rt. 34/34 (Daniel Boone Tr)	5
Rt. 33	WV 34 to Great Teays Blvd	5
Rt. 33	Great Teays Blvd to Apple Ln	6
Rt. 33	Apple Ln to Teays Villa	6
Rt. 33	Teays Villa to Rt. 817 (Winfield Rd)	6
Rt. 19	WV 34 (Teays Valley Rd) to Rt. 19/8	5
Rt. 19	Rt. 19/8 to Rt. 19/6 (Peach Ridge Rd)	5
Rt. 60/10	County Line to Hale St.	6
Rt. 60/10	Hale St. to Lynn St.	7
Rt. 50	US 60 to Rt. 50/1 (Panther Lick Rd)	7
Rt. 40	WV 34 to Sleepy Hollow Rd	7

Rt. 34/15	Cow Creek Rd to WV 34	7
Rt. 34/14	WV 34 to WV 34	7
Rt. 46	WV 34 to Rt. 33	5
Rt. 46	Rt. 33 to Leslie Pl	6
Rt. 46	Leslie Pl to Rt. 60/5	3
Erskine Ln	Rt. 33 to end	7
Frazier Way	Rt. 33 to end	7
Rt. 33/7	Heather Ct to Hamon Dr	7
Hedrick Rd	Rt. 33 to Devonshire Dr	6

If the access connection spacing standards in Table 2 cannot be achieved, the Director of Planning may reduce required separation distances of access points provided that:

1. Shared access driveways and cross access easements are provided wherever feasible; or
2. The connection does not create a safety or operational problem upon review of a site specific traffic impact analysis of the proposed connection prepared by a registered engineer or other professional acceptable to the Director of Planning and submitted by the applicant; or
3. At an intersection, where no other access to the property is available and shared access driveways and cross access easements are not feasible, the Director of Planning may allow construction of an access connection along the property line farthest from the intersection. In such cases, directional connections (i.e., right in/out) may be required.

Figure 1: Potential Results from Access Management



SUBDIVISION OF LAND ALONG CORRIDORS. All land in a parcel having a single tax code number, as of (*date of adoption*), shall be entitled one (1) driveway/connection per parcel as of right on said public thoroughfares(s). When subsequently subdivided, access to all newly created lots shall be provided via the permitted access connection. This may be achieved through subdivision roads, shared and cross accesses, and service drives (see Figure 1).

Parcels in existence as of (*date of adoption*) with frontages that exceed minimum spacing requirements as shown in Table 2 may be permitted additional access connections.

Additional access connections may be allowed where the property owner can demonstrate upon review of a traffic impact analysis of the proposed connection submitted by the applicant that safety and efficiency of travel on the thoroughfare will be improved by providing more than one access to the site.

SHARED AND CROSS ACCESS. Adjacent commercial or office properties classified as major traffic generators (i.e., shopping center, office parks) shall provide cross access and pedestrian access to allow circulation between sites.

Commentary: Adjacent shopping centers or office parks are often not connected by a service drive and sidewalk. As a result, customers who wish to shop in both centers or visit both sites must exit the parking lot of one, travel a short distance on a major thoroughfare, and then access the next site. A cross access drive reduces traffic on the major thoroughfare and reduces safety hazards. This in turn can have positive business benefits by providing easy access to one site from another.

A system of shared use driveways and cross access easements shall be established wherever feasible and the building site shall incorporate the following:

1. A continuous service drive or cross access extending the entire length of each block served to provide for driveway separation consistent with the access classification system and standards.
2. Sufficient width to accommodate two-way travel aisles designed to accommodate automobiles, service vehicles, and loading vehicles.
3. Stub roads and other design features to make it visually obvious that the abutting properties may be tied in to provide cross access via a service drive.
4. A unified access and circulation system plan that includes coordinated or shared parking areas is encouraged.

Pursuant to this section, the owner shall record an easement with the deed allowing cross access to and from other properties served by the shared use driveways and cross access or service drives.

Subdivisions with frontage on the state highway system shall be designed into shared access points to and from the highway.

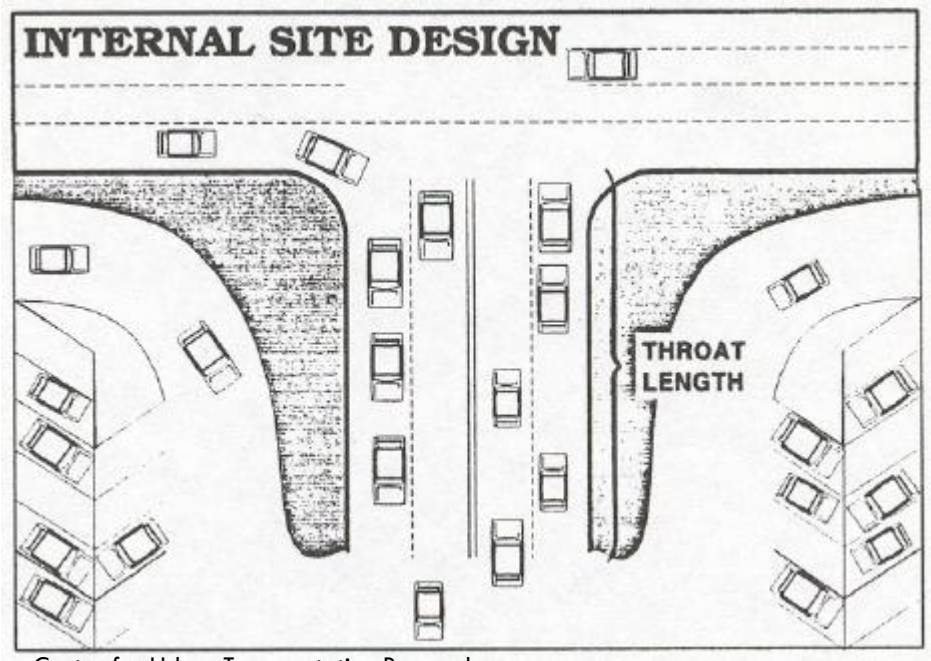
ACCESS CONNECTION AND DRIVEWAY DESIGN.

Driveway width shall meet the following guidelines:

1. If the driveway is a one way in or one way out drive, then the driveway shall be a minimum width of 14 feet of pavement and shall have appropriate signage designating the driveway as a one-way connection.
2. For two-way access, each lane shall have a width of 12 feet.
3. Driveways that enter the major thoroughfare at traffic signals must have at least two outbound lanes (one for each turning direction) of at least 12 feet width and one inbound lane with 14 feet width of pavement.

Driveway grades, turnout radii, approaches, and lengths shall conform to WVDOT's standards.

Figure 2: Driveway Throat Length



Center for Urban Transportation Research

Driveway approaches must be designed and located to provide an exiting vehicle with an unobstructed view. Construction of driveways along acceleration or deceleration lanes and tapers is prohibited.

The length of driveways or "throat length" shall be designed in accordance with the anticipated storage length for entering and exiting vehicles to prevent vehicles from backing into the flow of traffic on the public street or causing unsafe conflicts with on-site circulation

(refer to Figure 2). These measures generally are acceptable for the principle access to a property and are not intended for any minor supplemental driveways to that same property.

REQUIREMENTS FOR OUTPARCELS AND PHASED DEVELOPMENT PLANS. In the interest of promoting unified access and circulation systems, development sites under the same ownership or consolidated for the purposes of development and comprised of more than one building site shall not be considered separate properties in relation to the access standards and regulations. The number of connections permitted shall be the minimum number necessary to provide adequate access to these properties, not the maximum available for that frontage. All necessary easements, agreements, and stipulations shall be met. This shall also apply to phased development plans. The owner and all lessees within the affected area are responsible for compliance with the requirements of these access standards and regulations.

All access to the outparcel must be internalized using the shared circulation system of the principal development or retail center. Access to outparcels shall be designed to avoid excessive movement across parking aisles and queuing across surrounding parking and driving aisles.

Commentary: Essentially this section states that adjacent properties under single ownership will be treated as one property.

REVERSE FRONTAGE. Access to double frontage lots shall be encouraged on the street with the lower functional classification.

When a residential subdivision is proposed, it shall be designed to provide through lots along public roads with access from an interior subdivision road as required by the county's subdivision ordinance. A buffer yard may be required at the rear of through lots to buffer residences from traffic on the roadway. The buffer yard shall not be located within the public right-of-way.

CONNECTIVITY. The street system of a proposed subdivision shall be designed to coordinate with existing, proposed, and planned streets outside of the subdivision as provided in this section.

Wherever a proposed development abuts unplatted land or a future development phase of the same development, street stubs shall be provided as deemed necessary by the county to provide access to abutting properties or to logically extend the street system into the surrounding area. The restoration and extension of the street shall be the responsibility of any future developer of the abutting land.

INTERCHANGE AREAS ON LIMITED ACCESS FACILITIES (INTERSTATE 64 AND ROUTE 35) To protect the safety and operational efficiency of the limited access facility and the interchange area, the distance to the first access connection from the interchange area (measured from the end of the taper of the ramp for that quadrant of the interchange) should be at least 625 feet

where the posted speed limit is greater than 45 mph or 440 feet where the posted speed limit is 45 mph or less.

Commentary: New highway interchanges can impact land development patterns around the interchange area. In turn, if land development is not properly planned it can create safety hazards and interfere with the flow of traffic onto and off of the interchange.

NONCONFORMING ACCESS FEATURES. Permitted access connections in place as of *(date of adoption)* that do not conform with the standards herein shall be designated as nonconforming features and shall be brought into compliance with applicable standards under the following conditions:

1. When new access connection permits are requested;
2. Increase in trip generation of 100 or more additional peak hour trips; or
3. As roadway improvements allow.

Commentary: Nonconforming access features may continue in the same manner after adoption of land development regulations— a process known as "grandfathering". This protects the substantial investment of property owners and recognizes the expense of bringing those properties into conformance. Yet the negative impacts of nonconforming properties may be substantial, depending upon the degree of nonconformity. Nonconforming properties may pose safety hazards, increase traffic congestion, reduce property values, degrade the environment, and undermine community character. To address the public interest in these matters, land development regulations include conditions or circumstances where nonconforming features must be brought into conformance. It is essential that these standards be consistently and rigorously applied and enforced and that data and other information supporting these decisions be well documented.

If the principal activity on a property with nonconforming access features is discontinued for a consecutive period of two (2) years or discontinued for any period of time without a present intention of resuming that activity, then that property must thereafter be brought into conformity with all applicable connection spacing and design requirements, unless otherwise exempted by the permitting authority. If the activity is discontinued and renewed with a different activity, property owner must provide a traffic impact analysis to show that the new activity will not increase the number of trips.

TRAFFIC IMPACT ANALYSIS. Traffic impact analyses (TIAs) are studies of the transportation needs and traffic impacts of a development at build-out on the surrounding road network and should be an integral part of the site development review process. TIAs should be conducted by registered professional traffic engineers and reviewed and approved by the county. A complete analysis should be performed for each of the following situations:

1. All developments that can be expected to generate more than 250 total new peak-hour vehicle trips on the adjacent street or for a lesser volume when a review of the site

plan indicates the need for additional data based on the latest edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual.

2. In some cases, a development that generates less than 250 new peak-hour trips should require a TIA if it affects local problem areas such as high accident locations or heavily congested areas.
3. When the original TIA is more than two years old, access decisions are still outstanding, and changes in development have occurred in the site environs.

The County Planning Director has the discretion to waive the requirement of a traffic impact analysis when it is determined that improvements needed to the road network caused by the proposed development are obvious without an analysis, and the developer agrees to participate in the cost of these improvements.

AUXILIARY LANE WARRANTS. Auxiliary lanes (right and left turn lanes and acceleration lanes) reduce the slowing and stopping of traffic that is caused by turning vehicles. The purpose of the auxiliary lane is to enhance motorist safety and to prolong the intended through function of the major route. Auxiliary lanes are desirable features on any road, but are more important on higher roadway classifications. The lanes are needed wherever the volume of traffic turning at a site is high enough in relation to the through traffic to constitute a potential for disruption. This determination is commensurate to the access category of the road being entered. To ensure that the roadway is preserved for future use and not just current conditions, the future average daily traffic volumes (FADT) of the fronting road is used rather than present day average daily traffic volumes (PADT). Likewise, the number of turns being made at the time the site is completely built is used to assess the need for auxiliary lanes in the case of phased developments. To determine when an auxiliary lane is warranted see Figure 3. Refer to Appendix B for procedures on calculating right and left turns and determining the justification of the lane. The storage, deceleration, and transition lengths shall be in accordance with current WVDOT design criteria.

Acceleration lanes are required when the number of right turns exiting a site are 200 turns per hour or greater on Access Category 2, 3 & 5 roads. Channelized free right turn lanes are required on Access Category 2, 3 & 5 roads if the projected number of right turns entering or exiting a site is 300 right turns per hour at non-signalized intersections or 200 right turns per hour at signalized intersections. Double left turn lanes are required if the number of left turns entering the site at a signalized point of access is 300 left turns per hour on any roadway.

SITE PLAN/SUBDIVISION PLAN REVIEW STANDARDS. In addition to the existing county site plan and subdivision plat review, applicants shall submit the information listed below for review by the Planning Department:

1. Location of all properties' access point(s) on both sides of the road where applicable.
2. Location of all proposed and existing access points for the site.
3. Plat map showing property lines, right-of-way, and ownership of abutting properties.
4. Distances to neighboring existing exit/entrance points, median openings, traffic signals, intersections, and other transportation features on both exit/entrance sides of the property.
5. Number and direction of lanes to be constructed on the driveway.
6. All planned transportation features (such as auxiliary lanes, signals, etc.).
7. Trip generation data or appropriate traffic studies.
8. Parking and internal circulation plans.
9. A detailed description of any requested variance and the reason the variance is requested.

Commentary: The subdivision and site plan review process provides local governments with the most effective opportunity for addressing access considerations and preventing access problems before they occur. This should be done as early as possible in the process. Developers will be far less amenable to revising the access plan later in the process or after the site plan or plot has been approved.

The county reserves the right to require traffic and safety analysis where safety is or may be an issue or where significant problems already exist.

VARIANCE. The Planning Commission may authorize a variance to the application of these access standards and regulations. The granting of a variation shall be in accordance with the purpose and intent of these standards and regulations and shall not be considered until every feasible option for meeting access standards is explored.

Applicants for a variance from these standards and regulations must provide proof of unique or special conditions that the strict application of the provisions would deny all reasonable access; endanger public health, welfare or safety; or cause an exceptional and undue hardship on the applicant, as distinguished from a special privilege or convenience sought by the applicant. This shall include proof that:

1. Indirect or restricted access cannot be obtained.
2. No engineering or construction solutions can be applied to mitigate the condition.
3. No alternative access is available from a street with a lower functional classification than the primary roadway.
4. No variance shall be authorized until there has been notice and a public hearing as required by the Office of Planning and Infrastructure.

APPENDIX D: SYSTEM EVALUATION

BACKGROUND

The following four scenarios were tested using TransCAD and Trans Modeler running the RIC MPO traffic model. The model was updated from the 2040 LRTP version to include recent completion of the US 35 corridor within the Teays Valley study area. Each of the scenarios were tested for impacts on the transportation network and compared against desired outcomes from input received through the public process and in discussions with RIC staff.

Output data from the model is presented following each scenario and is displayed in three different ways. The first method of comparison is through expected daily traffic volumes for the corridor for a "no-build" horizon year of 2040 and a "build" horizon year of 2040. The second comparison is through a volume to capacity ratio for each scenario in the peak morning and evening travel periods for each of the years listed above. Volume to capacity is a generally accepted metric for comparison of congestion. As the v/c ratio approaches 1.0, the capacity of the roadway is diminished and the facility is considered fully congested. The third tool that was utilized in the model process was the use of TransModeler to test specific improvements on a microscale to assess their impacts on surrounding areas. For Scenario 4, these microscale simulations were utilized in a few instances and included in the appropriate section.

ANALYSIS

I-64: The I-64 corridor has average daily volumes that would be expected of an interstate corridor. Of particular interest to this corridor is the PM peak congestion on the westbound off-ramp at CR 19.

As each scenario progresses, I-64 does not see much fluctuation in congestion. Since Scenario 1 includes major widening for the corridor that is already programmed by WVDOH, each subsequent scenario does not have any significant changes. The overall improvements of Scenario 4 show slight improvements in congestion along the I-64 corridor.

Volumes along I-64 are relatively steady, with increases from the base network through Scenario 4 in the range of 2,000 ADT.

Hurricane: Hurricane has historically seen a very high level of congestion, especially in the peak travel hours as drivers make their way to and from the interstate.

Through the scenario testing process, congestion in the Hurricane area is significant. In the base network, congestion in the Teays Valley Road / Midland Trail area is roughly double "at-capacity," meaning that the number of vehicles on the road is twice what the corridor was designed to accommodate. As you progress forward through Scenario 1, 2/3, and 4, the

congestion levels are reduced steadily to the point where in Scenario 4, the afternoon peak congestion is all below a "high" rating.

Traffic volumes in Hurricane are reduced dramatically through the scenario progression by diluting the volumes through alternate routing. In Scenario 4 there are three times as many routes available for vehicles to move through Hurricane as in the base network, and a reduction in as much as half the daily traffic on Midland Trail can be expected.

Teays Valley Road (34): Driver convenience services and residential destinations in this area lead to a confusing mix of travel patterns and high levels of both volume and congestion.

The WV 34 corridor between Springdale Road and I-64 experiences a diverse mixture of traffic related to business access, residential locations, commuter services, through trips, and school traffic. In the base network, the corridor is fully congested from Springdale Road to CR33 with a level of 0.71 at the section right off I-64. As each scenario progresses, there is incremental improvement until the ultimate relief in Scenario 4. At that configuration of projects, Teays Valley Road is fully congested only from Mount Vernon Road to CR33 in the morning peak period and the level of congestion at I-64 is reduced to 0.59

Volumes in the corridor steadily increase from the base network through Scenarios 1, 2, and 3, and then traffic moves away from the corridor to I-64 in Scenario 4 and there are reductions in volume on Teays Valley Road.

Teays Valley Road (33): This is a mixed-use route with commercial and residential development on the western end and rural / commuter traffic on the eastern end towards Charleston. There are opportunities for improvement to reduce turning movement conflicts.

In the base network, morning peak hour traffic on this corridor experiences significant congestion on the commute east towards Charleston. As each scenario progresses, no adverse changes are expected, with congestion levels remaining steady in the morning and improving slightly in the afternoon peak period, especially in the Winfield Road area.

Traffic volumes along CR33 are relatively low with mostly residential access. Through the scenario progressions growth in volumes remains flat with slightly higher volumes near Great Teays Boulevard and US 35.

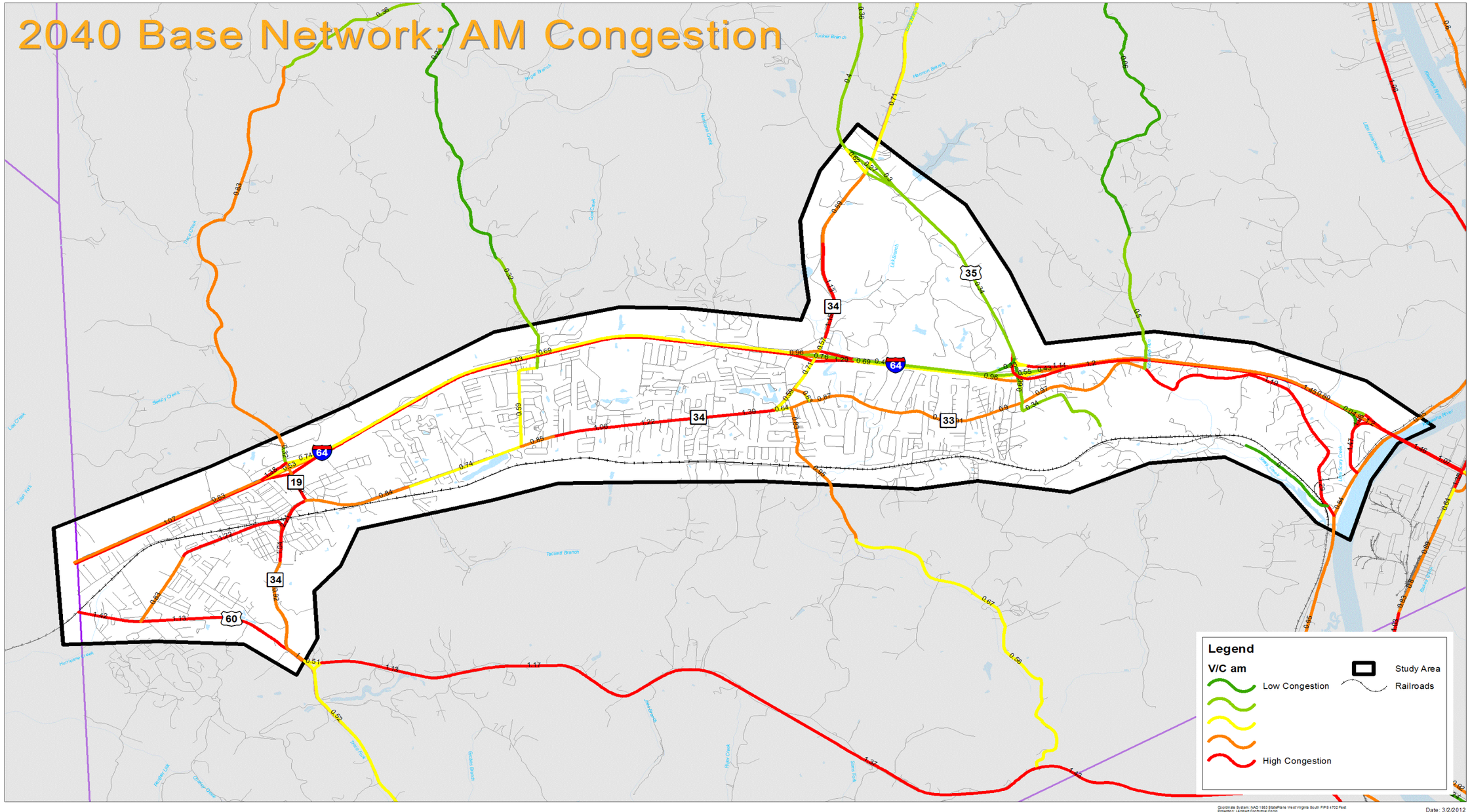
US 60: Alternate commuter route for Teays Valley to St. Albans and Charleston. Significant congestion levels in the peak periods with moderate volumes.

In the morning commute on the base network, US 60 is over capacity and congestion is very high. Afternoon traffic is a little less congested on the corridor. This trend continues until Scenario 4 where the combination of projects reduces congestion in both the morning and afternoon peak periods.

Volumes are moderate along the corridor, averaging between 10,000 and 12,000 ADT through all four scenarios and the base year.

BASE 2040 NO-BUILD

The following series of maps display expected conditions for the study area if no new projects are built in the area except for those projects that are already programmed (funding identified) for construction by the West Virginia Department of Transportation.



Teays Valley Subarea Transportation Study

0 0.5 1 2 Miles

Coordinate System: NAD 1983 StatePlane West Virginia South FIPS 4702 Feet
Projection: Lambert Conformal Conic
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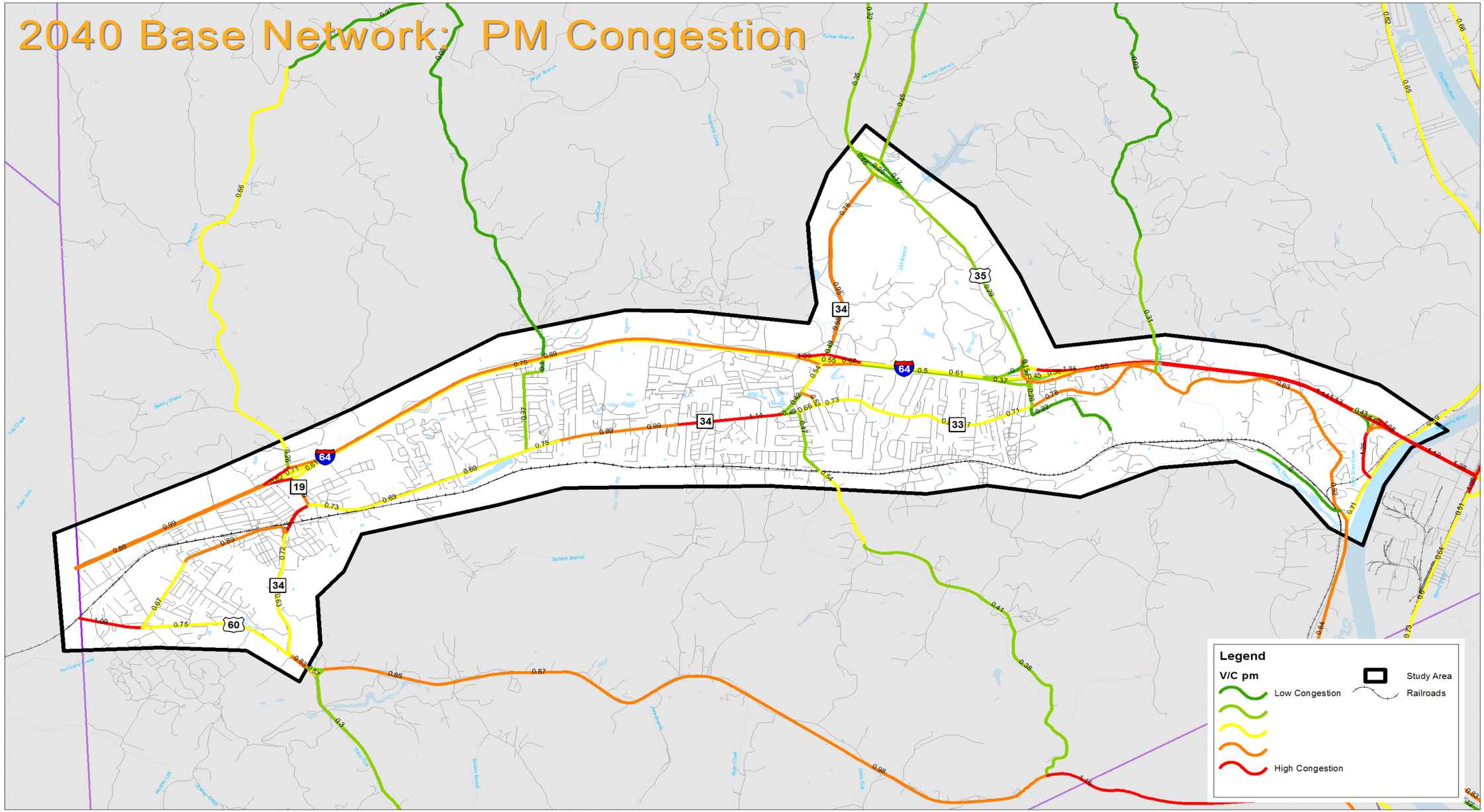
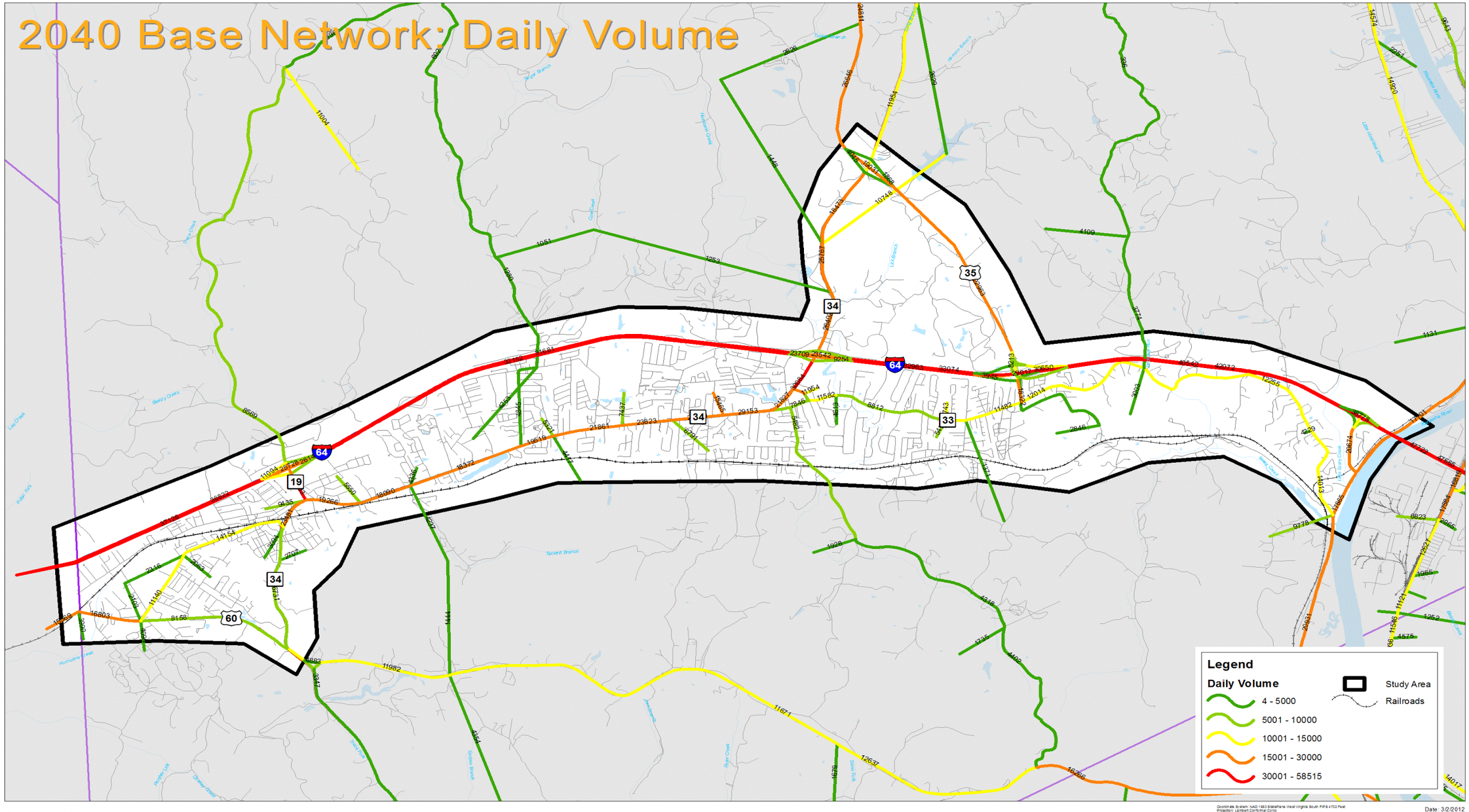
Units: Foot US

Date: 3/2/2012
Author: Chet Parsons

URS


2040 Base Network: PM Congestion
Legend
V/C pm
Low Congestion
High Congestion
Study Area
Railroads
Teays Valley Subarea Transportation Study
0
0.5
1
2
Miles
Date: 3/6/2012
Author: Chet Parsons
URS



Teays Valley Subarea Transportation Study

0 0.5 1 2 Miles

Coordinate System: NAD 1983 StatePlane West Virginia South FIPS 4702 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
False Easting: 1,968,503.0000
False Northing: 0.0000
Central Meridian: -81.0000
Standard Parallel 1: 37.4833
Standard Parallel 2: 38.8833
Latitude Of Origin: 37.0000
Units: Foot US

Date: 3/2/2012
Author: Chet Parsons

URS

SCENARIO #1 (PROJECT LISTING FROM 2040 LRTP):

The following options present alternatives for development that can potentially have a positive impact on traffic and transportation effectiveness in Teays Valley. Those projects listed under construction / expansion were tested using the RIC transportation model developed in TransCad. Projects shown under system preservation, travel demand management, transportation system management, and intelligent transportation systems are not effectively tested through a model and were assessed through policy implications for recommendation.

A. SYSTEM PRESERVATION

1. CO 13 - North Poplar Fork Slide correction
2. WV 34 – Signal @ Springdale Road
3. CO 33 – Upgrade Signage
4. CO 19 – Resurface CO 19 Hurricane to WV 34
5. I-64 – Scott Depot landscape interchange, light park and ride

B. TRAVEL DEMAND MANAGEMENT

1. Public education
2. Car and van-pooling
3. Transit

C. TRANSPORTATION SYSTEM MANAGEMENT

1. Traffic Signal Synchronization along WV 34
2. Intersection Improvements
3. Roundabouts
4. Parking Restrictions
5. Access Management

D. INTELLIGENT TRANSPORTATION SYSTEMS

1. Regional multimodal traveler information
2. Variable message signs

E. CONSTRUCTION / EXPANSION

HIGHWAY

1. **WV 34 (P1 from 2040 LRTP):**
   a. Construct a non-traversable median between Poplar Fork Road and I-64.
   b. Construct a full left-over entrance to Liberty Square, allowing left turns from the main line only.

c. Delineate the truck stop driveway (Go Mart) at the northwest quadrant of I-64 and provide a rear connection between the facility and Poplar Fork Road.
d. Construct a median over the center turn lane between Poplar Fork Road and Stonegate Drive.
e. Construct a full left-over at Prestige Park Drive, allowing left turns from the mainline only

2. **Teays Valley Road – WV 34 (P2 from 2040 LRTP):**
   a. Construct a single direction left-over at the salvage yard driveway entrance, allowing left turns into facility from westbound Teays Valley Road.
   b. Construct a full movement non-signalized intersection at the high school exit, allowing right and left exiting movements.
   c. Construct a single direction left-over at the high school entrance, allowing left turns from eastbound Teays Valley Road.
   d. Construct a full left-over at Sunnybrook Drive, allowing left turns from main line only.
   e. Construct a full left-over at Taylor Drive, allowing left turns from main line onto Taylor Drive and u-turn movement from westbound direction.
   f. Install a traffic signal at Sleepy Hollow Road.
   g. Construct a full left-over at Wethersfield Crossing, allowing left turns from main line onto Wethersfield Crossing and u-turn movement from eastbound direction.
   h. Construct a connector road around the drug store (southeast corner of Teays Lane and Teays Valley Road) to create a northbound approach to the Hospital Drive intersection.
   i. Construct a single direction left-over at Lake Chadesa Drive, allowing left turns onto Lake Chadesa and u-turn movements from the eastbound direction.
   j. Install a roundabout at the Mt. Vernon Road and CR 33 intersection.
   k. WV 34 should be considered for a median from Mt. Vernon Road to Interstate 64. Conflicting turning movements exist between Great Teays Boulevard and I-64 that could be addressed through specific stacking lanes along the corridor.
3. **Teays Valley Road - CR 33 (P3 from 2040 LRTP):**
   a. Improve the intersection with Maplewood Estates, aligning entrance with Erskine Lane and better delineating and consolidating the entrance to Maplewood Estates neighborhood.
   b. Improve the right turn-lane geometry at Apple Estates to channelize turning movement
   c. Realign Friendship Lane to create an intersection with Rolling Meadows Road.
   d. Construct a median in the existing continuous center left-turn lane from Rolling Meadows to Belle Acres (approx 0.40 miles).
   e. Check safety data and signal warrants for possible installation of traffic signal* at the Big Scary Road intersection.
   f. Add channelization island to separate southbound right turns at the Big Scary Road intersection.
   g. Construct an exclusive southbound right-turn lane on WV 817 at the Teays Valley Road intersection.
   h. Construct a left turn lane eastbound onto Rocky Step Road.
   i. Construct a left turn lane eastbound onto Bills Creek Road.

4. **Hurricane Creek Road - CR 19 (P5 from 2040 LRTP):**
   a. Construct a planted median the full length of the project corridor (approx 0.40 miles).
   b. Construct a full left-over at Virginia Avenue, allowing left turns from the main line only.
5. **Interstate 64**
   a. P6 from 2040 LRTP – Cabell County line to WV 34 – widen from four to six lanes.
   b. P7 from 2040 LRTP – US 35 to WV 25 (1st Avenue) – widen from four to six lanes, replace Nitro bridge.

BIKE / PED

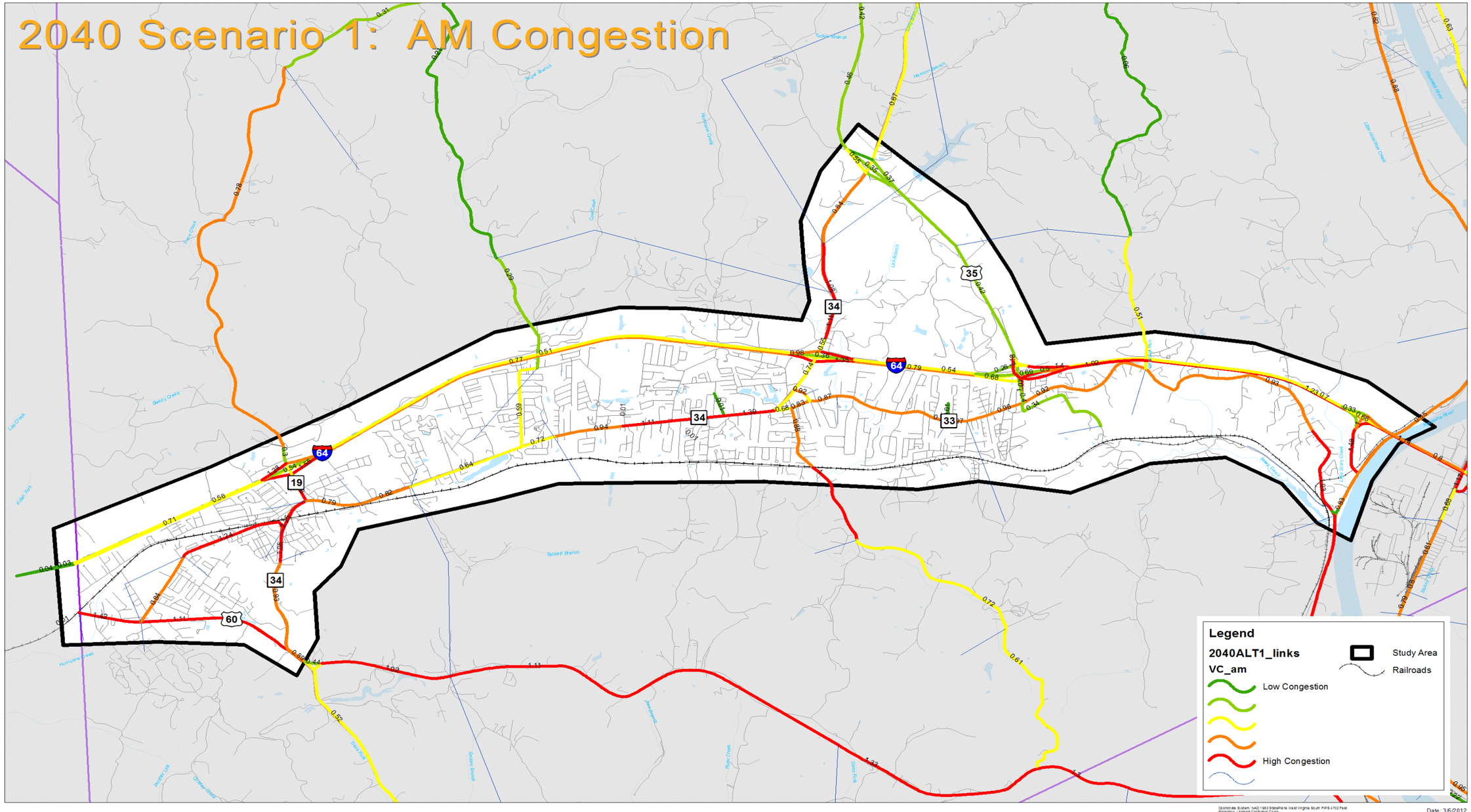
6. **Teays Valley Rd (WV 34), Great Teays Blvd to CR 19:**
   a. Re-stripe Teays Valley Road to provide 4' to 6' shoulders for "Share the Road." Consider reducing travel lanes to 10' width to allow for re-striping.
7. **Bills Creek Rd, WV 817 to Teays Valley Road (CR 33):**
   a. Investigate widening shoulders, and widen where feasible.
8. **WV 34, Stonegate Drive to I-64:**
   a. Install an 8' wide shared use path on east side from Putnam Village Drive to Stonegate Drive.
   b. Widen shoulders by 2' to 4' to accommodate bicycle traffic.
9. **South Poplar Fork Road (CR 46), Teays Valley Rd (CR 33) to CSX Railroad:**
   a. Install a 8' shared use path on one side of the roadway.
   b. Widen shoulders to provide 4' to 6' shoulders for bicyclists.
10. **Intersection of Teays Valley Road (WV 34) and Hurricane Creek Road (CR 19):**
    a. Relocate stop bars and install high visibility crosswalks.
    b. Replace gore striping on CR 19 at approach to intersection with concrete island and depressed curb to accommodate crosswalk.
    c. Install curb ramp on missing corner.
    d. Install illuminated "No Right on Red" sign for free flow right turn onto WV 34 to be actuated by pedestrian push button.
    e. Install pedestrian push buttons and countdown signals.
11. **Midland Trail (WV 34), Lynn St to Main St:**
    a. Install 5' ADA-compliant sidewalk from Lynn Street to Main Street (except where existing bridge), approximately 585 feet of sidewalk needed.
12. **Hurricane Creek Rd (CR 19), I-64 to Wal-Mart:**
    a. Install 5' ADA-compliant sidewalk where missing from Saturn Way to the entrance of Wal-Mart.
13. **Intersection of I-64 and Hurricane Creek Rd (CR 19) - North side of Interstate:**
    a. Upgrade the intersection, and the intersection of Saturn Way, to accommodate pedestrians, including crosswalks, pedestrian signals, curb ramps and push buttons on pedestrian activity approaches.
14. **Great Teays Blvd, WV 34 to Teays Valley Road (CR 33):**

a. Install 5' ADA-compliant sidewalk the entire length of Great Teays Boulevard, install streetscape amenities and traffic calming devices.

15. Teays Valley Road (WV 34), Great Teays Blvd to Putnam County Library:

a. Install 5' ADA-compliant sidewalk where missing on WV 34 (approximately 3,300 feet)

The series of maps below display expected conditions for the study area if the projects described above are built in the area including those projects that are already programmed (funding identified) for construction by the West Virginia Department of Transportation.



Teays Valley Subarea Transportation Study

0 0.5 1 2 Miles

Coordinate System: NAD 1983 StatePlane West Virginia South FIPS 4702 Feet
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False Easting: 1,968,500.0000
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Standard Parallel 1: 37.4833
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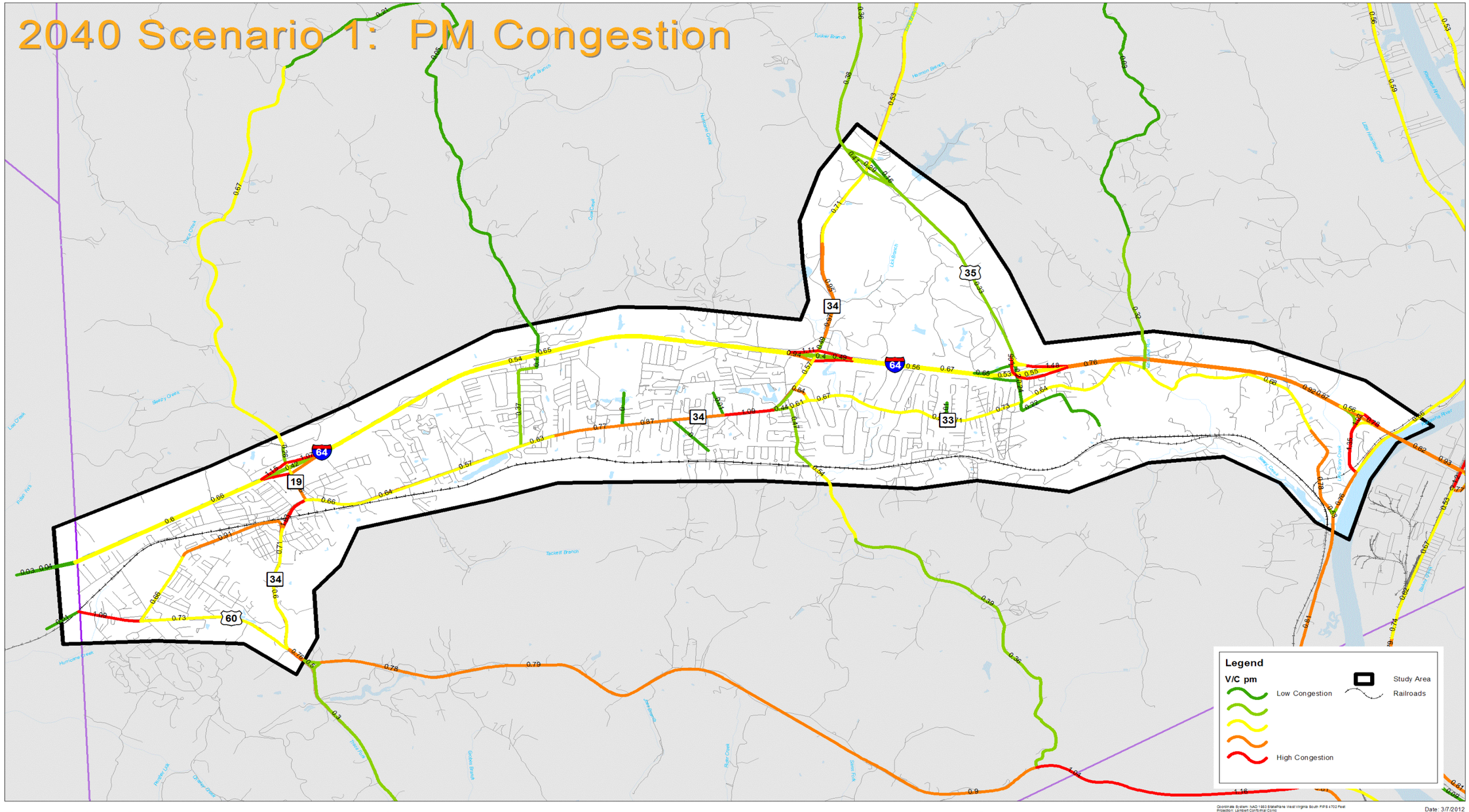
Units: Foot US

Date: 3/6/2012
Author: Chet Parsons
URS



Teays Valley Subarea Transportation Study

Coordinate System: NAD 1983 StatePlane West Virginia South FIPS 4702 Feet
Projection: Lambert Conformal Conic
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False Northing: 0.0000
Central Meridian: -81.0000
Standard Parallel 1: 37.48333
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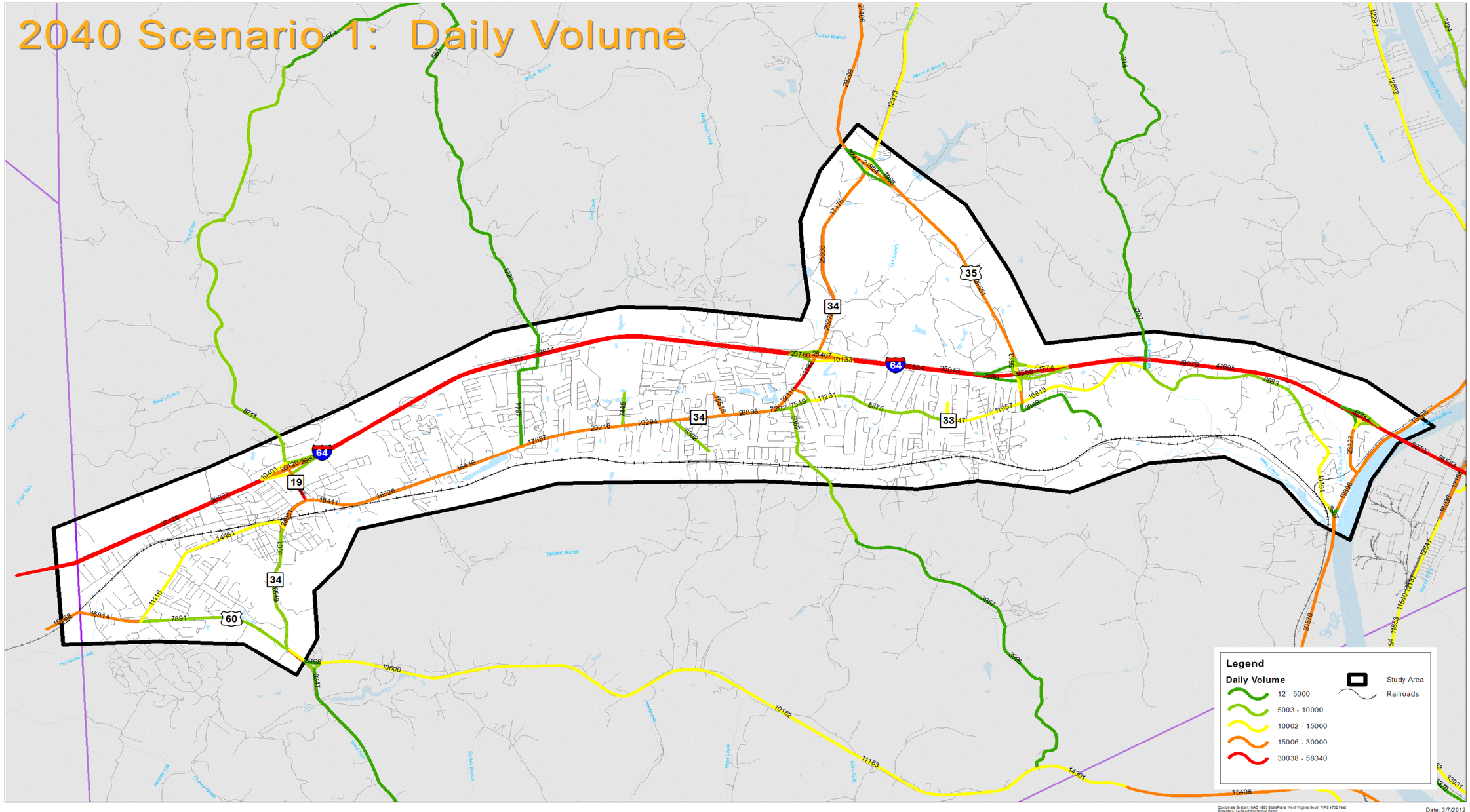
Latitude Of Origin: 37.0000
Units: Foot US

Date: 3/7/2012
Author: Chet Parsons

URS



Teays Valley Subarea Transportation Study

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Coordinate System: NAD 1983 StatePlane West Virginia South FIPS 4702 Feet
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Standard Parallel 1: 37.4833
Standard Parallel 2: 38.8833
Latitude Of Origin: 37.0000
Units: Foot US

Date: 3/7/2012
Author: Chet Parsons

URS

SCENARIO #2:

Includes Scenario #1 plus the following new additions – Scenario #1 is shown in black, Scenario #2 is shown in green

TSM:

- **Investigate the use of a counterflow lane along WV 34 in which traffic may travel in either direction, depending on certain conditions. Typically, it is meant to improve traffic flow during rush hours, by having overhead traffic lights and lighted street signs notify drivers which lanes are open or closed to driving or turning.**
- **Investigate use of adaptive signalization system along Teays Valley Road (WV 34).**
- **Consider signal timing adjustments to reduce conflicts at Teays Lane and Hospital Drive.**

Teays Valley Road (CR 33):

- **Improve the blind curve and entrance to Saddledown subdivision.**
- **Construct a left turn lane eastbound onto Rocky Step Road.**
- **Construct a left turn lane eastbound onto Bills Creek Road.**
- **Develop a right stacking turn lane into Scott Teays Elementary School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times.**

Scott Lane:

- **Add a signal and left turn lanes in both directions on CR 33 at Scott Lane.**

South Poplar Fork Road (CR 46):

- **Provide an improved north-south connection between I-64 and US 60 by widening and straightening South Poplar Fork Road and making other necessary safety improvement as needed.**

Virginia Avenue:

- **Develop 5' ADA-compliant sidewalks between US 60 and Cardinal Lane (approximately 3,875 feet)**

Teays Valley Road (WV 34):

- **Develop a right stacking turn lane into West Teays Elementary and Hurricane High School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times.**

Midland Trail (WV 34):

- **Develop a right stacking turn lane into Hurricane Middle School to pull standing vehicles off Midland Trail during morning and evening peak travel times.**

The following options present alternatives for development that can potentially have a positive impact on traffic and transportation effectiveness in Teays Valley. Those projects listed under construction / expansion will be tested using the RIC transportation model developed in TransCad. Projects shown under system preservation, travel demand management, transportation system management, and intelligent transportation systems are not effectively tested through a model and will be assessed through policy implications for recommendation.

A. SYSTEM PRESERVATION
1. CO 13 - North Poplar Fork Slide correction
2. WV 34 – Signal @ Springdale Road
3. CO 33 – Upgrade Signage
4. CO 19 – Resurface CO 19 Hurricane to WV 34
5. I-64 – Scott Depot landscape interchange, light park and ride

B. TRAVEL DEMAND MANAGEMENT
1. Public education
2. Car and van-pooling
3. Transit
4. **Schools access (focus on WV 34 and CR 33)**

C. TRANSPORTATION SYSTEM MANAGEMENT
1. Traffic Signal Synchronization along WV 34
    a. **Investigate the use of a counterflow lane along WV 34 in which traffic may travel in either direction, depending on certain conditions. Typically, it is meant to improve traffic flow during rush hours, by having overhead traffic lights and lighted street signs notify drivers which lanes are open or closed to driving or turning.**
    b. **Adaptive signals**
    c. **Consider signal timing adjustments at Hospital Drive**
2. Intersection Improvements
3. Roundabouts
4. Parking Restrictions
5. Access Management

D. INTELLIGENT TRANSPORTATION SYSTEMS
1. Regional multimodal traveler information
2. Variable message signs

E. CONSTRUCTION / EXPANSION

HIGHWAY

1. **WV 34 (P1 from 2040 LRTP):**
   a. Construct a non-traversable median between Poplar Fork Road and I-64.
   b. Construct a full left-over entrance to Liberty Square, allowing left turns from the main line only.
   c. Delineate the truck stop driveway (Go Mart) at the northwest quadrant of I-64 and provide a rear connection between the facility and Poplar Fork Road.
   d. Construct a median over the center turn lane between Poplar Fork Road and Stonegate Drive.
   e. Construct a full left-over at Prestige Park Drive, allowing left turns from the mainline only.
2. **Teays Valley Road - WV 34 (P2 from 2040 LRTP):**
   a. Construct a single direction left-over at the salvage yard driveway entrance, allowing left turns into facility from westbound Teays Valley Road.
   b. Construct a full movement non-signalized intersection at the high school exit, allowing right and left exiting movements.
   c. Construct a single direction left-over at the high school entrance, allowing left turns from eastbound Teays Valley Road.
   d. Construct a full left-over at Sunnybrook Drive, allowing left turns from main line only.
   e. Install a traffic signal at Springdale Road.
   f. Construct a full left-over at Taylor Drive, allowing left turns from main line onto Taylor Drive and u-turn movement from westbound direction.
   g. Construct a full left-over at Wethersfield Crossing, allowing left turns from main line onto Wethersfield Crossing and u-turn movement from eastbound direction.
   h. Construct a connector road around the drug store (southeast corner of Teays Lane and Teays Valley Road) to create a northbound approach to the Hospital Drive intersection.
   i. Construct a single direction left-over at Lake Chadesa Drive, allowing left turns onto Lake Chadesa and u-turn movements from the eastbound direction.
   j. Install a roundabout at the Mt. Vernon Road and CR 33 intersection.
   k. WV 34 should be considered for a median from Mt. Vernon Road to Interstate 64. Conflicting turning movements exist between Great Teays Boulevard and I-64 that could be addressed through specific stacking lanes along the corridor.
   l. **Develop a right stacking turn lane into West Teays Elementary and Hurricane High School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times**
3. **Teays Valley Road - CR 33 (P3 from 2040 LRTP):**
   a. Improve the intersection with Maplewood Estates, aligning entrance with Erskine Lane and better delineating and consolidating the entrance to Maplewood Estates neighborhood.
   b. Improve the right turn-lane geometry at Apple Estates to channelize turning movement.

c. Realign Friendship Lane to create an intersection with Rolling Meadows Road.
d. Construct a median in the existing continuous center left-turn lane from Rolling Meadows to Belle Acres (approx 0.40 miles).
e. Check safety data and signal warrants for possible installation of traffic signal* at the Big Scary Road intersection.
f. Add channelization island to separate southbound right turns at the Big Scary Road intersection.
g. Construct an exclusive southbound right-turn lane on WV 817 at the Teays Valley Road intersection.
h. Improve the blind curve and entrance at Saddledown subdivision.
i. Construct a left turn lane eastbound onto Rocky Step Road.
j. Construct a left turn lane eastbound onto Bills Creek Road.
k. Develop a right stacking turn lane into Scott Teays Elementary School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times.

4. Hurricane Creek Road - CR 19 (P5 from 2040 LRTP):
a. Construct a planted median the full length of the project corridor (approx 0.40 miles).
b. Construct a full left-over at Virginia Avenue, allowing left turns from the main line only.

5. Interstate 64
a. P6 from 2040 LRTP – Cabell County line to WV 34 – widen from four to six lanes.
b. P7 from 2040 LRTP – US 35 to WV 25 (1st Avenue) – widen from four to six lanes, replace Nitro bridge.

6. Scott Lane
a. Add a signal and left turn lanes in both directions on CR 33 at Scott Lane.

7. South Poplar Fork Road - CR 46
a. Provide an improved north-south connection between I-64 and US 60 by widening and straightening South Poplar Fork Road and making other necessary safety improvement as needed.

8. Midland Trail (WV 34):
a. Develop a right stacking turn lane into Hurricane Middle School to pull standing vehicles off Midland Trail during morning and evening peak travel times

BIKE / PED

9. Teays Valley Rd (WV 34), Great Teays Blvd to CR 19:
a. Re-stripe Teays Valley Road to provide 4' to 6' shoulders for "Share the Road." Consider reducing travel lanes to 10' width to allow for re-striping.

10. Bills Creek Rd, WV 817 to Teays Valley Road (CR 33):
a. Investigate widening shoulders, and widen where feasible.

11. WV 34, Stonegate Drive to I-64:
a. Install an 8' wide shared use path on east side from Putnam Village Drive to Stonegate Drive.
b. Widen shoulders by 2' to 4' to accommodate bicycle traffic.

12. South Poplar Fork Road (CR 46), Teays Valley Rd (CR 33) to CSX Railroad:

a. Install an 8' shared use path on one side of the roadway.
b. Widen shoulders to provide 4' to 6' shoulders for bicyclists.

13. Intersection of Teays Valley Road (WV 34) and Hurricane Creek Road (CR 19):

a. Relocate stop bars and install high visibility crosswalks.
b. Replace gore striping on CR 19 at approach to intersection with concrete island and depressed curb to accommodate crosswalk.
c. Install curb ramp on missing corner.
d. Install illuminated "No Right on Red" sign for free flow right turn onto WV 34 to be actuated by pedestrian push button.
e. Install pedestrian push buttons and countdown signals.

14. Midland Trail (WV 34), Lynn St to Main St:

a. Install 5' ADA-compliant sidewalk from Lynn Street to Main Street (except where existing bridge), approximately 585 feet of sidewalk needed.

15. Hurricane Creek Rd (CR 19), I-64 to Wal-Mart:

a. Install 5' ADA-compliant sidewalk where missing from Saturn Way to the entrance of Wal-Mart.

16. Intersection of I-64 and Hurricane Creek Rd (CR 19) - North side of Interstate:

a. Upgrade the intersection, and the intersection of Saturn Way, to accommodate pedestrians, including crosswalks, pedestrian signals, curb ramps and push buttons on pedestrian activity approaches.

17. Great Teays Blvd, WV 34 to Teays Valley Road (CR 33):

a. Install 5' ADA-compliant sidewalk the entire length of Great Teays Boulevard, install streetscape amenities and traffic calming devices.

18. Teays Valley Road (WV 34), Great Teays Blvd to Putnam County Library:

a. Install 5' ADA-compliant sidewalk where missing on WV 34 (approximately 3,300 feet).

19. Virginia Avenue:

a. Develop 5' ADA-compliant sidewalks between US 60 and Cardinal Lane (approximately 3,875 feet).

The series of maps for Scenario 2 is identical to the maps for Scenario 3 in terms of projects that can be tested in TransCAD as established for the RIC model. These projects are displayed following the project listing for Scenario 3.

SCENARIO #3:

Includes Scenario #1 plus the following new additions – Scenario #1 is shown in black, Scenario #2 is shown in green, and Scenario #3 is shown in blue:

TSM:

- **Investigate the use of a counterflow lane along WV 34 in which traffic may travel in either direction, depending on certain conditions. Typically, it is meant to improve traffic flow during rush hours, by having overhead traffic lights and lighted street signs notify drivers which lanes are open or closed to driving or turning.**
- **Investigate use of adaptive signalization system along Teays Valley Road (WV 34).**
- **Consider signal timing adjustments to reduce conflicts at Teays Lane and Hospital Drive.**

Transit:

- **Develop regular transit service between downtown Hurricane and Liberty Square for shopping and appointments.**
- **Make connections as logistics allow to established KRT and IT bus routes.**

Teays Valley Road (WV 34):

- **Develop a right stacking turn lane into West Teays Elementary and Hurricane High School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times.**

Midland Trail (WV 34):

- **Develop a right stacking turn lane into Hurricane Middle School to pull standing vehicles off Midland Trail during morning and evening peak travel times.**

Teays Valley Road (CR 33):

- **Improve the blind curve and entrance at Saddledown subdivision.**
- **Construct a left turn lane eastbound onto Rocky Step Road.**
- **Construct a left turn lane eastbound onto Bills Creek Road.**
- **Develop a right stacking turn lane into Scott Teays Elementary School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times.**
- **Develop a roundabout at Great Teays Boulevard and CR 33.**

Mount Vernon Road:

- **Upgrade and widen Mt. Vernon Road to a full two-lane local collector classification.**

Sleepy Hollow Road:

- **Upgrade and widen Sleepy Hollow Road to a full two-lane local collector classification.**

Scott Lane:

- **Add a signal and left turn lanes in both directions on CR 33 at Scott Lane.**

South Poplar Fork Road (CR 46):

- **Provide an improved north-south connection between I-64 and US 60 by widening and straightening South Poplar Fork Road and making other necessary safety improvement as needed.**

Virginia Avenue:

- **Develop sidewalks between US 60 and Cardinal Lane (approximately 3,875 feet)**

Southern Trail:

- **Develop a new bicycle trail south of the CSX right-of-way connecting Hurricane Creek Road and Teays Lane**

The following options present alternatives for development that can potentially have a positive impact on traffic and transportation effectiveness in Teays Valley. Those projects listed under construction / expansion were tested using the RIC transportation model developed in TransCad. Projects shown under system preservation, travel demand management, transportation system management, and intelligent transportation systems are not effectively tested through a model and were assessed through policy implications for recommendation.

A. SYSTEM PRESERVATION
1. CO 13 - North Poplar Fork Slide correction
2. WV 34 – Signal @ Springdale Road
3. CO 33 – Upgrade Signage
4. CO 19 – Resurface CO 19 Hurricane to WV 34
5. I-64 – Scott Depot landscape interchange, light park and ride

B. TRAVEL DEMAND MANAGEMENT
1. Public education
2. Car and van-pooling
3. Transit
    a. **Develop regular transit service between downtown Hurricane and Liberty Square for shopping and appointments**
4. **Schools access (focus on WV 34 and CR 33)**

C. TRANSPORTATION SYSTEM MANAGEMENT
1. Traffic Signal Synchronization along WV 34
    a. **Adaptive signals**

b. **Investigate the use of a counterflow lane along WV 34 in which traffic may travel in either direction, depending on certain conditions. Typically, it is meant to improve traffic flow during rush hours, by having overhead traffic lights and lighted street signs notify drivers which lanes are open or closed to driving or turning**
c. **Consider signal timing adjustments at Hospital Drive**

2. Intersection Improvements
3. Roundabouts
4. Parking Restrictions
5. Access Management

D. INTELLIGENT TRANSPORTATION SYSTEMS

1. Regional multimodal traveler information
2. Variable message signs

E. CONSTRUCTION / EXPANSION

HIGHWAY

1. WV 34 (P1 from 2040 LRTP):

a. Construct a non-traversable median between Poplar Fork Road and I-64
b. Construct a full left-over entrance to Liberty Square, allowing left turns from the main line only
c. Delineate the truck stop driveway (Go Mart) at the northwest quadrant of I-64 and provide a rear connection between the facility and Poplar Fork Road
d. Construct a median over the center turn lane between Poplar Fork Road and Stonegate Drive
e. Construct a full left-over at Prestige Park Drive, allowing left turns from the mainline only

2. Teays Valley Road - WV 34 (P2 from 2040 LRTP):

a. Construct a single direction left-over at the salvage yard driveway entrance, allowing left turns into facility from westbound Teays Valley Road
b. Construct a full movement non-signalized intersection at the high school exit, allowing right and left exiting movements
c. Construct a single direction left-over at the high school entrance, allowing left turns from eastbound Teays Valley Road
d. Construct a full left-over at Sunnybrook Drive, allowing left turns from main line only
e. Construct a full left-over at Taylor Drive, allowing left turns from main line onto Taylor Drive and u-turn movement from westbound direction
f. Install a traffic signal at Sleepy Hollow Road
g. Construct a full left-over at Wethersfield Crossing ,allowing left turns from main line onto Wethersfield Crossing and u-turn movement from eastbound direction

h. Construct a connector road around the drug store (southeast corner of Teays Lane and Teays Valley Road) to create a northbound approach to the Hospital Drive intersection
i. Construct a single direction left-over at Lake Chadesa Drive, allowing left turns onto Lake Chadesa and u-turn movements from the eastbound direction
j. Install a roundabout at the Mt. Vernon Road and CR 33 intersection.
k. WV 34 should be considered for a median from Mt. Vernon Road to Interstate 64. Conflicting turning movements exist between Great Teays Boulevard and I-64 that could be addressed through specific stacking lanes along the corridor.
l. **Develop a right stacking turn lane into West Teays Elementary and Hurricane High School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times**

3. **Teays Valley Road - CR 33 (P3 from 2040 LRTP):**
   a. Improve the intersection with Maplewood Estates, aligning entrance with Erskine Lane and better delineating and consolidating the entrance to Maplewood Estates.
   b. Improve the right turn-lane geometry at Apple Estates to channelize turning movement
   c. Realign Friendship Lane to create an intersection with Rolling Meadows Road
   d. Construct a median in the existing continuous center left-turn lane from Rolling Meadows to Belle Acres (approx 0.40 miles)
   e. Check safety data and signal warrants for possible installation of traffic signal* at the Big Scary Road intersection
   f. Add channelization island to separate southbound right turns at the Big Scary Road intersection
   g. Construct an exclusive southbound right-turn lane on WV 817 at the Teays Valley Road intersection
   h. **Improve the blind curve and entrance at Saddledown subdivision**
   i. **Construct a left turn lane eastbound onto Rocky Step Road**
   j. **Construct a left turn lane eastbound onto Bills Creek Road**
   k. **Develop a right stacking turn lane into Scott Teays Elementary School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times**
   l. **Develop a roundabout at Great Teays Boulevard and CR 33**
4. **Hurricane Creek Road - CR 19 (P5 from 2040 LRTP):**
   a. Construct a planted median the full length of the project corridor (approx 0.40 miles)
   b. Construct a full left-over at Virginia Avenue, allowing left turns from the main line only
5. **Interstate 64**
   a. P6 from 2040 LRTP – Cabell County line to WV 34 – widen from four to six lanes
   b. P7 from 2040 LRTP – US 35 to WV 25 (1st Avenue) – widen from four to six lanes, replace Nitro bridge
6. **Mount Vernon Road**
   a. **Upgrade and widen Mt. Vernon Road to a full two-lane local collector classification**
7. **Sleepy Hollow Road**
   a. **Upgrade and widen Sleepy Hollow Road to a full two-lane local collector classification**

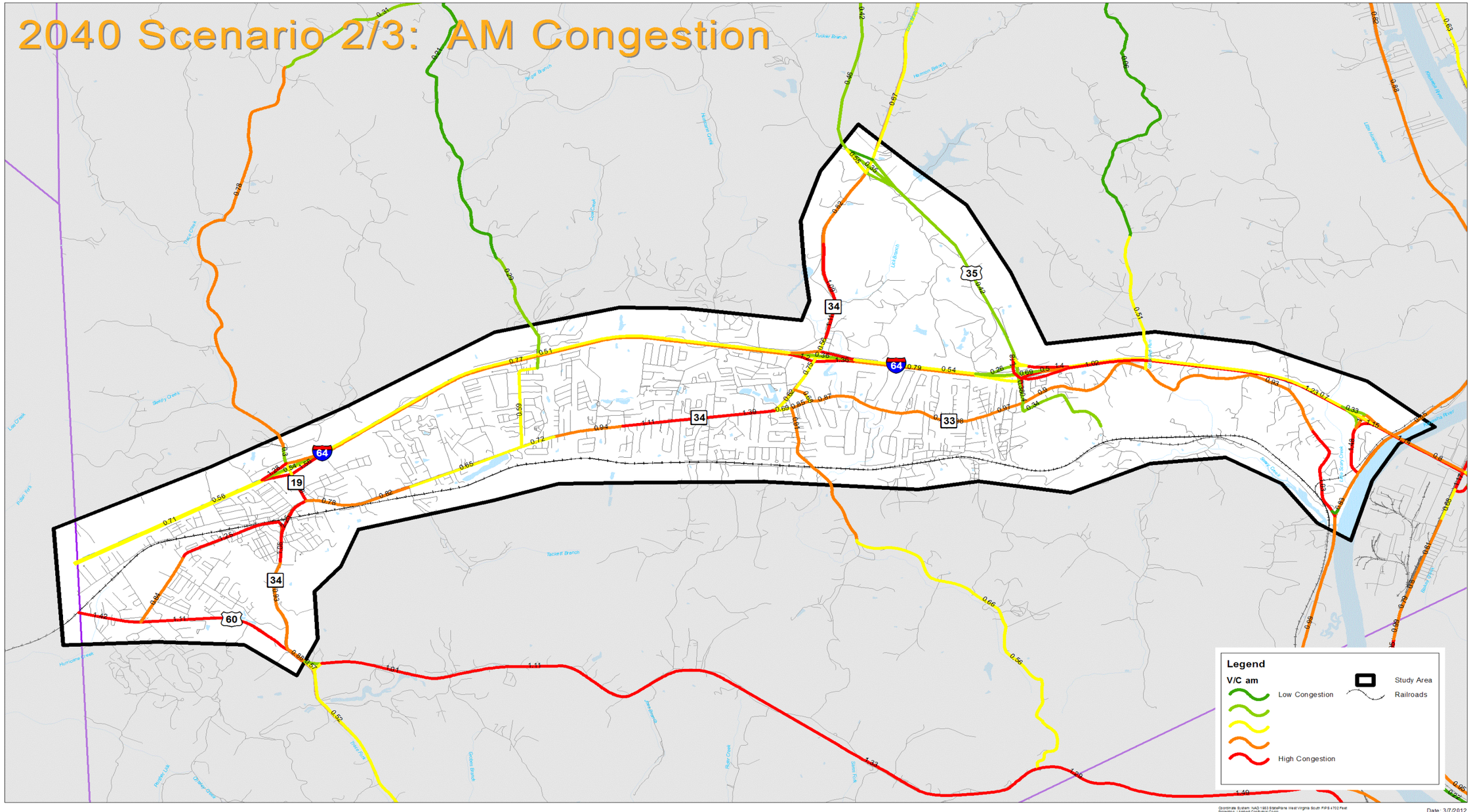
8. **Scott Lane**
   a. **Add a signal and left turn lanes in both directions on CR 33 at Scott Lane.**
9. **South Poplar Fork Road (CR 46):**
   a. **Provide an improved north-south connection between I-64 and US 60 by widening and straightening South Poplar Fork Road and making other necessary safety improvement as needed.**
10. **Midland Trail (WV 34):**
   a. **Develop a right stacking turn lane into Hurricane Middle School to pull standing vehicles off Midland Trail during morning and evening peak travel times**

BIKE / PED

10. **Teays Valley Rd (WV 34), Great Teays Blvd to CR 19:**
   a. Re-stripe Teays Valley Road to provide 4' to 6' shoulders for "Share the Road." Consider reducing travel lanes to 10' width to allow for re-striping.
11. **Bills Creek Rd, WV 817 to Teays Valley Road (CR 33):**
   a. Investigate widening shoulders, and widen where feasible.
12. **WV 34, Stonegate Drive to I-64:**
   a. Install an 8' wide shared use path on east side from Putnam Village Drive to Stonegate Drive.
   b. Widen shoulders by 2' to 4' to accommodate bicycle traffic.
13. **South Poplar Fork Road, Teays Valley Road (CR 33) to CSX Railroad:**
   a. Install a 8' shared use path on one side of the roadway.
   b. Widen shoulders to provide 4' to 6' shoulders for bicyclists.
14. **Intersection of Teays Valley Road (WV 34) and Hurricane Creek Road (CR 19):**
   a. Relocate stop bars and install high visibility crosswalks.
   b. Replace gore striping on CR 19 at approach to intersection with concrete island and depressed curb to accommodate crosswalk.
   c. Install curb ramp on missing corner.
   d. Install illuminated "No Right on Red" sign for free flow right turn onto WV 34 to be actuated by pedestrian push button.
   e. Install pedestrian push buttons and countdown signals.
15. **Midland Trail (WV 34), Lynn St to Main St:**
   a. Install 5' ADA-compliant sidewalk from Lynn Street to Main Street (except at existing bridge), approximately 585 feet of sidewalk needed.
16. **Hurricane Creek Rd (CR 19), I-64 to Wal-Mart:**
   a. Install 5' ADA-compliant sidewalk where missing from Saturn Way to the entrance of Wal-Mart.
17. **Intersection of I-64 and Hurricane Creek Rd (CR 19) - North side of Interstate:**
   a. Upgrade the intersection, and the intersection of Saturn Way, to accommodate pedestrians, including crosswalks, pedestrian signals, curb ramps and push buttons on pedestrian activity approaches.

18. **Great Teays Blvd, WV 34 to Teays Valley Road (CR 33):**
    a. Install 5' ADA-compliant sidewalk the entire length of Great Teays Boulevard, install streetscape amenities and traffic calming devices.
19. **Teays Valley Road (WV 34), Great Teays Blvd to Putnam County Library:**
    a. Install 5' ADA-compliant sidewalk where missing on WV 34 (approximately 3,300 feet)
20. **Virginia Avenue:**
    a. **Develop 5' ADA-compliant sidewalks between US 60 and Cardinal Lane (approximately 3,875 feet)**
21. **Southern Trail:**
    a. **Develop a new bicycle trail south of the CSX right-of-way connecting Hurricane Creek Road and Teays Lane**
22. **Teays Valley Road (CR 33), Great Teays Blvd to US 35:**
    a. **Develop a striped bicycle lane along Teays Valley Road (CR 33) as well as an 8' multi-use path in conjunction with its widening to three lanes between WV 34 and US 35.**

The series of maps below display expected conditions for the study area if the projects described above are built in the area including those projects that are already programmed (funding identified) for construction by the West Virginia Department of Transportation.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V/C am
Low Congestion
High Congestion
Study Area
Railroads
Teays Valley Subarea Transportation Study
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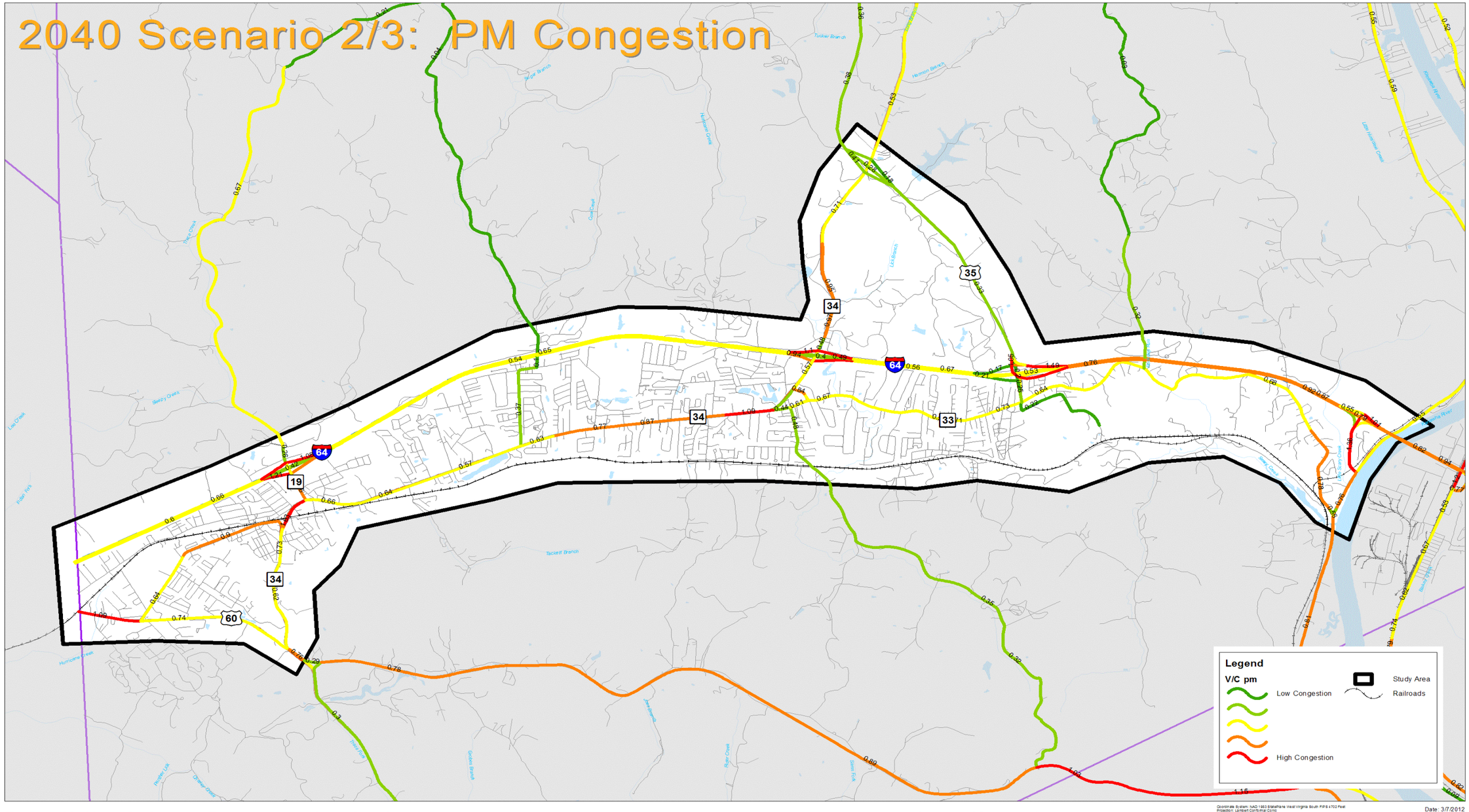
Miles
Date: 3/7/2012
Author: Chet Parsons
URS



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Latitude Of Origin: 37.0000
Units: Foot US

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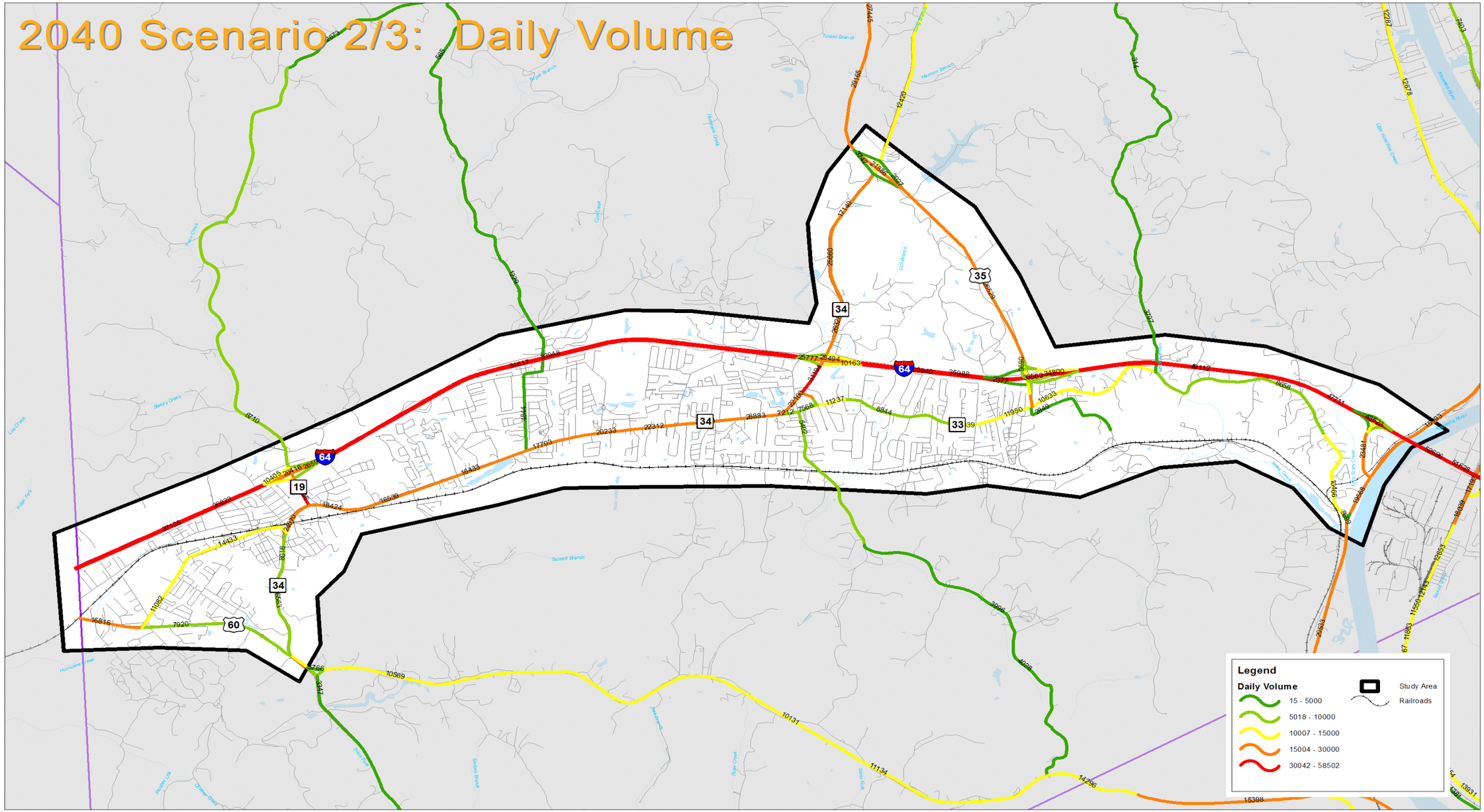

Teays Valley Subarea Transportation Study

Date: 3/7/2012
Author: Chet Parsons
URS

SCENARIO #4:

Includes Scenario #1 plus the following new additions – Scenario #1 is shown in black, Scenario #2 is shown in green, Scenario #3 is shown in blue, and Scenario #4 is shown in purple:

TSM:

- **Investigate the use of a counterflow lane along WV 34 in which traffic may travel in either direction, depending on certain conditions. Typically, it is meant to improve traffic flow during rush hours, by having overhead traffic lights and lighted street signs notify drivers which lanes are open or closed to driving or turning**
- **Investigate use of adaptive signalization system along WV 34**
- **Consider signal timing adjustments to reduce conflicts at Teays Lane and Hospital Drive**

Transit:

- **Develop regular transit service between downtown Hurricane and Liberty Square for shopping and appointments**
- **Make connections as logistics allow to established KRT and IT bus routes**

Teays Valley Road (WV 34):

- **Develop a right stacking turn lane into West Teays Elementary and Hurricane High School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times**

Midland Trail (WV 34):

- **Develop a right stacking turn lane into Hurricane Middle School to pull standing vehicles off Midland Trail during morning and evening peak travel times**

Teays Valley Road (CR 33):

- **Widen Teays Valley Road (CR 33) to three lanes between WV 34 and US 35 in areas where two lanes currently exist**
- **Improve the blind curve and entrance at Saddledown subdivision**
- **Construct a left turn lane eastbound onto Rocky Step Road**
- **Construct a left turn lane eastbound onto Bills Creek Road**
- **Develop a right stacking turn lane into Scott Teays Elementary School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times**
- **Develop a roundabout at Great Teays Boulevard and CR 33**
- **Develop a gateway roundabout at US 35 and Teays Valley Road (CR 33)**

Interstate 64:

- **New I-64 interchange at Cow Creek Rd**

Virginia Avenue Connector:

- **Provide a connection between Hurricane Creek Road at Davis Ct. through to Washington Avenue and on to Virginia Avenue.**

Mount Vernon Road:

- **Upgrade and widen Mt. Vernon Road to a full two-lane local collector classification**

Sleepy Hollow Road:

- **Upgrade and widen Sleepy Hollow Road to a full two-lane local collector classification**

Hurricane Creek Road (CR 19):

- **Develop a connector road from the proposed Valley Connector to Midland Trail (WV 34) south of Surrey Drive to provide a more direct route for traffic flowing from I-64 to US 60 and to reduce safety conflicts and congestion around Hurricane Middle School.**

Valley Connector:

- **Valley Connector from the southern terminus of Hurricane Creek Road (at WV 34) to US 35 at Teays Valley Road (CR 33) providing an additional east-west corridor to augment WV 34 and CR 33**

Scott Lane:

- **Add a signal and left turn lanes in both directions on CR 33 at Scott Lane.**

South Poplar Fork Road (CR 46):

- **Provide an improved north-south connection between I-64 and US 60 by widening and straightening South Poplar Fork Road and making other necessary safety improvement as needed.**

Lynn Street

- **Close Lynn Street at the intersection with Midland Trail (WV 34)**

Virginia Avenue:

- **Develop sidewalks between US 60 and Cardinal Lane (approximately 3,875 feet)**

Southern Trail:

- **Develop a new bicycle trail south of the CSX right-of-way connecting Hurricane Creek Road and Teays Lane**

Teays Valley Road (CR 33), Great Teays Blvd to US 35:

- **Develop a striped bicycle lane along Teays Valley Road (CR 33) as well as an 8' multi-use path in conjunction with its widening to three lanes between WV 34 and US 35.**

The following options present alternatives for development that can potentially have a positive impact on traffic and transportation effectiveness in Teays Valley. Those projects listed under construction / expansion were tested using the RIC transportation model developed in TransCad. Projects shown under system preservation, travel demand management, transportation system management, and intelligent transportation systems are not effectively tested through a model and were assessed through policy implications for recommendation.

A. SYSTEM PRESERVATION

1. CO 13 - North Poplar Fork Slide correction
2. WV 34 – Signal @ Springdale Road
3. CO 33 – Upgrade Signage
4. CO 19 – Resurface CO 19 Hurricane to WV 34
5. I-64 – Scott Depot landscape interchange, light park and ride

B. TRAVEL DEMAND MANAGEMENT

1. Public education
2. Car and van-pooling
3. Transit
   a. **Develop regular bus service between downtown Hurricane and Liberty Square for shopping and appointments**
4. **Schools access (focus on WV 34 and CR 33)**

C. TRANSPORTATION SYSTEM MANAGEMENT

1. Traffic Signal Synchronization along WV 34
   a. **Adaptive signals**
   b. **Investigate the use of a counterflow lane along WV 34 in which traffic may travel in either direction, depending on certain conditions. Typically, it is meant to improve traffic flow during rush hours, by having overhead traffic lights and lighted street signs notify drivers which lanes are open or closed to driving or turning**
   c. **Consider signal timing adjustments at Hospital Drive**
2. Intersection Improvements
3. Roundabouts
4. Parking Restrictions
5. Access Management

D. INTELLIGENT TRANSPORTATION SYSTEMS

1. Regional multimodal traveler information

2. Variable message signs

E. CONSTRUCTION / EXPANSION

HIGHWAY

1. WV 34 (P1 from 2040 LRTP):

a. Construct a non-traversable median between Poplar Fork Road and I-64
b. Construct a full left-over entrance to Liberty Square, allowing left turns from the main line only
c. Delineate the truck stop driveway (Go Mart) at the northwest quadrant of I-64 and provide a rear connection between the facility and Poplar Fork Road
d. Construct a median over the center turn lane between Poplar Fork Road and Stonegate Drive
e. Construct a full left-over at Prestige Park Drive, allowing left turns from the mainline only

2. Teays Valley Road - WV 34 (P2 from 2040 LRTP):

a. Construct a single direction left-over at the salvage yard driveway entrance, allowing left turns into facility from westbound Teays Valley Road
b. Construct a full movement non-signalized intersection at the high school exit, allowing right and left exiting movements
c. Construct a single direction left-over at the high school entrance, allowing left turns from eastbound Teays Valley Road
d. Construct a full left-over at Sunnybrook Drive, allowing left turns from main line only
e. Construct a full left-over at Taylor Drive, allowing left turns from main line onto Taylor Drive and u-turn movement from westbound direction
f. Install a traffic signal at Sleepy Hollow Road
g. Construct a full left-over at Wethersfield Crossing, allowing left turns from main line onto Wethersfield Crossing and u-turn movement from eastbound direction
h. Construct a connector road around the drug store (southeast corner of Teays Lane and Teays Valley Road) to create a northbound approach to the Hospital Drive intersection
i. Construct a single direction left-over at Lake Chadesa Drive, allowing left turns onto Lake Chadesa and u-turn movements from the eastbound direction
j. Install a roundabout at the Teays Valley Road and CR 33 intersection.
k. WV 34 should be considered for a median from Mt. Vernon Road to Interstate 64. Conflicting turning movements exist between Great Teays Boulevard and I-64 that could be addressed through specific stacking lanes along the corridor.
l. **Develop a right stacking turn lane into West Teays Elementary and Hurricane High School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times**

3. **Teays Valley Road - CR 33 (P3 from 2040 LRTP):**
   a. Improve the intersection with Maplewood Estates, aligning entrance with Erskine Lane and better delineating and consolidating the entrance to Maplewood Estates neighborhood
   b. Improve the right turn-lane geometry at Apple Estates to channelize turning movement
   c. Realign Friendship Lane to create an intersection with Rolling Meadows Road
   d. Construct a median in the existing continuous center left-turn lane from Rolling Meadows to Belle Acres (approx 0.40 miles)
   e. Check safety data and signal warrants for possible installation of traffic signal* at the Big Scary Road intersection
   f. Add channelization island to separate southbound right turns at the Big Scary Road intersection
   g. Construct an exclusive southbound right-turn lane on WV 817 at the Teays Valley Road intersection
   h. **Widen Teays Valley Road (CR 33) to three lanes between WV 34 and US 35 in areas where two lanes currently exist**
   i. **Improve the blind curve and entrance at Saddledown subdivision**
   j. **Construct a left turn lane eastbound onto Rocky Step Road**
   k. **Construct a left turn lane eastbound onto Bills Creek Road**
   l. **Develop a right stacking turn lane into Scott Teays Elementary School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times**
   m. **Develop a roundabout at Great Teays Boulevard and CR 33**
   n. ~~**Develop a gateway roundabout at US 35 and CR 33**~~ Eliminated due to failure in testing through TransModeler
4. **Midland Trail (WV 34):**
   a. **Develop a right stacking turn lane into Hurricane Middle School to pull standing vehicles off Midland Trail during morning and evening peak travel times**
5. **Hurricane Creek Road - CR 19 (P5 from 2040 LRTP):**
   a. Construct a planted median the full length of the project corridor (approx 0.40 miles).
   b. Construct a full left-over at Virginia Avenue, allowing left turns from the main line only
   c. **Develop a connector road from the proposed Valley Connector to** ~~**Midland Trail (WV 34) south of Surrey Drive**~~ US 60 **to provide a more direct route for traffic flowing from I-64 to US 60 and to reduce safety conflicts and congestion around Hurricane Middle School.**
6. **Interstate 64**
   a. P6 from 2040 LRTP – Cabell County line to WV 34 – widen from four to six lanes.
   b. **New I-64 interchange at Cow Creek Rd**
   c. P7 from 2040 LRTP – US 35 to WV 25 (1st Avenue) – widen from four to six lanes, replace Nitro bridge
7. ~~**Lynn Street**~~
   a. ~~**Close Lynn Street at the intersection with Midland Trail (WV 34)**~~ Hurricane officials recommended keeping Lynn Street open
8. **Virginia Avenue Connector**

a. **Provide a connection between Hurricane Creek Road at Davis Ct. through to Washington Avenue and onto Virginia Avenue.** Changed from full intersection at CR 19 to right-in right-out

~~**9. Valley Connector**~~

a. ~~**Valley Connector from the southern terminus of Hurricane Creek Road (at WV 34) to US 35 at Teays Valley Road (CR 33) providing an additional east-west corridor to augment WV 34 and CR 33**~~ Eliminated through TransCAD testing that showed inefficient traffic volumes compared to overall cost

10. Mount Vernon Road

a. **Upgrade and widen Mt. Vernon Road to a full two-lane local collector classification**

11. Sleepy Hollow Road

a. **Upgrade and widen Sleepy Hollow Road to a full two-lane local collector classification**

12. Scott Lane

a. **Add a signal and left turn lanes in both directions on CR 33 at Scott Lane.**

13. South Poplar Fork Road (CR 46):

a. **Provide an improved north-south connection between I-64 and US 60 by widening and straightening South Poplar Fork Road and making other necessary safety improvement as needed.**

BIKE / PED

14. Teays Valley Rd (WV 34), Great Teays Blvd to CR 19:

a. Re-stripe Teays Valley Road to provide 4' to 6' shoulders for "Share the Road." Consider reducing travel lanes to 10' width to allow for re-striping.

15. Bills Creek Rd, WV 817 to Teays Valley Road (CR 33):

a. Investigate widening shoulders, and widen where feasible.

16. WV 34, Stonegate Drive to I-64:

a. Install an 8' wide shared use path on east side from Putnam Village Dr. to Stonegate Dr.
b. Widen shoulders by 2' to 4' to accommodate bicycle traffic.

17. South Poplar Fork Rd, Teays Valley Rd (CR 33) to CSX Railroad:

a. Install a 8' shared use path on one side of the roadway.
b. Widen shoulders to provide 4' to 6' shoulders for bicyclists.

18. Intersection of Teays Valley Road (WV 34) and Hurricane Creek Road (CR 19):

a. Relocate stop bars and install high visibility crosswalks.
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24. **Virginia Avenue:**
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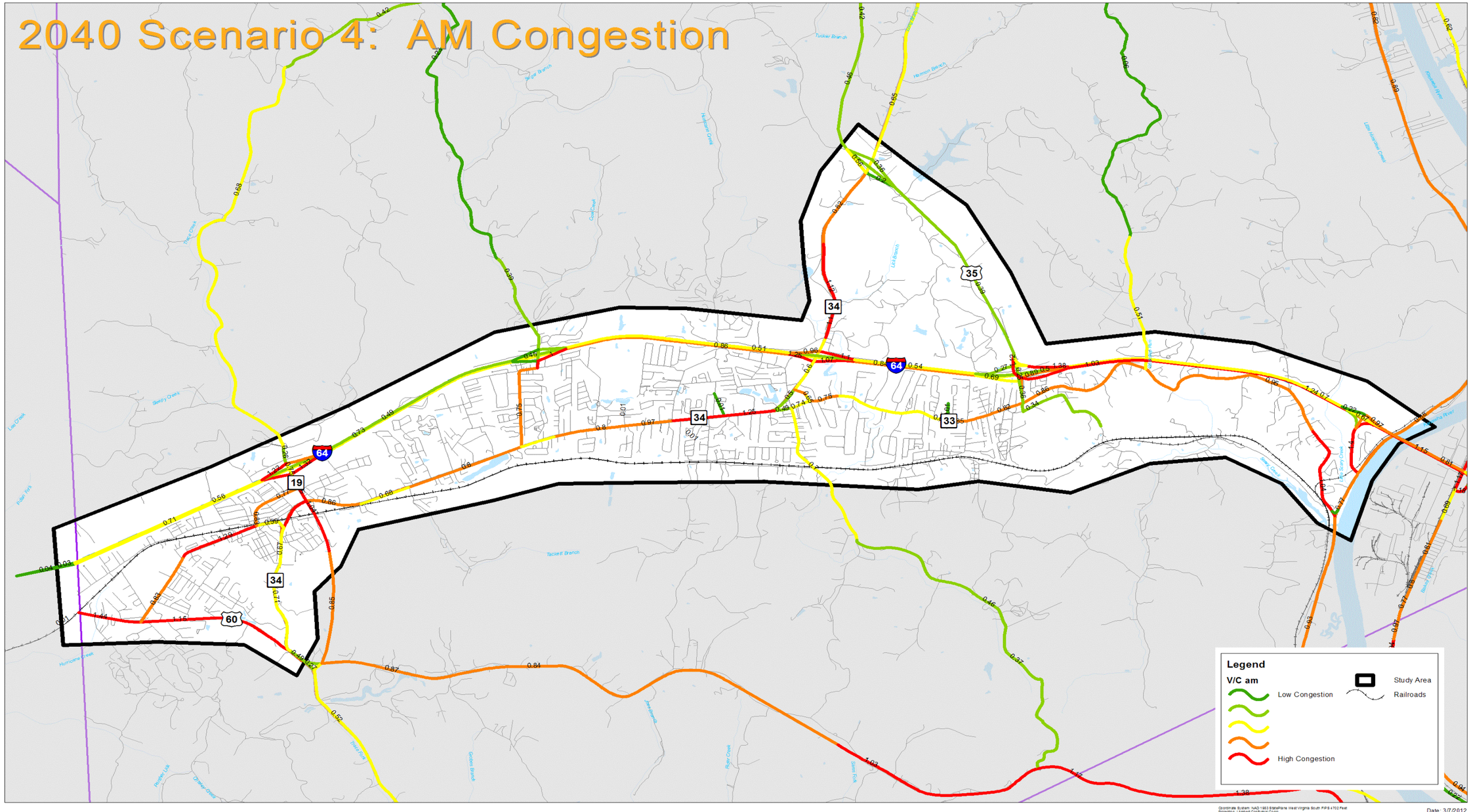

Teays Valley Subarea Transportation Study

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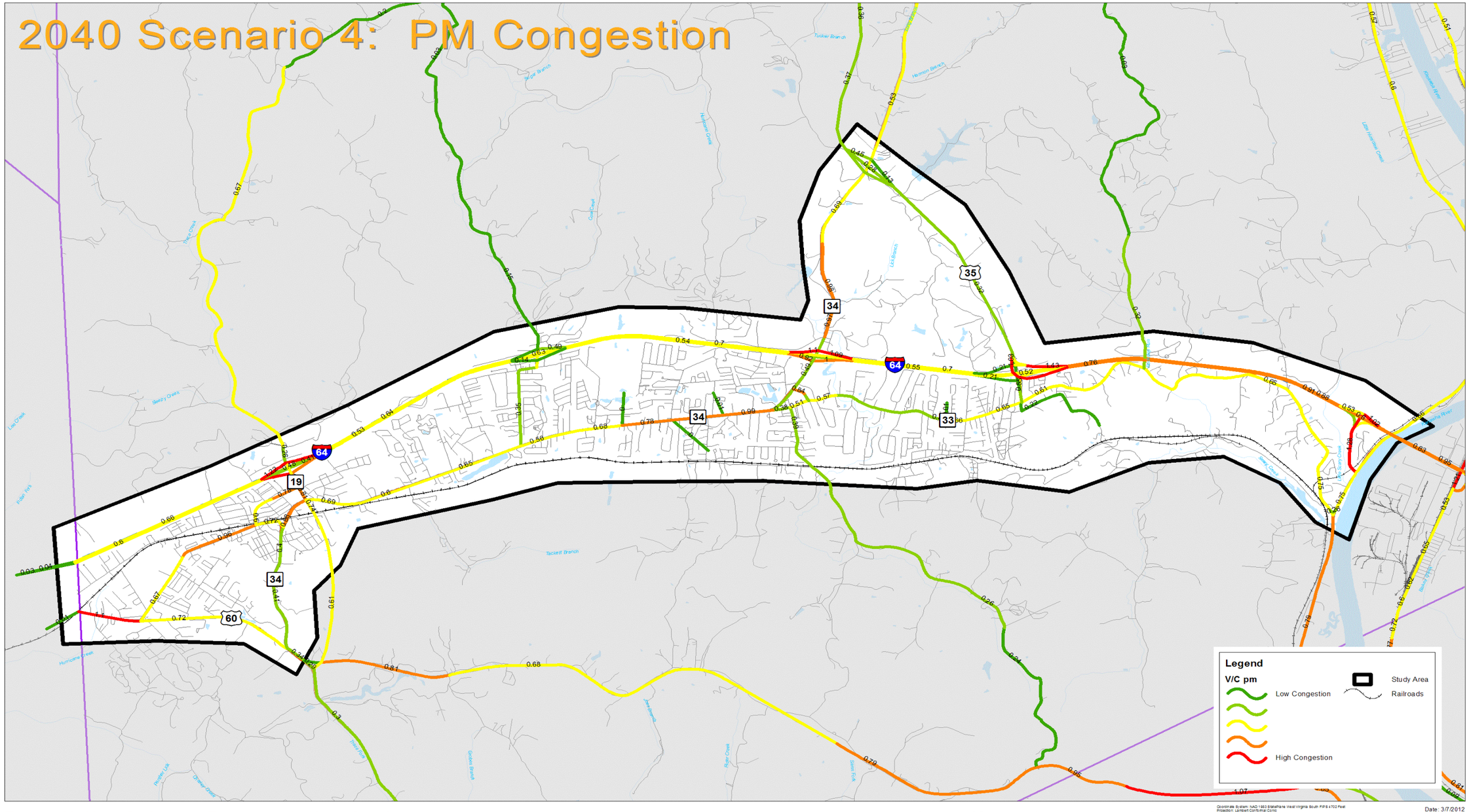
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V/C pm
Low Congestion
High Congestion
Study Area
Railroads
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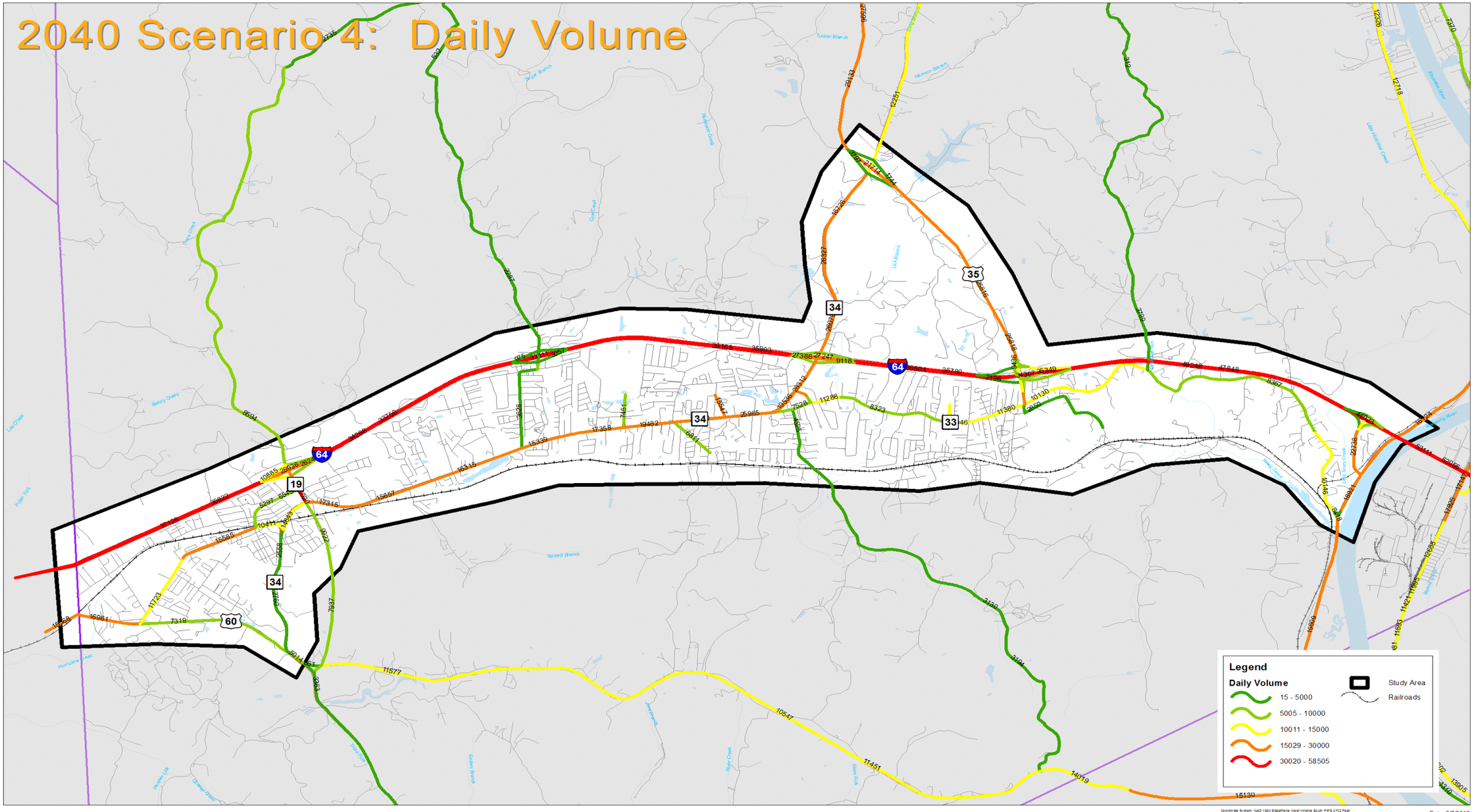
Miles
Date: 3/7/2012
Author: Chet Parsons
URS

2040 Scenario 4: Daily Volume



Teays Valley Subarea Transportation Study

Date: 3/7/2012
Author: Chet Parsons

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CR 33

URS

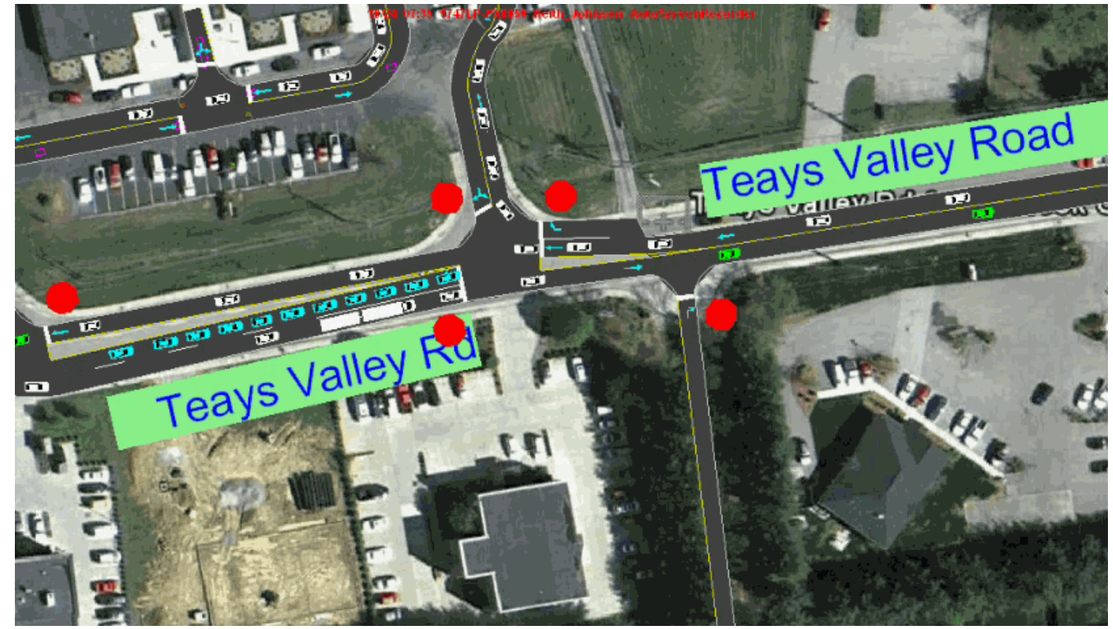
Teays Valley Road (33): Rendering of before and after improvements

CR 19

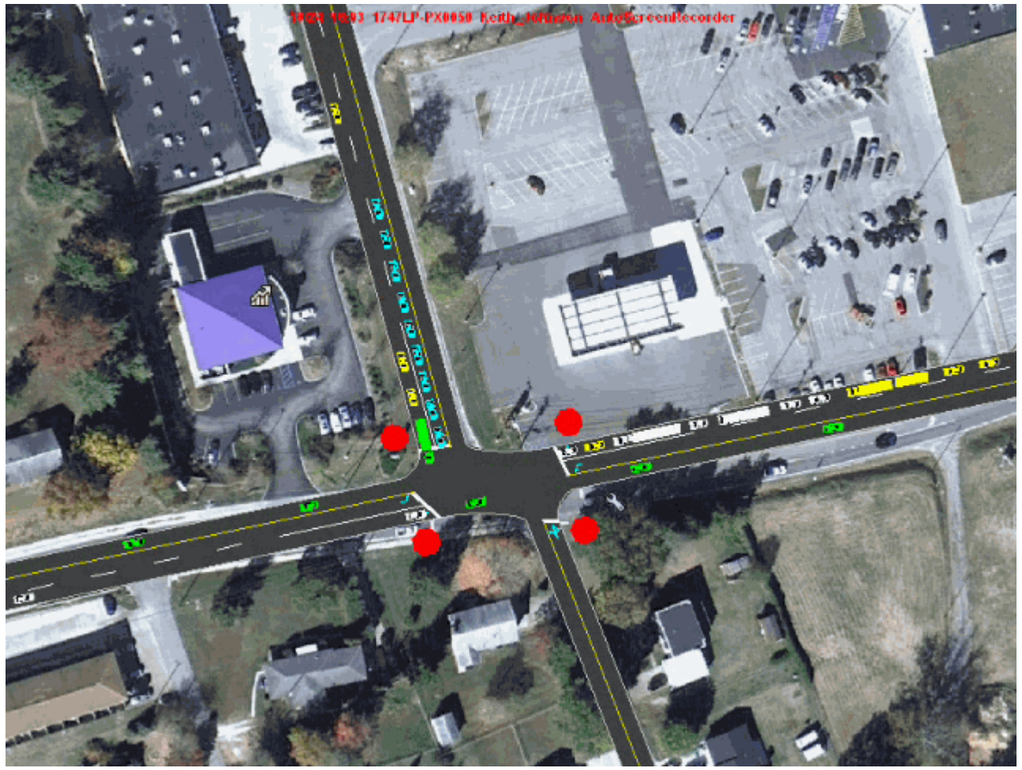
URS

Hurricane Creek Road (19): Rendering of before and after improvements

Great Teays Boulevard: Rendering of before and after improvements



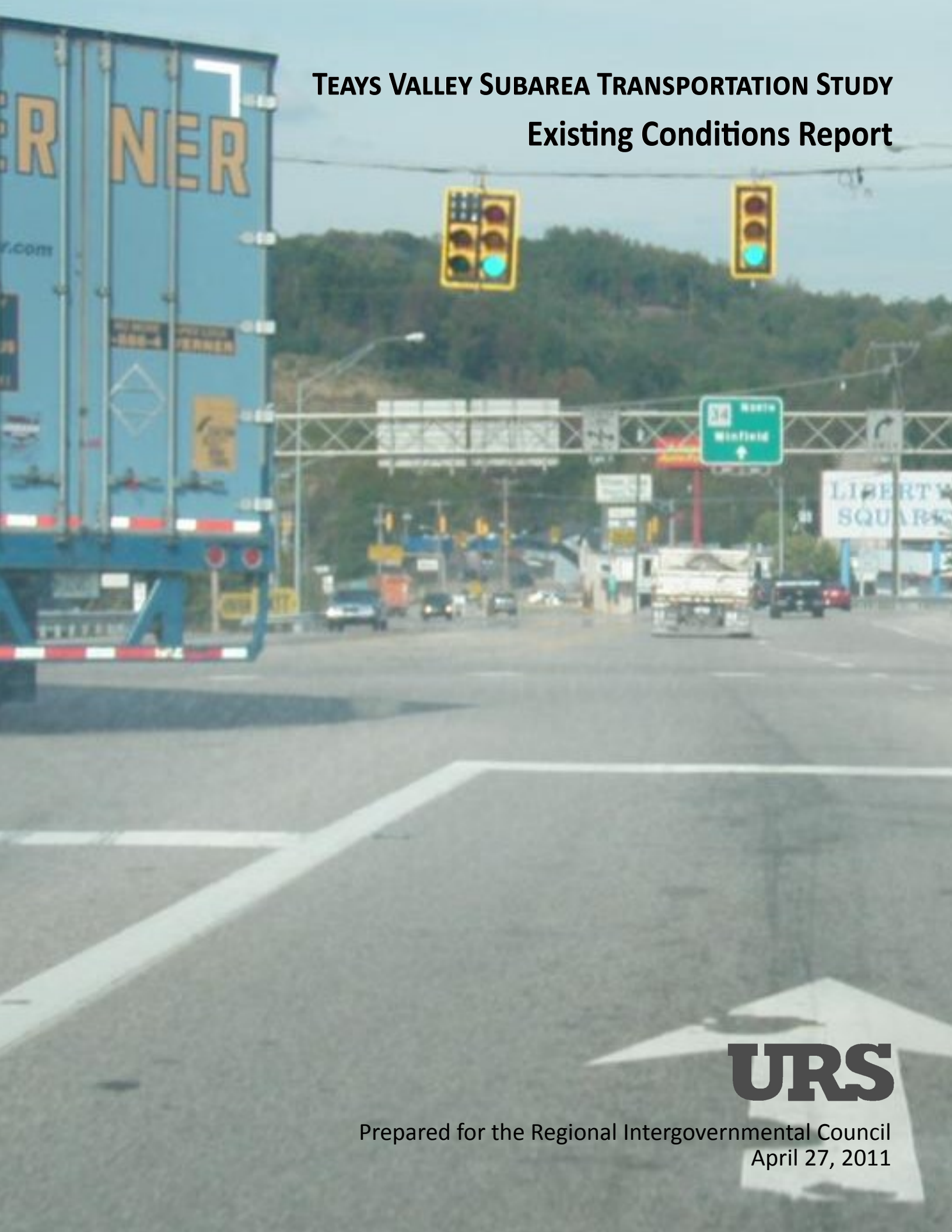
Teays Valley Road: Future Traffic with pull-off lane at West Teays Elementary School



Great Teays Boulevard: Existing Traffic

Great Teays Boulevard: Future Traffic with Roundabout

APPENDIX E: EXISTING CONDITIONS



Teays Valley Subarea Transportation Study

Existing Conditions Report

URS

Prepared for the Regional Intergovernmental Council

April 27, 2011

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Acknowledgements

The Teays Valley Subarea Transportation Study is the product of a coordinated effort between the residents, business owners in Putnam County, The West Virginia Department of Transportation, The Kanawha Valley Regional Transportation Authority, and government agencies across Putnam County. The plan has been developed through a partnership of the following committees:

Regional Intergovernmental Council

Patrick Hill
Chairman

Gary Tillis
First Vice-Chairman

Dick Callaway
Second Vice-Chairman

Jeff Boyd
Third Vice-Chairman

Charles Armstrong
Treasurer

Curtis Hardman
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Steering Committee

Scott Ferry – Regional Intergovernmental Council

Sandy Mellert – Putnam County Planning Department

Brian Donat – Putnam County Administrator

Glen Yeager – Local Business Owner

Ben Newhouse – Hurricane City Manager

Kevin Sullivan – WVDOH

Ray Lewis – WVDOH

Chris Callahan – Regional Intergovernmental Council

Joe Haynes – Putnam County Commission

Joe Tyree – Citizen AdvocatePerry Keller – WVDOH

Acronyms

ADT	Average Daily Traffic
FTA	Federal Transit Administration
FHWA	Federal Highway Administration
GIS	Geographic Information Systems
HBW	Home-based Work Trips
HCM	Highway Capacity Manual
LOS	Level of Service
MPO	Metropolitan Planning Organization
MOE	Measure of Effectiveness
NHS	National Highway System
O-D	Origin – Destination
RIC	Regional Intergovernmental Council
TAZ	Traffic Analysis Zone
TDM	Transportation Demand Management
TSM	Transportation System Management
V/C	Volume-to-Capacity Ratio
VMT	Vehicle Miles of Travel
VPD	Vehicles Per Day
WVDOH	West Virginia Division of Highways
WVDOT	West Virginia Department of Transportation

Glossary / Definitions

The following definitions are general transportation planning terms that may be used in the planning process. While all these may not appear in the following report, it may still be helpful for those readers unfamiliar with the field to understand the overall intent of developing a transportation plan.

ADA - Americans With Disabilities Act - Federal civil rights legislation for disabled persons passed in 1990; calls on public transit systems to make their services more fully accessible as well as to underwrite a parallel network of paratransit service.

Alternative Fuels – Low-polluting fuels which are used to propel a vehicle instead of high-sulfur diesel or gasoline. Examples include methanol, ethanol, propane or compressed natural gas, liquid natural gas, low-sulfur or "clean" diesel and electricity.

APTA - American Public Transit Association – The national, nonprofit trade association representing the public transit industry. APTA members include more than 400 public transit systems, as well as state and local departments of transportation and planning agencies, manufacturers and suppliers of transit equipment, consultants, contractors and universities.

Average Daily Traffic (ADT) – The total amount of traffic observed, counted or estimated during a single, 24-hour period.

Arterial Street – A major thoroughfare, used primarily for through traffic rather than for access to adjacent land, that is characterized by high vehicular capacity and continuity of movement.

Bus Lane – A street or highway lane intended primarily for buses, either all day or during specified periods, but sometimes also used by carpools meeting requirements set out in traffic laws.

Capacity – The maximum sustainable vehicle flow rate that can be expected to traverse a roadway segment/intersection during a specific time period given roadway, geometric, traffic, environmental, and control conditions. Capacity is usually expressed in vehicles per day (vpd) or vehicles per hour (vph).

CAA – Clean Air Act, aka FCAA – Federal legislation that sets national air quality standards; requires each state with areas that have not met federal air quality standards to prepare a SIP. The sweeping 1990 amendments to the CAA, sometimes refereed to as CAAA, established new air quality requirements for the development of metropolitan transportation plans and programs.

CAAA – Clean Air Act Amendments of 1990 – The comprehensive federal legislation that establishes criteria for attaining and maintaining the federal standards for allowable concentrations and exposure limits for various air pollutants; the act also provides emission standards for specific vehicles and fuels.

Capital Costs – Costs of long-term assets of a public transit system such as property, buildings, vehicles, etc.

Capital Revenues – Monies dedicated for new projects to cover one-time costs, such as construction of roads, transit lines and facilities or purchase of buses.

CMAQ – Congestion Mitigation and Air Quality Program – A pot of money contained in ISTEA for projects and activities that reduce congestion and improve air quality in regions not yet attaining federal air quality standards.

Conformity – The ongoing process that ensures the planning for highway and transit systems, as a whole and over the long term, is consistent with the state air quality plans for attaining and maintaining health-based air quality standards; conformity is determined by metropolitan planning organizations (MPOs) and the U.S. Department of Transportation (U.S. DOT), and is based on whether transportation plans and programs meet the provisions of a State Implementation Plan.

Delay – The amount of time spent not moving due to a traffic signal being red, or being unable to pass through an unsignalized intersection.

Flexible Funds – Those federal funds which can be used for highway, transit or other transportation projects as decided by regional Metropolitan Planning Organizations (MPOs) and state governments. Examples of such funds are the Surface Transportation Program (STP) and the Congestion Mitigation and Air Quality (CMAQ) fund.

Level of Service (LOS) – A qualitative measure of intersection or road segment operating condition. A grading scale of A through F is used to characterize traffic operating conditions. The scale is based on the ability of an intersection or street segment to accommodate the amount of traffic using it, and can be used for both existing and projected conditions. The scale ranges from "A" which indicates little, if any, vehicle delay, to "F" which indicates significant vehicle delay and traffic congestion.

Multimodal – The concept of incorporating private passenger vehicles, transit, and non-motorized (bicycles and pedestrians) transportation features into the planning process.

Peak Hour – The hour of greatest traffic flow at an intersection or on a road segment during a day. Typically broken down into AM and PM peak hours.

Travel speed - The speed at which a vehicle travels between two points including all intersection delays.

Transportation Demand Management (TDM) – Programs developed to reduce the levels or patterns of transportation demand in order to use the transportation system more efficiently.

Transportation System Management (TSM) – Projects designed to increase the efficiency of the existing transportation system through minor, localized improvements such as focused intersection and signalization improvements.

Volume to Capacity (V/C) Ratio – The resultant of dividing the counted/estimated traffic volume in a corridor by the estimated corridor/intersection capacity for a similar increment of time.

Fare Box Recovery Ratio – Measure of the proportion of operating expenses covered by passenger fares; found by dividing fare box revenue by total operating expenses for each mode and/or systemwide.

Fare Box Revenue – Value of cash, tickets, tokens and pass receipts given by passengers as payment for rides; excludes charter revenue.

Fare Elasticity – The extent to which ridership responds to fare increases or decreases.

Fare Structure – The system set up to determine how much is to be paid by various passengers using a transit vehicle at any given time.

FCAA - Federal Clean Air Act See CAA.

FHWA - Federal Highway Administration See DOT.

Fixed Cost – An indirect cost that remains relatively constant, irrespective of the level of operational activity.

Fixed Route Service – Transit service provided on a repetitive, fixed-schedule basis along a specific route with vehicles stopping to pick up and deliver passengers to specific locations; each fixed-route trip serves the same origins and destinations, unlike demand responsive and taxicabs.

Formula Funds – Funds distributed or apportioned to qualifying recipients on the basis of formulas described in law; e.g., funds in the Section 18 program for Small Urban and Rural Transit Assistance, which are distributed to each state based on the state's percentage of national rural population. See also "Section 9".

FTA – Federal Transit Administration

Headway – Time interval between vehicles moving in the same direction on a particular route.

Highway Trust Fund – The federal trust fund established by the Highway Revenue Act of 1956; this fund has two accounts -- the Highway Account and the Mass Transit Account. Trust fund revenues are derived from federal highway-user taxes and fees such as motor fuel taxes; trust fund uses and expenditures are determined by law.

Intermodal – Those issues or activities which involve or affect more than one mode of transportation, including transportation connections, choices, cooperation and coordination of various modes. Also known as "multimodal".

Layover Time –Time built into a schedule between arrival at the end of a route and the departure for the return trip, used for the recovery of delays and preparation for the return trip.

Level of Service (LOS) – A report card that rates traffic flow from A (excellent) through F (flunks), and compares actual or projected traffic volume with the maximum capacity of the intersection or road in question.

Metropolitan Planning Organization (MPO) – A federally required transportation planning body responsible for the regional transportation program and the transportation improvement plan (TIP) in its region; the governor designates an MPO in every urbanized area with a population of over 50,000.

NEPA – National Environmental Policy Act of 1969

National Highway System (NHS) – An approximately 155,000-mile network designated (partially) in ISTEA to provide an interconnected system of principal routes to serve major travel destinations and population centers. The NHS picks up where the Interstate Highway System left off.

Nonattainment Area – Any geographic region of the United States that the U.S. Environmental Protection Agency (EPA) has designated as not attaining the federal air quality standards for one or more air pollutants, such as ozone and carbon monoxide

Obligation – A federal budgetary term that refers to a binding agreement that will result in an outlay; an agreement by the federal government to pay for goods or services immediately or at some future time when the goods or services are delivered. Also known as a "commitment".

Paratransit – Comparable transportation service required by the Americans with Disabilities Act (ADA) of 1990 for individuals with disabilities who are unable to use fixed-route transportation systems.

Park and Ride Lot - Designated parking areas for automobile drivers who then board transit vehicles from these locations.

Passenger Miles – The total number of miles traveled by passengers on transit vehicles; determined by multiplying the number of unlinked passenger trips times the average length of their trips.

Reverse Commuting – Movement in a direction opposite the main flow of traffic, such as from the central city to a suburb during the morning peak period.

Ridesharing – A form of transportation, other than public transit, in which more than one person shares the use of the vehicle, such as a van or car, to make a trip. Also known as "carpooling" or "vanpooling".

Ridership – The number of rides taken by people using a public transportation system in a given time period.

Section 9 – The section of the Federal Transit Act (formerly known as the Urban Mass Transportation Act of 1964), as amended, that authorizes grants to public transportation systems in urbanized areas (population greater than 50,000) for both capital and operating programs based on formulas set out in statute.

Section 13(c) –The section of the Federal Transit Act (formerly known as the Urban Mass Transportation Act of 1964), as amended, related to labor protection that is designed to protect transit employees against a worsening of their position with respect to their employment as a result of grant assistance under the Act.

Section 15 – The section of the Federal Transit Act (formerly known as the Urban Mass Transportation Act of 1964), as amended, that authorizes the U.S. Department of Transportation to gather statistical information about the financing and operations of public transportation systems, based upon a uniform system of accounts and records.

Section 16 – The section of the Federal Transit Act (formerly known as the Urban Mass Transportation Act of 1964), as amended, that declares the national policy to be that elderly persons and persons with disabilities have the same right as other persons to utilize mass transportation facilities and services, and that special efforts shall be made in the planning and design of mass transportation facilities and services so that effective utilization by elderly persons and persons with disabilities is assured.

Section 16(b) – The subsection of the Federal Transit Act (formerly known as the Urban Mass Transportation Act of 1964), as amended, that authorizes grants to nonprofit corporations and associations for the specific purpose of assisting them in providing transportation services meeting the special needs of elderly persons and persons with disabilities for whom mass transportation services are unavailable, insufficient or inappropriate.

Section 18 – The section of the Federal Transit Act (formerly known as the Urban Mass Transportation Act of 1964), as amended, that authorizes grants to public transit systems outside urbanized areas, based on formulas set out in statute; the funds go initially to the Governor of each state.

State Implementation Plan (SIP) – Metropolitan areas prepare local and regional areas prepare local and regional SIPs showing steps they plan to take to meet federal air quality standards (outlined in the CAA).

Single-Occupant Vehicle (SOV) – A vehicle with one occupant, the driver, who is sometimes referred to as a "drive alone."

Surface Transportation Program (STP) – STP monies are "flexible," meaning they can be spent on mass transit, pedestrian and bicycle facilities as well as on roads and highways.

Transportation Control Measure (TCM) – A strategy to reduce driving or smooth traffic flows in order to cut auto emissions and resulting air pollution.

Examples of TCMs include roving tow truck patrols to clear stalls and accidents from congested roadways, new or increased transit service, or a program to promote carpools and vanpools.

Transportation Demand Management (TDM) – Low-cost ways to reduce demand by automobiles on the transportation system, such as programs to promote telecommuting, flextime and ridesharing.

Transportation Improvement Program (TIP) – This is primarily a spending plan for federal funding expected to flow to the region from all sources for transportation projects of all types.

Transportation Systems Management (TSM) – Low-cost improvements to make the transportation system work more efficiently, such as traffic signal coordination.

United States Department of Transportation (USDOT) – The federal cabinet-level agency with responsibility for highways, mass transit, aviation and ports; headed by the secretary of transportation. The DOT includes the Federal Highway Administration and the Federal Transit Administration, among others. There are also state DOTs (West Virginia DOT).

Vehicle Miles Traveled (VMT) – This term helps pin down the numbers. Reducing VMT can help ease traffic congestion and improve air quality.

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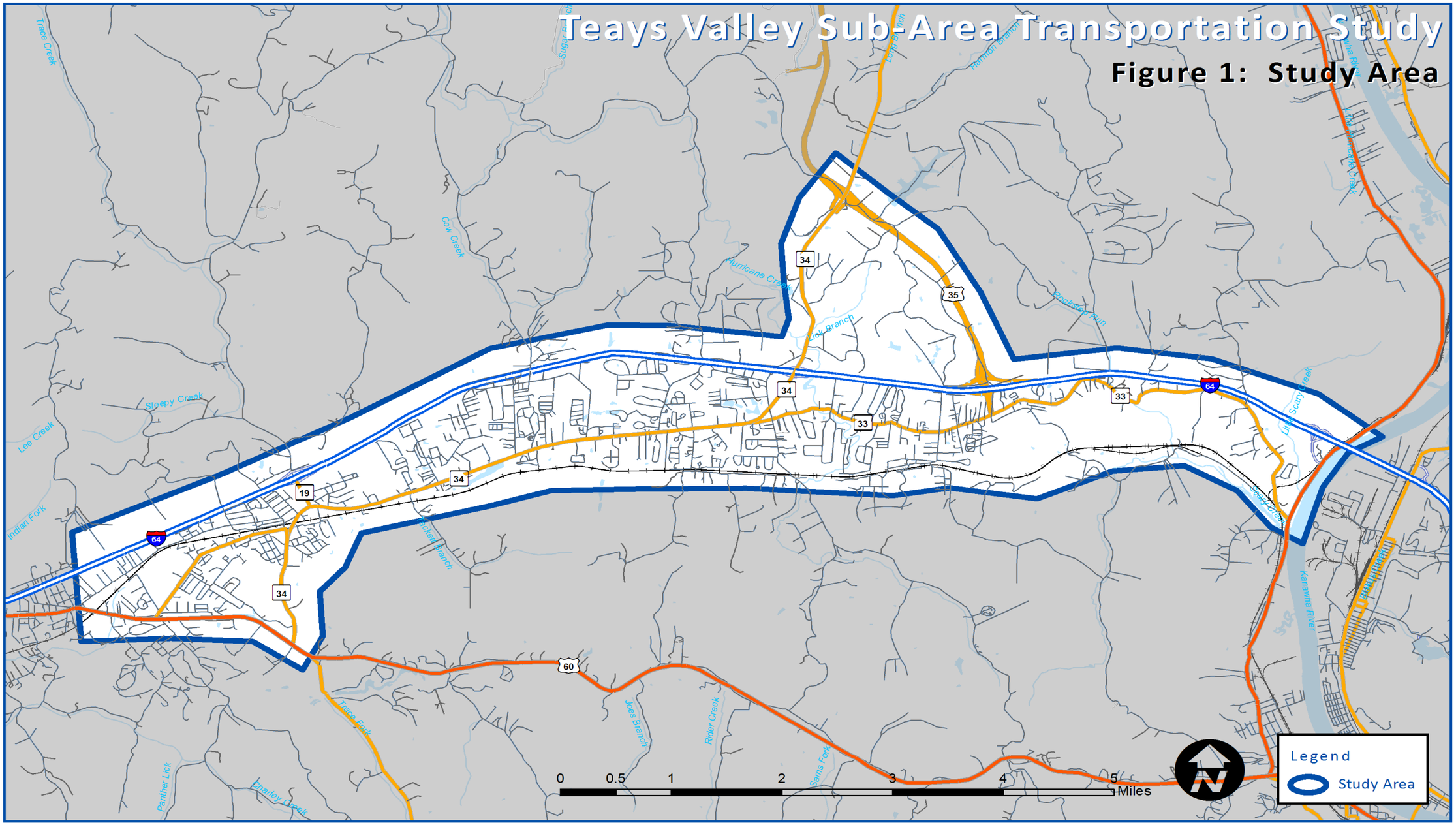
Introduction

The Teays Valley Subarea Transportation Study provides the underlying structure for the area's transportation planning process encompassing the next 15+ years. The transportation planning process is a collaborative effort where the existing and future demands on the transportation system are being evaluated and a set of actions and/or strategies will be developed that will guide the Teays Valley area to a desired outcome, as defined by locally identified issues, goals, objectives and benchmarks. The Transportation Study will address the study area displayed in *Figure 1 on the following page*.


Teays Valley Sub-Area Transportation Study
Figure 1: Study Area
Trace Creek
Cow Creek
Hurricane Creek
Long Branch
Harmon Branch
Rockspring Run
Sleepy Creek
Lee Creek
Indian Fork
Little Scary Creek
Kanawha River
Trace Fork
Joes Branch
Rider Creek
Sams Fork
Panther Lick
Charley Creek
34
35
33
64
19
60
0
0.5
1
2
3
4
5
Miles
Legend
Study Area

The overall study considers a wide range of social, technical, environmental and economic factors in establishing the transportation system goals and objectives. These goals and objectives have been developed to reflect the overall values of the region and are important because they set the general course for the study. The outcome of the plan will include both short-term recommendations (within the next five years) and long-term recommendations (five to twenty years) that lead to the development of an integrated, multimodal transportation system that efficiently moves people and goods.

A multimodal system is one that provides and connects various modes of transportation in and through the area, including automobile, pedestrian, bicycle, transit and rail and truck freight.

The Teays Valley Subarea Transportation Study process includes the following elements:

1. Definition of a set of transportation system goals and objectives that reflect input from a broad range of perspectives.
2. Documentation of transportation system issues and concerns through involvement of the community and technical analysis of available transportation data sets (traffic, crash records, facility condition reports).
3. Identify the projected transportation demand of persons and goods in the study area over the planning period (through the year 2040).
4. Identify effective congestion-management and safety improvement strategies that systematically address current and future transportation demand.
5. Evaluate current and future transit system needs, including the KVRTA and TTA systems.
6. Identify and evaluate pedestrian and bicycle transportation facilities.
7. Assess methods to make the most efficient use of the existing transportation facilities to relieve roadway congestion and enhance the mobility of people and goods.
8. Use a multimodal perspective in evaluating the transportation, social, environmental, and economic impacts of the plan.

The elements that form the existing transportation system form the foundation of Teays Valley area future transportation needs. Therefore, documenting the existing transportation system is an important step in the transportation planning process. The purpose of this Existing Conditions Report is to evaluate and summarize the various elements of the current study area transportation system. The existing transportation system is formed by the coordination of many elements, including:

- Roadways and streets
- Trails and sidewalks
- Transit services (iT Express Bus)
- Truck and rail freight movement

Public Participation Plan

The process for the Teays Valley Subarea Transportation Study calls for a defined public participation approach to ensure that the project is transparent and open to the public.

The Teays Valley study will benefit greatly from public involvement and the following plan is designed to encourage active participation from the public, including elected officials, business leaders, and residents of the area who are interested in guiding the future of transportation in the valley.

Public Participation Approach

The public involvement process is organized as five interrelated elements:

- Engagement
- Visioning
- Building consensus
- Establishing priorities
- Confirming direction

While each of the elements listed above can be considered a phase in the public participation process, progress is rarely linear. The public participation element for the Teays Valley Subarea Transportation Study recognizes this and provides the skills and tools needed to manage and resolve conflicting opinions while continuing to move the project forward. Some of the specific strategies that will be used to build support and resolve conflicts include:

- Working from general ideas before moving to specific recommendations to build comfort with concepts and trust in the process
- Getting everyone on the same page in terms of the content of a specific proposal by clearly defining the issue at hand using images and “real English” explanations of technical data
- Identifying areas of agreement and conflict through:
  - One-on-one discussions that identify the specific areas of conflict
  - Facilitated group discussions that help participants understand multiple points of view
  - Exercises that walk participants through potential solutions to identified or potential areas of conflict

- Clearly demonstrating how feedback has been used to modify a proposal to reduce or eliminate concerns raised
- Identifying any areas in which conflict remain and delineating steps for addressing them in plan implementation strategies

Our team recognizes that Teays Valley has a diversity of interests and viewpoints and has developed a public participation strategy that will incorporate those into the Subarea Plan. We anticipate working with the Steering Committee to finalize public participation strategies to best meet the needs of the project.

Steering Committee Meetings

URS will meet as needed with the Steering Committee. The first will be a project kick-off meeting at which the project scope, budget, schedule and public participation strategy will be confirmed.

We expect that there will be a total of three meetings required to report project progress and obtain guidance from the Steering Committee. We envision Steering Committee meetings as hands-on work sessions that include frank discussions that help to identify and resolve potential areas of conflict as recommendations are developed. Most meetings will begin with a Power Point presentation that summarizes work complete and issues to consider and will then move into a facilitated discussion or workshop format, depending on the actions needed.

The URS role in Steering Committee meetings is technical advisor and meeting facilitator. We expect Steering Committee members to be active in the crafting of plan content and outreach to their constituent groups. The Committee will be critical "eyes and ears on the street" sharing feedback – good and bad – it has heard about the plan and will actively participate in all community workshops.

To support this active role, the URS team will provide all draft materials to the Steering Committee at least one week prior to all meetings and will discuss draft workshop materials and activities with the Committee prior to any community meetings.

Stakeholder Interviews

In an effort to develop a deeper understanding of municipal and stakeholder experiences, issues, concerns, and desires, URS will facilitate a series of stakeholder interviews. The interviews will be highly interactive to address issues raised in project research and identify areas of concern not yet addressed.

The URS team will work with RIC staff to select participants who represent municipal interests and a broad range of backgrounds.

When appropriate during the interviews, we will ask whether participants would be willing to assist in publicizing the Subarea Plan and related meetings via their newsletters, electronic mailing lists, or

website, or by providing us with their organizations' mailing list. This method of outreach allows us to reach more interested people more quickly and more cost-effectively than less targeted approaches.

Community Kick-off Meeting

We have found that it can be difficult to engage the community at the start of a planning process. The plan is – for many people – a somewhat obscure policy document, and many have trouble understanding the potential impacts to their lives, homes and businesses. Unfortunately, it is often only after an individual or group has concerns about a specific plan recommendation that they get involved.

An important element of the URS team's public participation initiative is to engage stakeholders and the local community early and throughout the planning process. A community kick-off that is open, creative, interesting and fun will be important to engaging people and generating a "buzz" around the Comprehensive Plan. The URS team will work with the Steering Committee to identify the best approach for early engagement of the Teays Valley community. The following paragraphs describe our initial concept for a Community Kick-off Meeting that would occur during the Community Assessment phase of the Subarea Plan.

We propose to format the Community Kick-off Meeting as an interactive "community assessment survey." The meeting would begin with an introduction to the project, why RIC is undertaking a Plan now and the key issues we expect the plan to address. We will then move to an interactive survey using Power Point slides to illustrate concepts and ask questions, which participants will respond to using electronic keypads at their seats. Questions could include yes/no answers and scaled ratings. Summary responses can be displayed immediately for each question, so each person in the room can see the results.

Specific issues to be addressed would include the major issues raised in the Request for Proposals and others that arise in the stakeholder interviews and initial project planning. For example, we could ask questions about the types of congestion that residents and businesses see in the Valley's commercial nodes. A broad range of ideas and potential outcomes for each issue can be tested in this format, which helps to communicate that all ideas are welcome. The Community Assessment Survey will stimulate ideas and discussion and will provide important feedback that can be used in structuring options to be presented in Community Meeting #2 described below.

Community Meeting #2

URS will work with the Steering Committee to organize a Community Visioning meeting during the Alternatives Development phase. We propose a workshop that will begin with a Power Point presentation to describe the Subarea Plan, explain the findings from the early project phases and the Community Assessment Survey, and then move to an interactive format to seek community input on alternatives to pursue.

Feedback from stakeholders and the community assessment survey will play an important role in the process. A major task of this workshop will be to test draft plan objectives and emerging potential strategies for implementation.

We will use display boards to list and illustrate objectives and potential strategies developed with the Steering Committee. Participants will be asked to respond to the ideas raised by using "sticker dots" to indicate whether they agree/disagree with an objective, support/don't support the implementation of a potential strategy.

Space will be available on each display for people to add their own ideas and comments, which are then typically responded to by other meeting participants, creating the opportunity for "give and take" among a large group. Each display will be staffed by URS and Steering Committee members who will discuss and record specific concerns and ideas raised by meeting participants.

We believe that our proposed format will provide the opportunity for strong interaction between URS, Steering Committee and participants that will result in a comprehensive understanding of community needs and desires. It also provides all meeting participants an opportunity to view and respond to all of the issues raised in the planning process.

At the end of the evening, URS and Steering Committee members will report back on important issues and new ideas arising from the discussion at each display. The URS team facilitator will take closing questions and comments from the audience, summarize key issues heard and outline next steps in the planning process.

Final Report

As a part of the adoption process outlined by RIC, URS will draft a recommended draft plan and present to RIC for consideration.

URS recommends formatting this meeting to maximize community interaction and feedback. The meeting would begin in an open house format with display boards around the room that illustrate plan recommendations. The URS team would be on hand to summarize critical issues in the planning process and changes to the plan resulting from feedback at the public meetings. Following the presentation, community members would have the opportunity to ask questions and provide the RIC Board with comments on plan recommendations.

Outreach and Marketing Support

Access to current project information and ongoing contact with stakeholders and interest groups will be critical to the success of the Comprehensive Plan. URS will work with the project manager and Steering Committee to provide initial materials to educate stakeholders and the general public on the project. We will update materials as the project progresses for use in the community involvement activities described above and for the Steering Committee to use and distribute in its broader contact with the community.

- **Media:** While a targeted approach is critical to getting specific interest groups involved, outreach to the general public will also be an important element of building community support for the Comprehensive Plan. We will work with the Steering Committee to provide project information and images for inclusion in press releases and outreach to local media.

- **Project Blog:** Social media provides a unique resource for spreading the word about the Subarea Plan. All Plan information, including project background, maps, meeting announcements and summaries, copies of Power Point presentations, schedules, and contact information will be discussed and available for public discussion on the blog. Additional resources will be developed for outreach on Facebook and Twitter.

- **Community Meeting Invitations:** URS will provide electronic invitations for each community meeting. The electronic copy can be distributed to a variety of electronic mailing lists managed by RIC or other local stakeholders.

Transportation System Issues

The initial stages of the study have included working with the general community and the RIC Steering Committee to document current or emerging transportation system issues. To this point in the study process, local issues have been identified through four primary means:

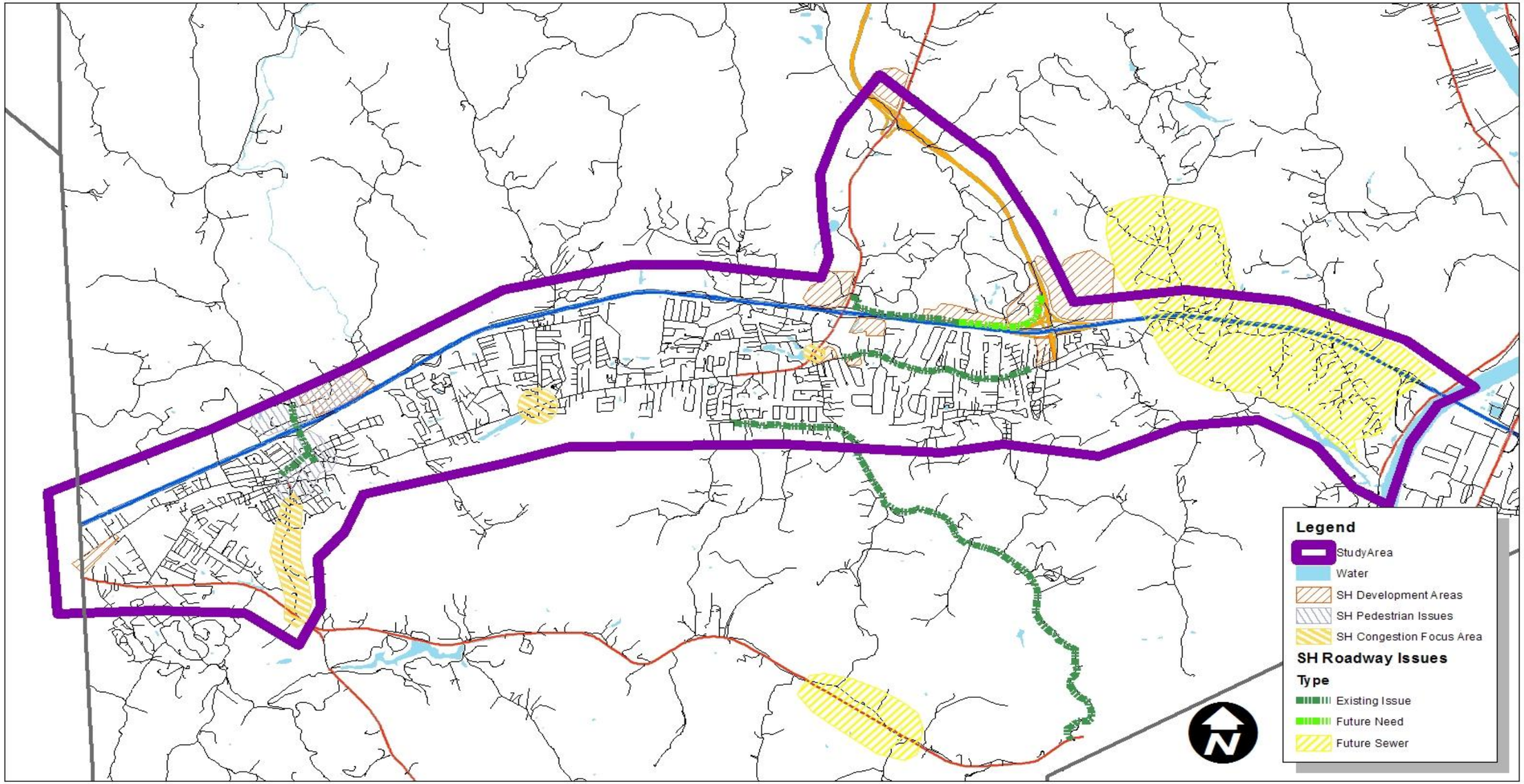
- Stakeholder Interviews
- Steering Committee Meeting 1
- Public Meeting 1
- Citizen comments received via email, telephone calls and blog posts.

Stakeholder Interviews / Steering Committee / Public Information Meeting #1

A series of outreach efforts were held as part of the data collection process to help the project team gain a better understanding of local issues. The following methods were utilized to get a baseline understanding of what the local concerns were about transportation.

Stakeholder Interviews

Stakeholders were identified through consultation with RIC as initial sources for good information on planning needs in the study area. Using the existing reports and data that had been collected by the project team, interviews were held with a number of stakeholders from local government, business, and community interests the week of January 17, 2011. The ideas gleaned from those interviews were marked up on large maps of the study area for later review and refinement.



Teays Valley Transportation Study: Steering Committee Issues

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Projection: Lambert Conformal Conic
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Standard Parallel 2: 38.8833
Latitude Of Origin: 37.0000
Units: Foot US

Date: 7/8/2011

Author: Chet Parsons

URS

Steering Committee

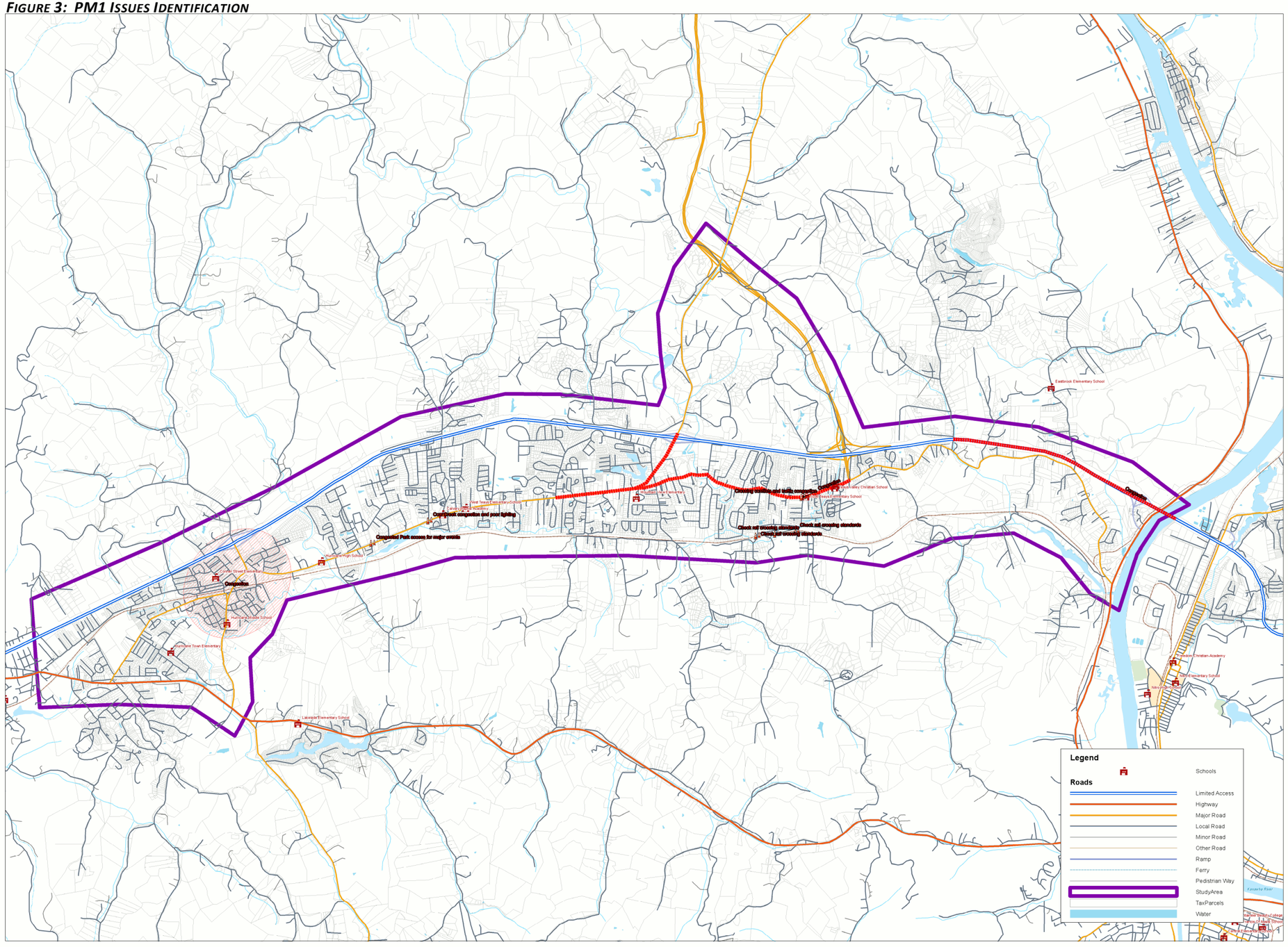
A Steering Committee issues identification workshop was held on February 16, 2011, following the stakeholder interviews. During the workshop, the issues identified by the stakeholders were reviewed on large aerial maps of the study area. Each of the issues refined and approved to move to the public meeting as part of the workshop are identified on *Figure 2*.

Public Information Meeting 1

At the first public meeting different categories of transportation were shared for the purpose of holding discussions about the current transportation issues. Maps of the general study area were provided for base mapping. The purpose of the first public meeting was to allow meeting participants an opportunity to talk one-on-one with representatives from the study team. Participants were encouraged to label issues on the mapping and to document their issues on the comment forms.

Approximately three hours were used at the meetings to gather input from participants. Comments received were recorded on study area maps and can be seen in *Figures 3-5* below. These comments will be incorporated into the process during the plan development phase.

FIGURE 3: PM1 ISSUES IDENTIFICATION



Teays Valley Transportation Study: Public Meeting 1 Existing Issues

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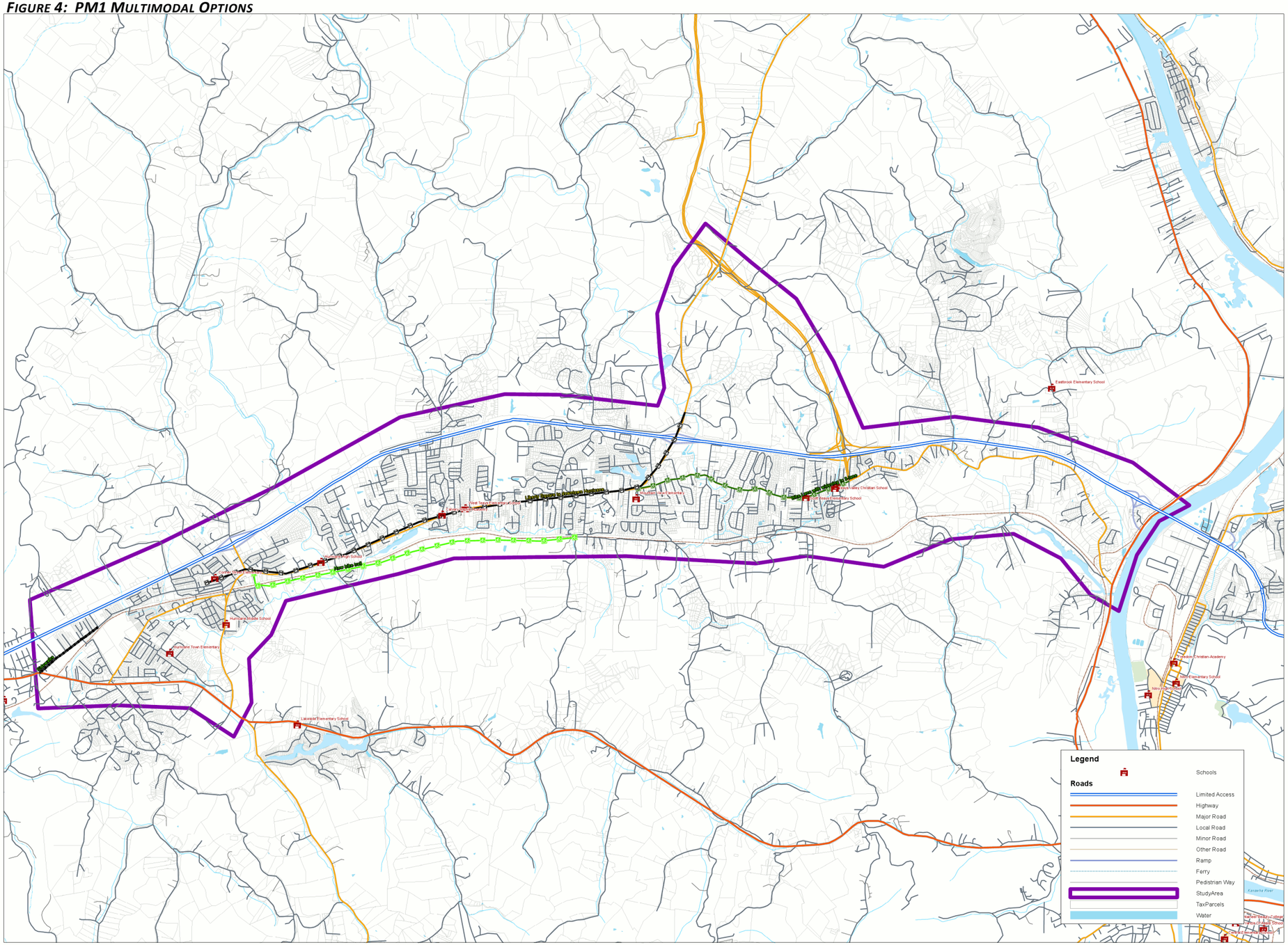
Latitude Of Origin: 37.0000
Units: Foot US

Date: 3/8/2011
Author: Chet Parsons

URS

Figure 4: PM1 Multimodal Options



Teays Valley Transportation Study:
Public Meeting 1 Crowdsourced Transit, Bike, & Pedestrian Options

0 0.5 1 2 Miles

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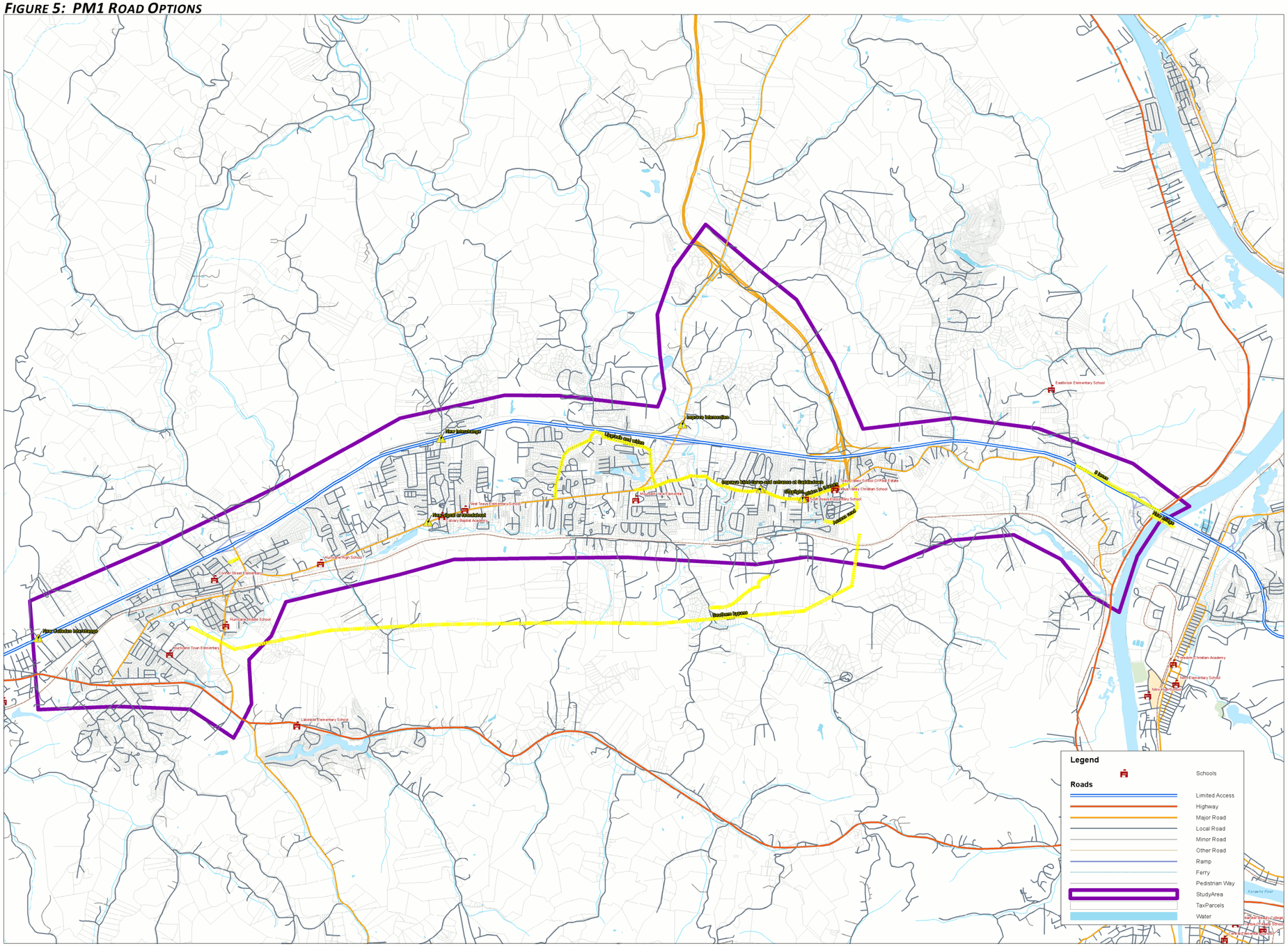
Standard Parallel 2: 38.8833
Latitude Of Origin: 37.0000
Units: Foot US

Date: 3/8/2011
Author: Chet Parsons

URS

FIGURE 5: PM1 ROAD OPTIONS



Teays Valley Transportation Study:
Public Meeting 1 Crowdsourced Road Options

0 0.5 1 2 Miles

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Central Meridian: -81.0000
Standard Parallel 1: 37.4833
Standard Parallel 2: 38.8833
Latitude Of Origin: 37.0000
Units: Foot US

Date: 3/8/2011
Author: Chet Parsons

URS

Comments Received via email, Facebook, blog, Twitter, phone

As of March 14, 2011, there were a total of 14 comments received either through the project blog or via email. The comments reflected a number of different topics, ranging from sight distance at specific locations along the WV 34 corridor to the desire for and against a new interchange at Benedict Road / Culloden. These comments are included in the appendix.

There were also a handful of calls concerning the above topics as well as general questions about the planning process and logistics for public involvement.

Goals & Objectives

The following goals and objectives were gleaned from the RIC 2040 Long-Range Transportation Plan prepared by RIC for the area encompassing Kanawha and Putnam counties. These goals and objectives will be used as the foundation for the Teays Valley Transportation Plan and as the process moves forward, may be updated or refined to more closely match the needs and desires of the community.

Goal 1: To decrease travel time from home to work, school, shopping and other important destinations.

Objectives:

- Preserve, promote, and develop a transportation system complementary to existing and proposed land uses.
- Improve access to and from commercial districts, residential areas, and other existing and proposed activity centers.
- Improve local circulation to avoid conflicts with through traffic.
- Improve ability to handle through traffic.
- Minimize traffic congestion.
- Improve mobility for elderly/handicapped.

Goal 2: Reduce peak period traffic congestion and fuel consumption in the study area and create an energy efficient transportation system.

Objectives:

- Promote increase in vehicle occupancy rate and reduction in single occupant vehicles (SOVs).
- Better accommodate truck traffic.
- Improve capacity for through (i.e. freight) traffic.
- Preserve and enhance the existing network of highways, streets, and roads, as well as the traffic management system (i.e., connecting dead-end streets).

- Deploy intelligent transportation systems (ITS).
- Minimize fuel consumption by minimizing vehicles miles traveled.
- Encourage use of mass transit.
- Encourage pedestrian and bicycle activity by providing adequate pedestrian and bicycle facilities at high volume locations.

Goal 3: Improve surface transportation safety in Kanawha County and Putnam County.

Objectives:

- Maintain a coordinated effort to reduce fatalities, injuries, property damage, and hazardous material spills.
- Reduce the number of high-incident accident locations (i.e., intersections and at-grade railway crossings) at identified problem locations.
- Assure adequacy of evacuation routes in the immediate vicinity of chemical manufacturing plants and storage facilities (i.e. warehouses and bulk storage sites).
- Provide adequate pedestrian and bicycle facilities at high volume locations.
- Reduce potential for conflicts between rail and highway modes (.e. at grade RR crossings).

Goal 4: Provide a transportation system complementary to existing and proposed land uses; promote economic development.

Objectives:

- Minimize negative impact on existing land uses.
- Preserve, promote or provide desirable land for other productive uses.
- Maintain consistency with existing land use plans.
- Provide adequate access to traveler information regarding existing and proposed ports, airports and intermodal facilities.

Goal 5: Minimize adverse environmental impacts and provide for the beautification of the community.

Objectives:

- Encourage a transportation system of high aesthetic quality that blends well with the existing landscape.
- Avoid areas of fragile natural environments or unique historic value.
- Minimize effects of noise pollution.
- Reduce air pollution, with particular emphasis on ozone precursors (VOC and NOX).
- Identify potential “transportation enhancement” activities.
- Reduce auto dependency.
- Improve existing and create more facilities for bicycles and pedestrians.

- Improve public transit.
- Minimize displacement of people and facilities.

Goal 6: Minimize costs consistent with available financial resources and implementation capability.

Objectives:

- Minimize capital costs.
- Minimize operating costs.

Existing Transportation Systems

The following section highlights details about the existing transportation systems that will influence any future plans made as part of the Teays Valley Subarea Transportation Study. The following information is even more pertinent in a time when state and federal budgets are constrained. Plans developed during this period should be based upon a firm understanding of the foundational transportation network and capitalize existing opportunities as much as possible.

State / Federal Highways and Local Roadway Systems

Functional Classification

As reported by the West Virginia Division of Highways 2009 Annual Roadway Statistics, there were 118.68 miles of urbanized area roadway in Putnam County, the majority of which lie in the study area. Interstate 64 bisects the study area and 13.62 miles of this corridor run through Putnam County and Teays Valley in particular.

Using the Federal Highway System guidelines outlined by the FHWA (http://www.fhwa.dot.gov/planning/fcsec2_1.htm#fsc), the following functional classification information is presented for Putnam County, WV by classification type.

Table 1: Roadway Functional Classification

Rural areas	*Urbanized areas*
Principal arterials – 17.56 miles	*Principal arterials – 2.17 miles*
Minor arterial roads – 0 miles	*Minor arterial streets – 38.32 miles*
Collector roads – 94.13 miles	*Collector streets – 11.66 miles*
Minor Collectors and Local roads – 439.89 miles	*Local streets – 52.91 miles*

Three corridors running through the study area belong to the National Highway System (NHS). The NHS is approximately 160,000 miles (256,000 kilometers) of roadway important to the nation's economy,

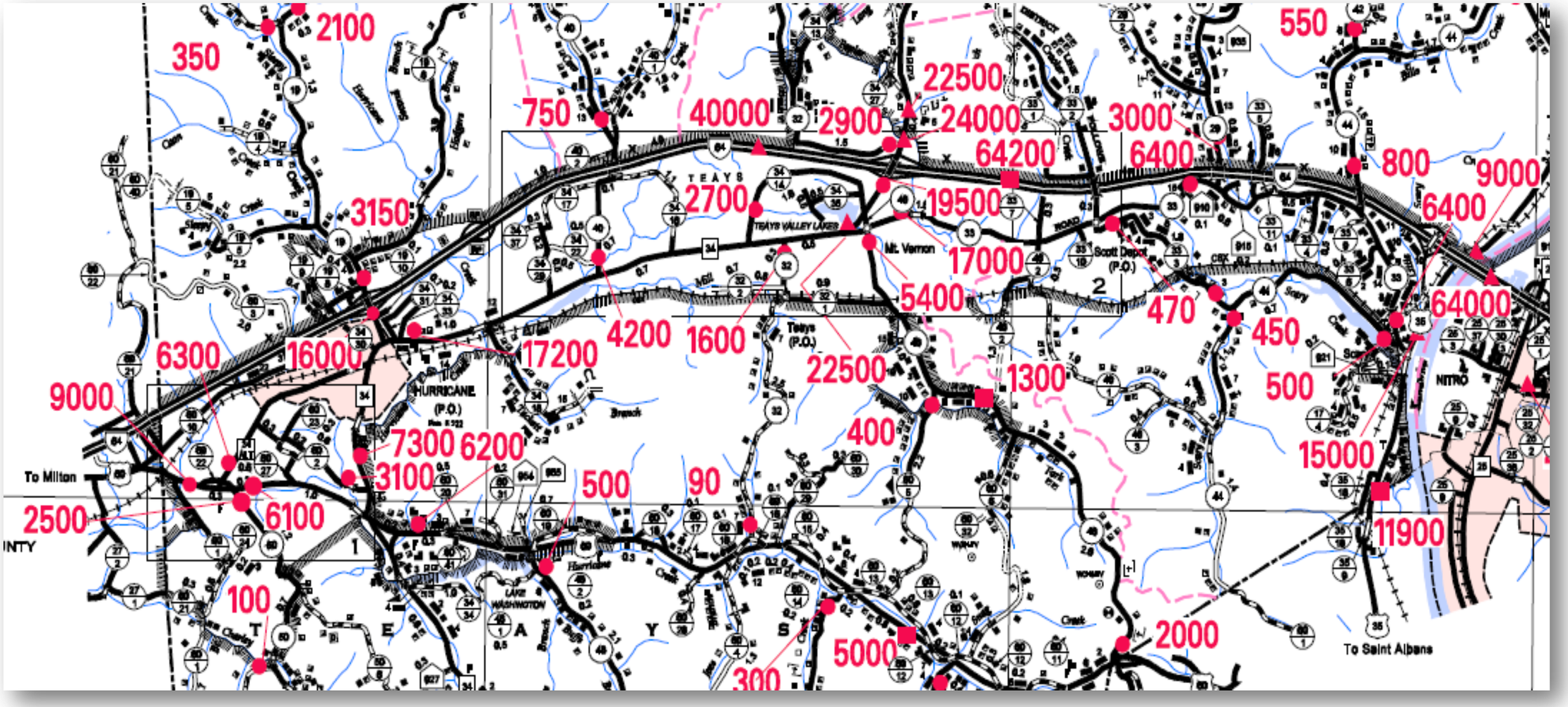
defense, and mobility. The National Highway System (NHS) in Putnam County includes the following roadways: WV Route 34, US 35, and Interstate 64. Each of these corridors have major sections within the Teays Valley Transportation study area.

Traffic Volumes

Highway traffic volumes are an integral component in evaluating the study area's existing transportation system conditions. Average daily traffic (ADT) counts are available from the WVDOT. The most recent available ADT data, collected in 2007, are illustrated in *Figure 6.* The WVDOT updates daily traffic volume counts throughout the state on a three-year rotating basis, and will be updating the counts in Teays Valley beginning in the fall of 2010. Those counts are completed but have not yet been made available to the public.

Through analysis of multi-year data, it was concluded that seasonal and day of the week adjustments were typically not warranted as long as the data was collected in mid-week periods while schools were in session. In addition, the DOT reviews newly collected count data with historical data to aid in establishing the validity of the new information.

FIGURE 6: 2007 AVERAGE DAILY TRAFFIC



Measures of Corridor Operations / Roadway Capacity

Each intersection and the roadway links connecting them have a finite capacity. The maximum number of vehicles that could be accommodated on a link or through an intersection, however, is greater than the number typically acceptable in a community the size of Teays Valley. For the study area the following assumptions have been used in determining thresholds of acceptable capacity:

For corridors within the urbanized area, level of service "C" operations were assumed to be the target threshold for acceptable traffic flow. Definitions of level of service are documented in *Table 2* and a graphical representation of traffic flow conditions at the range of levels of service are displayed in *Figure 7*.

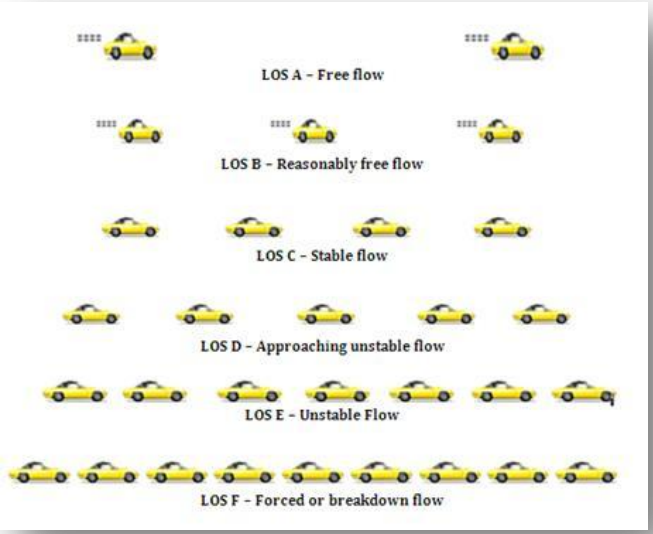
TABLE 2: LEVEL OF SERVICE

	Free Flow, Insignificant Delays. Very little, if any, delay incurred at intersections (< 10 seconds per vehicle). Corridor travel speed is within 10% of the free-flow operating speed (travel speed without any outside influences controlling any one drivers decision as how fast to drive).
	Stable Operation, Minimal Delays. Described as reasonably unimpeded operations. A driver's ability to maneuver within the traffic stream is only minimally restricted by other vehicles. Operating speeds are within approximately 30 percent of the free-flow speed. Typical intersection delay is between 10 and 20 seconds per vehicle.
	Stable Operation, Acceptable Delays. Operations within the corridor are stable; however, a driver's ability to maneuver between lanes or make a turn may be restricted due to needing to yield to other vehicles. Not all vehicles during every signal cycle clear the intersection (cycle failures). The average delay per vehicle at a controlled intersection ranges from 20 to 35 seconds.
	Restricted Flow, Regular Delays. Reflects the limits of stable flow, and a slight change in vehicle flow may result in substantial increases in delay. The average vehicle travel speed is approximately 40 percent of the estimated free-flow speed. Queues may develop but dissipate rapidly, without excessive delays. The average intersection delay per vehicle ranges from 35 to 55 seconds.
	Maximum capacity, extended delays. Volumes at or near the finite capacity. Vehicles may wait through several signal cycles. Long queues form upstream from intersection. Typical operating speeds in the corridor are less than 35 percent of the free-flow speed and intersection delay ranges from 55 to 80 seconds per vehicle.
	Forced flow, excessive delays. Represents jammed conditions. Intersection operates

below capacity with low volumes. Queues may block upstream intersections.

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

FIGURE 7: TRAFFIC FLOW CHARACTERISTICS BY LOS



Capacity Deficiencies

For the purposes of this study, a capacity deficiency is defined as the condition when the current daily traffic volume in a corridor exceeds a level of service "C" in some corridor. In the plan development phase the URS team will document the estimated daily capacity by functional classification over the currently observed range of lane geometrics for roadways in the urban area. Traffic operations along roadway corridors in the study area, based on current (2002) traffic and the existing roadway network, will be quantified and used to compare with plan options as they are developed.

It should be noted that the traffic operations analyses will be conducted using data available from existing sources. Traffic volumes used in the analysis will be obtained from the WVDOT database, which does not cover 100 percent of the system. Thus, there may be additional corridors that travelers observe to be congested that may not be highlighted. These corridors may be supplemented through traffic counts collected by RIC staff as part of the plan development process.

Crash Assessment

Safety conditions for travelers (vehicle and non-motorized) in the Teays Valley area were assessed using crash record information and average rate information obtained through the WVDOT. Annually, the WVDOT publishes a Crash Data report that contains summaries of crashes reported by the State Police, county sheriff departments, and municipal police departments.

Summaries of crash records for the road and street system in Teays Valley for the calendar year 2004 through 2006 period were obtained from the WVDOT.

Local Transit Service

Existing transit options consist of two categories of service. The WVDOT has initiated a daily commuter-oriented service between Huntington and Charleston, and there are also local dial-a-ride type services for elderly/disabled patrons who need access to shopping, doctors' offices, and other essential appointments.

KRTA / TTA

The Kanawha Valley Regional Transportation Authority and Tri-State Transit Authority have partnered with the West Virginia Department of Transportation to develop an express bus service called Intelligent Transit between Huntington and Charleston. The service is offered twice daily, with a morning route from Huntington to Charleston and the evening route from Charleston to Huntington. The lone Putnam County stop on the express service is at the Crooked Creek Park and Ride facility at the Scott Depot I-64 interchange.

The service is offered at a rate of $3.00 one way from Huntington to Charleston and vice-versa but can also be used for $2.00 one way if the rider boards at Crooked Creek.

No other daily public transit service exists in the Teays Valley area at this time. KRTA and TTA do not have any current plans to expand service in this area.

Specialized Transportation Services

Two services currently exist in Putnam County that provide services to specific target populations. The **Putnam County Aging Program, Inc.** provides transportation for senior citizens in Putnam County, primarily to nutrition sites and is also a Non-emergency Medicaid transportation provider. **Winfield Senior Citizens** provides transportation for senior citizens to health care sites. **Teays Valley Taxi** provides taxi service to all of Putnam County, and **Express Cab Company** is a non-emergency Medicaid transportation provider for Putnam County.

Non-Motorized Transportation System

Current Trail Facilities

At this time there are no community-wide trail systems that connect neighborhoods and businesses. A number of trails exist through the Putnam County Parks and Recreation Department that have a major impact on the health and activity of Teays Valley residents.

The Valley Park is approximately 60 acres and has a number of amenities for community activities, including four miles of walking trails (see Figure 8).

Although not within the study area, the Putnam County Park in Eleanor boasts over 200 acres and has 10 miles of hiking and mountain bike trails. This regional resource is something that is utilized by residents and visitors all over the region.

Sidewalks and Crosswalks

There are sidewalks and crosswalks at a number of locations across the Teays Valley and Hurricane region, but there are also a number of gaps in infrastructure and areas that will need special attention as the plan is developed.

Public Meeting 1 identified a number of locations that need closer study to ensure that bicycle and pedestrian services are adequate. As shown in Figures 3 & 4, pedestrian issues exist in high traffic areas such as the intersection of Teays Valley Road and Hurricane Creek Road and near each school along the Teays Valley Road corridor. Congested roadways such as the two lane section of CR 33 between Great Teays Blvd and US 35 present options for installation of new bike lanes and sidewalks as roadway improvements are made.

The 2008 RIC Bicycle and Pedestrian Plan identifies a number of similar issues for the Teays Valley and Hurricane areas that will be included as part of the planning process. These improvement areas include Teays Valley Road, South Poplar Fork Road, the entrance to Hurricane City Park, Hurricane Creek Road, and Great Teays Boulevard. A number of recommendations were made as part of that plan that will be incorporated into the overall transportation options of this planning process.

Freight Movement

Trucks

Truck traffic in the Teays Valley region is not a critical issue for daily traffic, although there are the typical delivery services for retailers, fuel trucks and other associated haulers that serve businesses along the commercial corridors.

One area that was highlighted during the public involvement process was the truck traffic associated with US Food Service on Virginia Avenue in Hurricane. The URS Team is aware through conversation with stakeholders that there is specific routing that trucks are required to travel in accessing I-64 from the facility.

Train Service

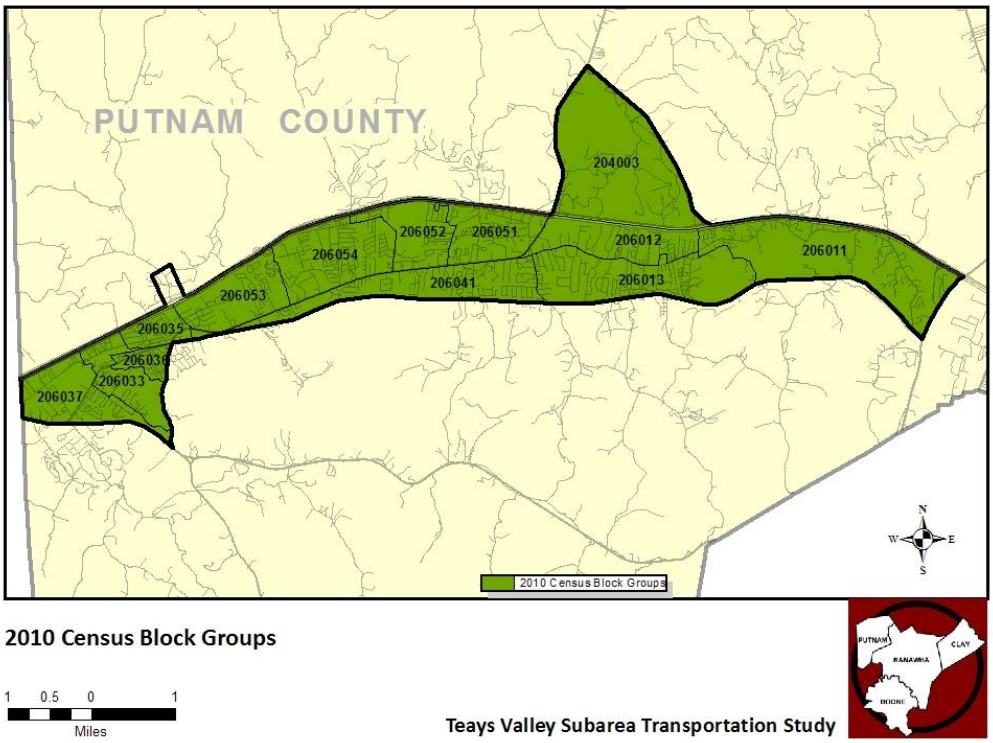
Amtrak operates three weekly passenger trains through the study area. However, none of them make stops within the study area. CSX operates a number of freight trains through the study area that minimally affect traffic depending on the time of day and length of train. The area around Saddle Downs and Johnson Place was mentioned during Public Meeting 1 as a housing development that may have conflicts with freight service and crossing standards.

As the plan is developed, URS will look at crossing opportunities and conflict points between trains and other modes of travel throughout the study area.

Socioeconomic Data

Due to the recent growth in the Teays Valley area two Census Block Groups were split and one was renamed. The table below displays the relationship between 2000 Census Block Groups and 2010 Census Block Groups.

Relationship between 2000 and 2010		
2000		2010
204003	same	204003
206011	same	206011
206012	same	206012
206013	same	206013
206021	split	206051
		206052
206022	split	206053
		206054
206023	renamed	206041
206033	same	206033
206035	same	206035
206036	same	206036
206037	same	206037



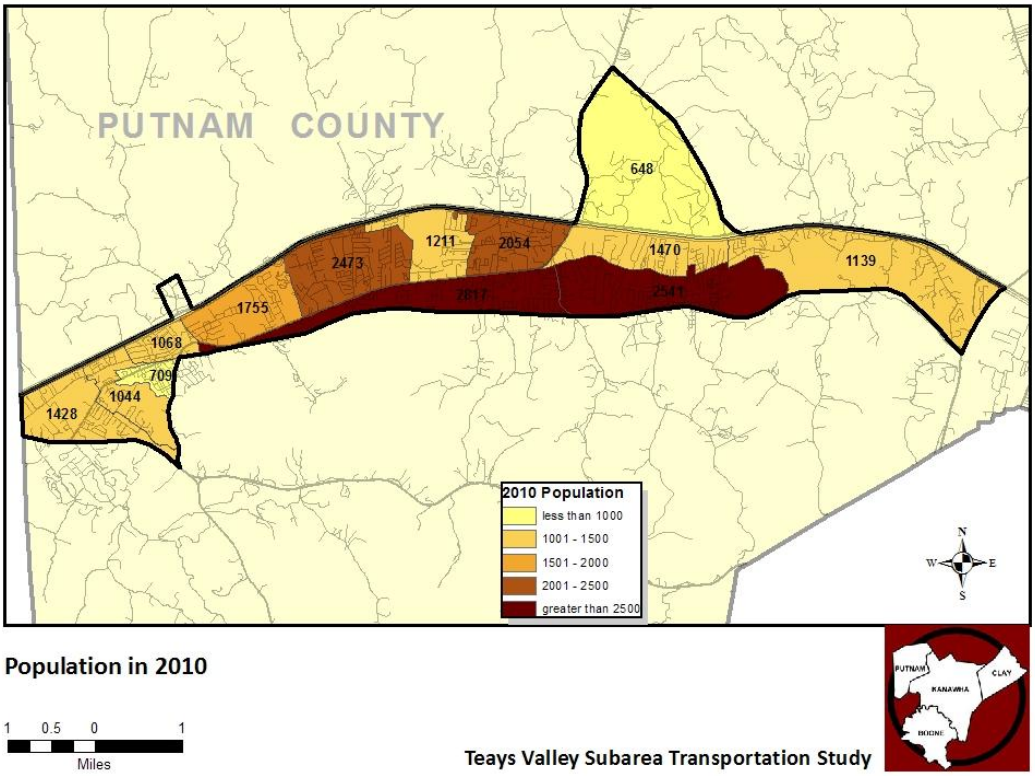
2010 Census Block Groups

1 0.5 0 1
Miles

Teays Valley Subarea Transportation Study

In the Teays Valley area the total population increased by 8.45%. A few areas had over 15% growth. Block Group 206033 experienced a 19.31% increase in population over ten years, while Block Group 206011 experienced a 8.44% decrease in population.

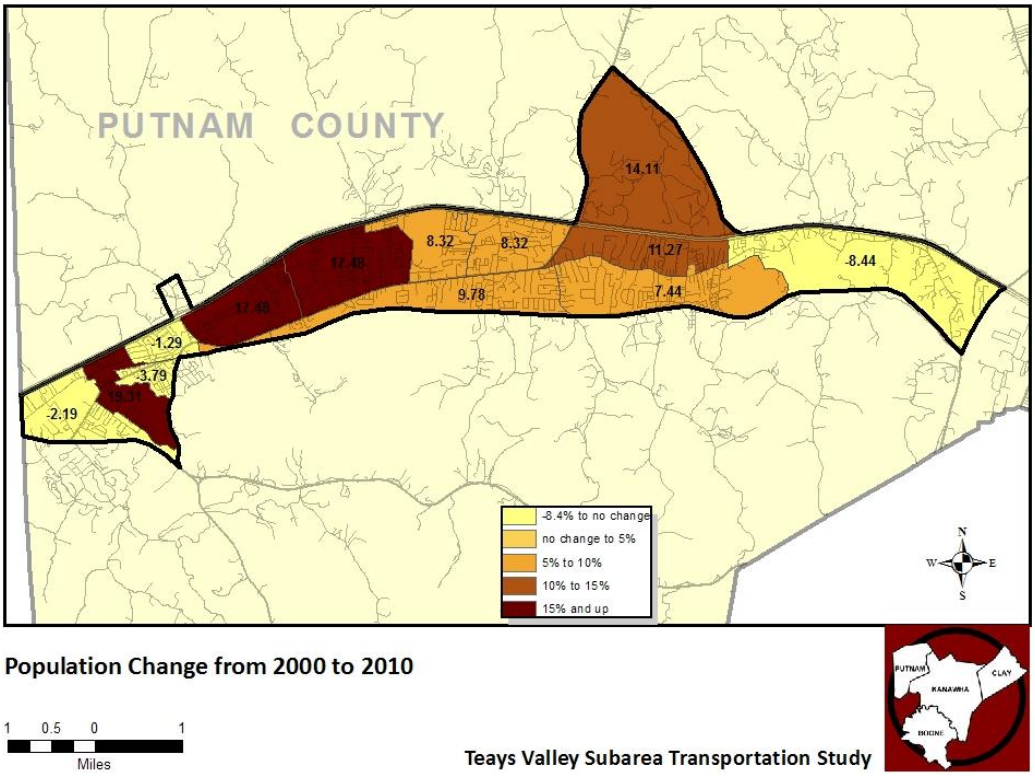
Population Change from 2000 to 2010				
	2000	Change	2010	
204003	1722	**14.11**	1965	204003
206011	1244	**-8.44**	1139	206011
206012	1321	**11.28**	1470	206012
206013	2365	**7.44**	2541	206013
206021	3014	**8.33**	2054	206051
			1211	206052
206022	3599	**17.48**	1755	206053
			2473	206054
206023	2566	**9.78**	2817	206041
206033	875	**19.31**	1044	206033
206035	1082	**-1.29**	1068	206035
206036	737	**-3.80**	709	206036
206037	1460	**-2.19**	1428	206037
TOTAL	19985	**8.45**	21674	TOTAL



Population in 2010

1 0.5 0 1
Miles

Teays Valley Subarea Transportation Study



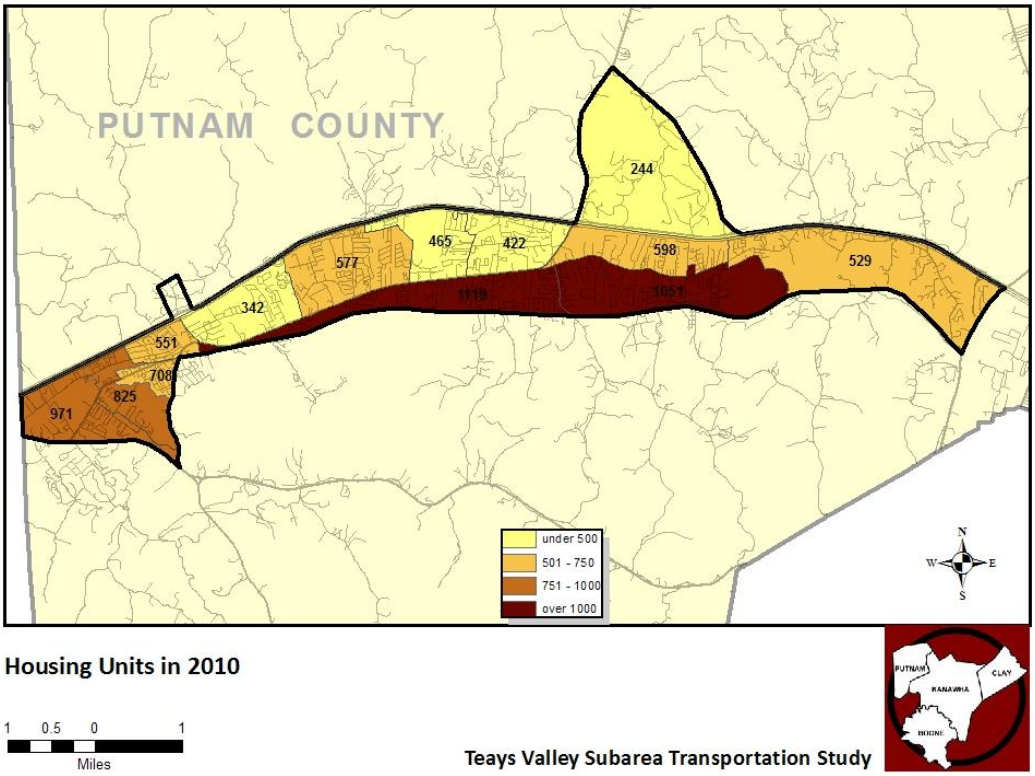
Population Change from 2000 to 2010

1 0.5 0 1
Miles

Teays Valley Subarea Transportation Study

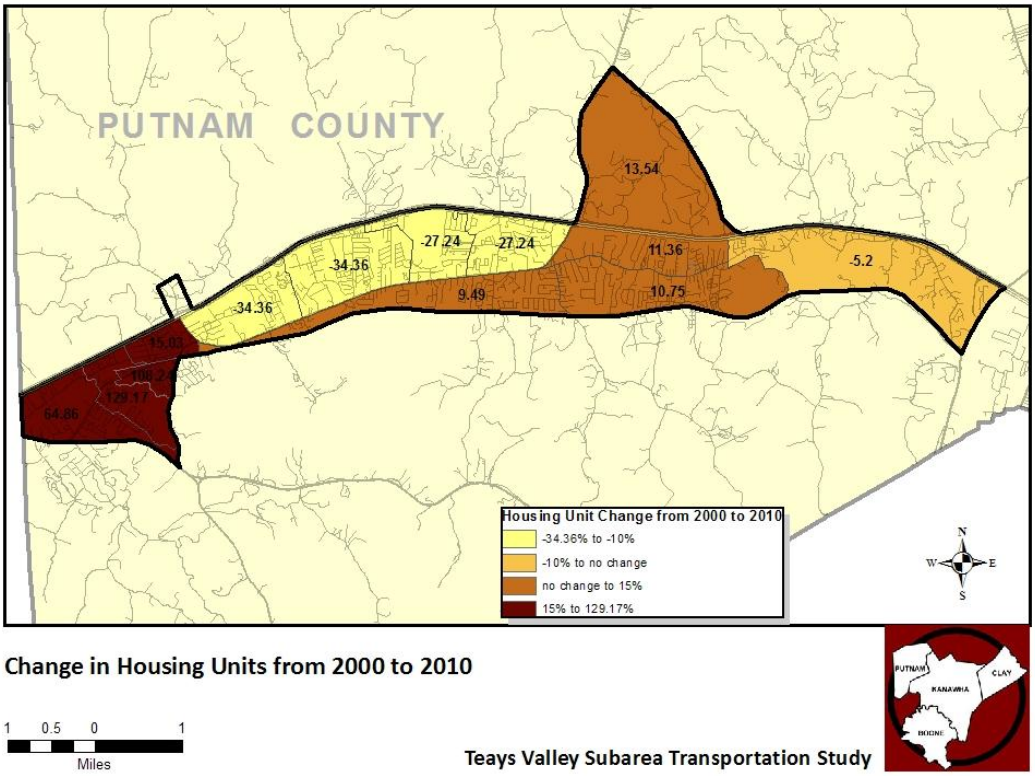
In Teays Valley the total households increased from 8,103 to 8,896, an increase of 9.79%.

Households from 2000 to 2010					
	2000	Change from 2000 to 2010	Percent Change from 2000 to 2010	2010	
204003	650	88	13.54%	738	204003
206011	558	-29	-5.20%	529	206011
206012	537	61	11.36%	598	206012
206013	949	102	10.75%	1,051	206013
206021	1219	-332	-27.24%	422	206051
				465	206052
206022	1400	-481	-34.36%	342	206053
				577	206054
206023	1022	97	9.49%	1,119	206041
206033	360	465	129.17%	825	206033
206035	479	72	15.03%	551	206035
206036	340	368	108.24%	708	206036
206037	589	382	64.86%	971	206037
TOTAL	8103	793	9.79%	8896	TOTAL



Housing Units in 2010

Teays Valley Subarea Transportation Study



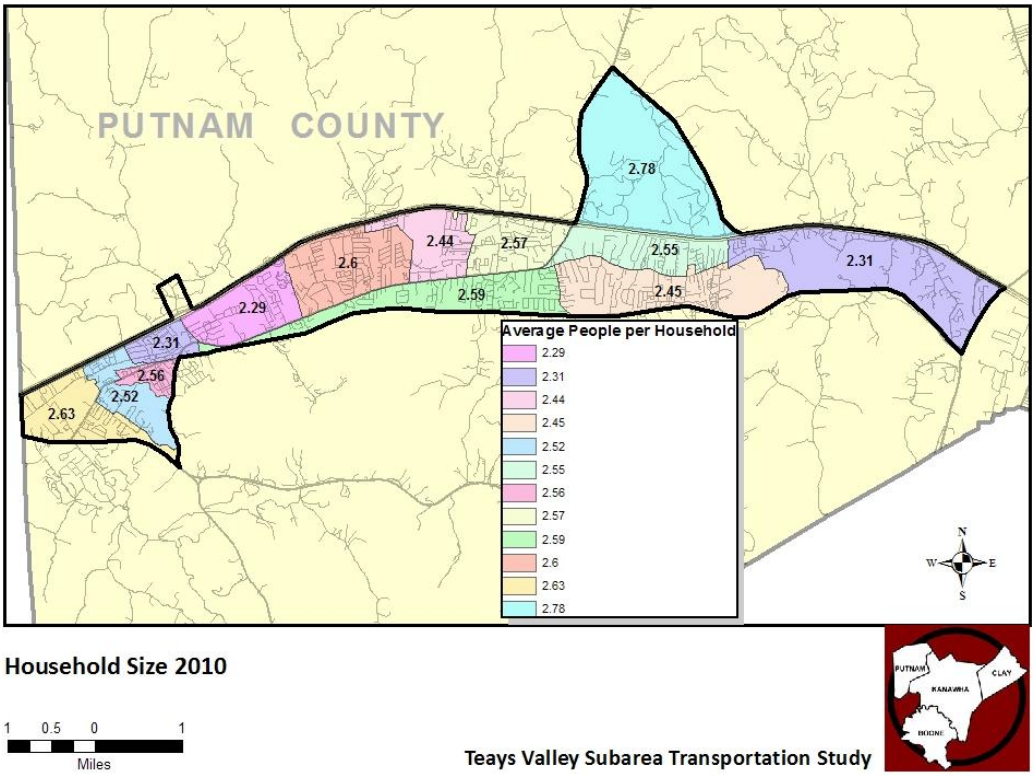
Change in Housing Units from 2000 to 2010

1 0.5 0 1
Miles

Teays Valley Subarea Transportation Study

In Teays Valley the average people per household has decreased by about two percent.

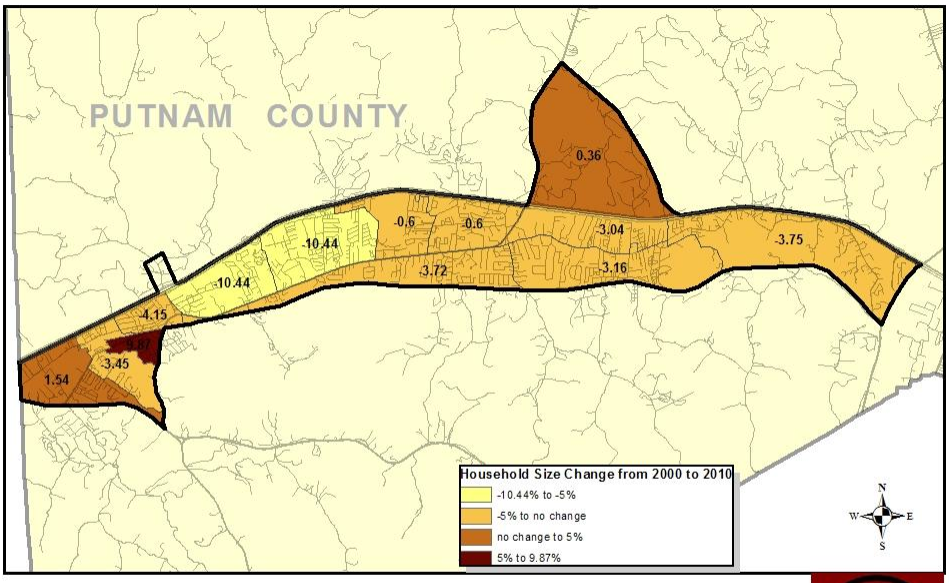
Change in Household Size from 2000 to 2010				
	2000	Percent Change	2010	
204003	2.77	0.36%	2.78	204003
206011	2.40	-3.75%	2.31	206011
206012	2.63	-3.04%	2.55	206012
206013	2.53	-3.16%	2.45	206013
206021	2.52	-0.60%	2.57	206051
			2.44	206052
206022	2.73	-10.44%	2.29	206053
			2.6	206054
206023	2.69	-3.72%	2.59	206041
206033	2.61	-3.45%	2.52	206033
206035	2.41	-4.15%	2.31	206035
206036	2.33	9.87%	2.56	206036
206037	2.59	1.54%	2.63	206037
TOTAL	2.56	-2.22%	2.51	TOTAL



Household Size 2010

1 0.5 0 1
Miles

Teays Valley Subarea Transportation Study



Household Size Change from 2000 to 2010

1 0.5 0 1
Miles

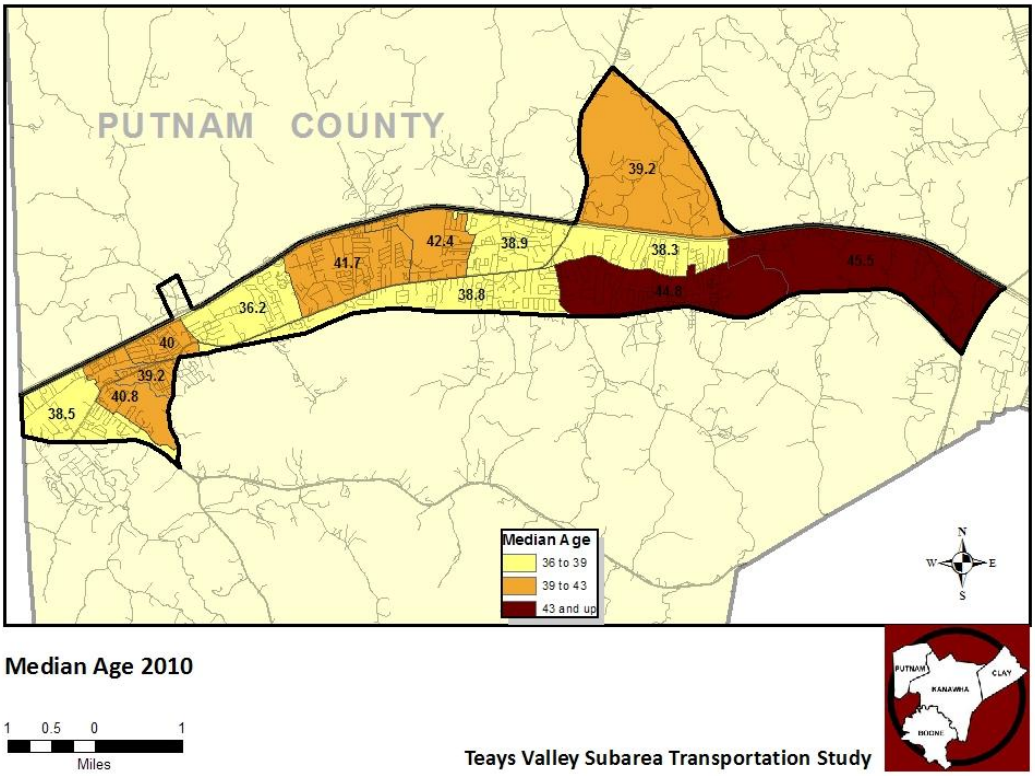
Teays Valley Subarea Transportation Study

It is interesting to look at the household size (average number of people per household), compared to the actual family size. A family is 'a group of two or more people who reside together and who are related by birth, marriage, or adoption', from the Census Bureau. The average family size for the Teays Valley area is almost 3 people.

Household and Family Size from 2000 to 2010					
	2000		2010		
	Household Size	Family Size	Household Size	Family Size	
204003	2.77	3.02	2.78	3.02	204003
206011	2.40	2.87	2.31	2.74	206011
206012	2.63	3.10	2.55	3.03	206012
206013	2.53	2.91	2.45	2.93	206013
206021	2.52	2.97	2.57	3.04	206051
			2.44	2.92	206052
206022	2.73	3.09	2.29	2.86	206053
			2.6	3.03	206054
206023	2.69	3.01	2.59	2.94	206041
206033	2.61	3.07	2.52	2.99	206033
206035	2.41	2.91	2.31	2.75	206035
206036	2.33	2.89	2.56	3.07	206036
206037	2.59	2.96	2.63	2.93	206037
TOTAL	2.56	2.98	2.51	2.94	TOTAL

In Teays Valley the median age changed from 37.3 to 40.3 in 2010

Median Age from 2000 to 2010							
	2000			2010			
	Age	Male	Female	Age	Male	Female	
204003	38.1	37.7	38.3	39.2	39.3	39.0	204003
206011	41.0	38.5	43.1	45.5	43.6	46.8	206011
206012	36.2	35.3	36.7	38.3	36.5	39.2	206012
206013	40.7	39.1	42.4	44.8	41.4	48.0	206013
206021	38.4	37.0	39.2	38.9	37.6	40.1	206051
				42.4	40.8	44.1	206052
206022	36.8	36.8	36.9	36.2	36.3	36.1	206053
				41.7	41.0	42.2	206054
206023	33.1	33.1	33.1	38.8	37.9	39.5	206041
206033	36.9	34.7	38.6	40.8	40.3	41.5	206033
206035	39.2	37.7	41.2	40.0	38.3	41.5	206035
206036	35.0	33.5	35.8	39.2	36.2	42.1	206036
206037	35.4	33.6	36.9	38.5	37.2	39.2	206037
TOTAL	37.3	36.1	38.4	40.3	39.0	41.5	TOTAL



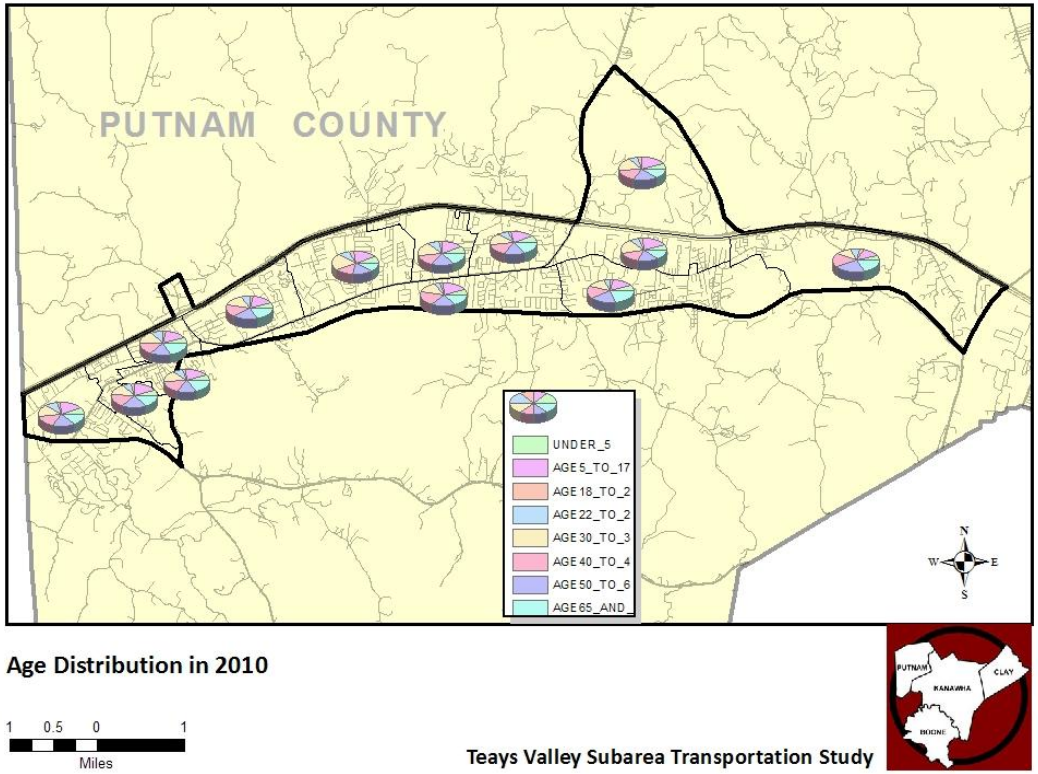
Median Age 2010

1 0.5 0 1
Miles

Teays Valley Subarea Transportation Study

The following table shows the breakdown in ages and changes from 2000 to 2010.

Population in Age Groups from 2000 to 2010																	
	2000								2010								
	Under 5	5 to 17	18 to 21	22 to 29	30 to 39	40 to 49	50 to 64	65 and up	Under 5	5 to 17	18 to 21	22 to 29	30 to 39	40 to 49	50 to 64	65 and up	
204003	121	344	75	122	261	354	309	136	119	382	72	145	290	294	451	212	204003
206011	68	210	47	112	162	212	240	193	59	145	43	103	137	161	296	195	206011
206012	88	282	62	118	213	227	172	159	82	305	50	127	223	219	289	175	206012
206013	125	442	84	170	335	403	390	416	151	409	91	168	314	328	565	515	206013
206021	195	603	109	249	438	554	467	399	210	561	102	241	350	404	553	396	206051
									150	343	71	205	298	277	415	295	206052
206022	284	769	114	256	620	692	549	315	68	193	41	93	171	162	276	207	206053
									128	350	75	149	301	266	317	169	206054
206023	234	520	109	291	419	391	370	232	138	498	67	136	324	394	573	343	206041
206033	58	162	57	81	134	145	145	93	65	191	39	71	144	156	229	149	206033
206035	62	182	48	116	149	142	210	173	59	185	33	105	152	146	198	190	206035
206036	59	131	33	95	108	93	120	98	46	135	24	65	92	105	132	110	206036
206037	109	260	71	165	226	228	239	162	97	274	51	143	188	200	287	188	206037
TOTAL	1403	3905	809	1775	3065	3441	3211	2376	1372	3971	759	1751	2984	3112	4581	3144	TOTAL



Age Distribution in 2010

The following tables show the breakdown of ethnicity and all changes in the Teays Valley Area from 2000 to 2010

Change in Ethnicity from 2000 to 2010													
	2000						2010						
	White	Black	Asian	American Indian or Alaska Native	Native Hawaiian	Other	White	Black	Asian	American Indian or Alaska Native	Native Hawaiian	Other	
204003	1699	2	7	2	1	1	1874	14	24	5	0	48	204003
206011	1201	11	15	3	0	7	1098	12	18	0	0	11	206011
206012	1299	1	8	1	0	0	1411	17	17	1	0	24	206012
206013	2316	18	10	1	0	7	2453	17	41	4	0	26	206013
206021	2893	16	80	2	0	8	1989	18	18	4	3	22	206051
							1145	18	23	1	1	23	206052
206022	3470	39	52	5	1	5	1655	24	42	4	2	28	206053
							2382	16	40	1	2	32	206054
206023	2426	65	45	3	1	7	2570	127	59	5	1	55	206041
206033	865	1	1	0	0	0	1014	6	7	2	2	13	206033
206035	1072	5	2	0	0	0	1046	6	7	2	2	7	206035
206036	721	7	7	1	0	0	688	6	2	0	0	13	206036
206037	1430	6	4	1	0	4	1401	7	9	2	2	9	206037
TOTAL	19392	171	231	19	3	39	20726	288	307	31	15	311	TOTAL

Percent Change in Ethnicity from 2000 to 2010

	White	Black	Asian	American Indian or Alaska Native	Native Hawaiian	Other	
204003	10.30%	600.00%	242.86%	150.00%	-100.00%	4700.00%	204003
206011	-8.58%	9.09%	20.00%	-100.00%	0.00%	57.14%	206011
206012	8.62%	1600.00%	112.50%	0.00%	0.00%	2400.00%	206012
206013	5.92%	-5.56%	310.00%	300.00%	0.00%	271.43%	206013
206021	8.33%	125.00%	-48.75%	150.00%	0.00%	462.50%	206051
							206052
206022	16.34%	2.56%	57.69%	0.00%	300.00%	1100.00%	206053
							206054
206023	5.94%	95.38%	31.11%	66.67%	0.00%	685.71%	206041
206033	17.23%	500.00%	600.00%	200.00%	200.00%	1300.00%	206033
206035	-2.43%	20.00%	250.00%	200.00%	200.00%	700.00%	206035
206036	-4.58%	-14.29%	-71.43%	-100.00%	0.00%	1300.00%	206036
206037	-2.03%	16.67%	125.00%	100.00%	200.00%	125.00%	206037
TOTAL	6.88%	68.42%	32.90%	63.16%	400.00%	697.44%	TOTAL

According to the U.S. Bureau of Labor and Statistics, Putnam County experienced an overall decrease in employment during 2008, but employment is steadily growing. The table below shows the major employers in Putnam County.

Major Employers in Putnam County	
Putnam County Board of Education	1265
Toyota Motor Manufacturing	1100-1400
CAMC eays Valley Hospital	425
Rite Aid of WV	400
John Amos Power Plant	320
Wal-Mart	300+
Diamond Electric	295+
AEP Service	245
Appalachian Power	240
Jefferds Corporation	225
Kanawha Stone	141
Data from 2010	

Appendix

Comment: "Coverage of the 3/3/11 Public Meeting"

Joni Ettore <wordpress@movingteaysvalley.com> **Wed, Mar 23, 2011 at 7:43 AM**

Reply-To: "jonistoy@gmail.com" <jonistoy@gmail.com>
To: urs@movingteaysvalley.com

New comment on your post "Coverage of the 3/3/11 Public Meeting"
Author : Joni Ettore (IP: 152.216.11.5 , internet9.irs.gov)
E-mail : jonistoy@gmail.com
URL :
Whois : http://whois.arin.net/rest/ip/152.216.11.5
Comment:
I believe a turn lane on Teays Valley road would elliviate a lot of the traffic back-up. Especially around Scott Teays Elmentary school in the mornings and afternoons. Traffic really gets backed up with parents dropping off and picking up their children.

[] Comment: "About the Project"

wordpress@movingteaysvalley.com <wordpress@movingteaysvalley.com> **Mon, Mar 14, 2011 at 3:24 PM**

To: urs@movingteaysvalley.com

New comment on your post "About the Project"
Author : (IP: 173.80.189.218 , 173-80-189-218.atw.dyn.suddenlink.net)
E-mail :
URL :
Whois : http://ws.arin.net/cgi-bin/whois.pl?queryinput=173.80.189.218
Comment:
I'd like to see NO LEFT TURNS allowed off of the main road between the interstate and the light at Teays Valley Blvd (except southbound into the truck stop). This would probably require a secondary access road for the businesses located there.

Culloden interchange

Jeanply <jeanply@aol.com> **Wed, Mar 2, 2011 at 8:38 PM**
To: urs@movingteaysvalley.com

We would like to see a Culloden interchange at the property designated for it years ago. Hopefully it would help to reduce the traffic in Hurricane.

Wayne and Jean Pauley

FW: Local I-64 Interchange

Runion, Jon <Jon.Runion@yum.com> **Wed, Mar 2, 2011 at 8:19 PM**
To: "urs@movingteaysvalley.com" <urs@movingteaysvalley.com>

To Whom it May Concern,

I am definitely in favor of adding a interchange in Culloden. This would relieve a lot of the congestion you have at the Hurricane interchange (and intersection at BB&T). This would be a time savings for the Culloden residents……to be able to jump on the interstate in Culloden instead of driving all the way to Milton or fight the traffic in Hurricane. I also believe it would help with some of the house values with the ease of getting on/off of the interstate. I know several years ago they were looking into doing this and I was in favor of it then. I didn't understand what happened to the project.

Thank you for your time.

Jon Runion

Help us out here in "forgotten" Culloden...

Attention: Culloden, Hurricane and other interested local area residents. If you agree that a Culloden I-64 Interchange, (property that is already owned and was originally designed by the WVDOH back in 1964), at Benedict Road would help to improve traffic congestion upon local highways, especially near the Hurricane I-64 Interchange, then submit comments before March 3, by calling 1-304-225-5111, or with an E-mail to: urs@movingteaysvalley.com or writing Teays Valley Subarea Transportation Study, Atnn. Chet Parsons, 3604 Collins Ferry Road, Morgantown, WV 26505.

Culloden I-64 interchange

Michael Johnson <michaelhj49@msn.com> **Wed, Mar 2, 2011 at 7:35 PM**
To: urs@movingteaysvalley.com

My wife and I live in Hurricane and would very much support the interchange, there is just so much traffic on Lynn St, Virginia St. & Putnam Ave. trying to get to the west end of Hurricane. Sometimes I'm backed up on interstate and it takes 20 min. to get to Putnam Ave. The mornings during school traffic, you can't hardly get out on 34 from Lynn St, to go to I-64.

Thanks,

Mike & Renee Johnson

Does the WV Department Highways believe that most of the Mason and Putnam County taxpayers are too naive to think that US Route 35 is a cost efficient-built four-lane highway?

First of all, in the beginning, back in 1995, it was diverted away from a Culloden interchange that would have provided two more lanes onto I-64 east to the Nitro bridge with a simple four-exit interchange design at Scott Depot such as presently exists at Hurricane and Winfield.

The main underlying reason, it would have located US 35 too close to where two proposed regional airports sites were located: The Evergreen site, in Putnam County and later on the Lincoln County site, approximately three miles south of Culloden.

The same underlying reason that happened back in 1967, when the " Midway Jet Port" was shot-down by Kanawha County voters, while Cabell and Putnam County voted for this site, north of I-64 between the Hurricane and Winfield Interchanges. As a result, an interchange was no longer "needed" at Culloden.

A more recent underlying reason, for this Culloden Interchange not existing, is because the Culloden area is the amount of distance that separates Charleston and Huntington from being (one) enterprise zone, or (one) metropolitan area.

Second of all, was building this US 35 highway the longest and most expensive way connecting to I-64, with an elaborate interchange at Scott Depot that displaced many homes and people. A Culloden route would not have required this enormous expense, with enough funds to construct a simply four-way design at Scott Depot.

Third, US 35 was constructed in segments designed to become a "toll" highway. All of the appropriated money was spent at both ending sections of this highway within Mason and Putnam Counties, leaving the middle section unfunded.

Last of all, this highway was designed especially for those who will use this highway. The motorists and truckers who are left with the financial burden and responsibility to complete this project that the "State" of West Virginia started. Progress comes with a price usually for those who are tax and "toll" payers.

What does this have to do with a transportation study for the Teays Valley area of which Culloden is included? It all comes down to $$$ funds or the lack thereof. US 35 was routed the most direct way to accommodate Kanawha County and Charleston, at Mason

and Putnam County's and the "forgotten" town of Culloden's expense.

I-64 Interchange

Sandra O'Shea <wvsjo@yahoo.com> **Mon, Feb 28, 2011 at 10:04 PM**
To: urs@movingteaysvalley.com
Cc: Phil Adkins <gadkins4074@suddenlink.net>, wvsjo@yahoo.com

Dear Sirs:
I am a fellow West Virginian and in support of my friends, am requesting you install an interchange to I-64 for residents of Culloden, WV. This access would reduce traffic congestion and promote business in the local community. Development of highways is critical for WV to stay in the mix for attracting more businesses to boost the economy. It seems there are always a select few in WV that want to keep the people down by not allowing expansion of business. Development of highways and infrastructure is critical to all communities. We must be forward thinking officials and not stuck in the mud or else WV will always rank at or near the bottom of the 50 states.
Thank you for your time and consideration.
Citizen for betterment of communities and development of highways in WV.
Sandra J. O'Shea
729 Weingartner Place
Newport, KY 41071

I-64 Interchange at Culloden, WV

joanadkins@suddenlink.net <joanadkins@suddenlink.net> **Mon, Feb 28, 2011 at 1:25 PM**
To: urs@movingteaysvalley.com

I am a resident of Hurricane, WV. The traffic at the Hurricane exchange is getting more congested every day. The morning and evening traffic is terrible trying to get on or off the interstate.

My family is all for an interchange at Culloden. It would help tremendously.

Thank you.

Don, Joan, and Donny Adkins

Culloden interchange

lwduke@aol.com <lwduke@aol.com> **Mon, Feb 28, 2011 at 8:36 AM**
To: urs@movingteaysvalley.com

Having lived in Culloden in the 50s, I can tell you how dissappointed we were when I-64 passed us up like a step child at the dinner table. All during the planning stages and even in the developing stage we were being told that we would have our own "cloverleaf." We were promised something that we had
never had before: easy access to Huntington and Charleston. But as time went on, it became evident that we were being lied to all along. We were to
remain that remote outpost belonging to Cabell County but our loyalties lie with Putnam County. At least Putnam offered us shopping, medical services, automobile services and better schools if we would just move a few hundred yards to the east. And move we did. As construction was taking our homes and properties, we moved our families to Putnam county instead of staying with the county that had desserted us one too many times. We helped make Putnam what it is today: One of the most desired places to raise a family in the entire state. But with success comes problems and one of western Putnam County's most pressing problems is automobile traffic. Relief is a must. An I-64 interchange at Culloden's Benedict Road is now the only answer. The bridges already exist. Building the ramps is the easy part. The money must be found. The time for Culloden is now. Putnam can't wait and Culloden shouldn't have to wait another 50 years as time continues to pass them by.
Lonnie and Mary Duke
2631 Hayslette Avenue
Hurricane, WV 25526
304-400-9735

Culloden 64 exchange

WhirlwindFrankie@aol.com <WhirlwindFrankie@aol.com> **Mon, Feb 28, 2011 at 7:34 AM**
To: urs@movingteaysvalley.com

I am in favor of the Culloden Interstate exchange. I live on Sycamore Road in Hurricane , We need it bad.
Thank you,
Frankie McCallister

Transportation needs-upcoming meeting TEAYS VALLEY SUBAREA TRANSPORTATION STUDY

Rhonda Ferguson <rferguson@rclburco.com> **Fri, Feb 25, 2011 at 9:31 AM**

To: "urs@movingteaysvalley.com" <urs@movingteaysvalley.com>

Hello

I live on the outskirts of Hurricane and work in Culloden for a railroad distribution center for CSX and other railroads/short lines. As an employee and a resident of the area, I would love to see a new interchange near Culloden to offset the heavy traffic patterns. It would benefit the business I work for and hopefully diminish the backlog of traffic that occurs thru the week at certain points in the area. I do not however wish for people to lose their homes or property to imminent domain. I have read some about this, but I would like to know more about the proposal, feasibility, and costs to the area. I will not be able to attend the meeting on March 3rd as the time is inconvenient to my work schedule, but would like this additional information if it could be presented by email or mailed to the address below. Thank you for your time.

Regards,

Rhonda Ferguson-Acctg Supv.

RCL Burco/RCL Burco Services ULC

103 Thompson Road

Culloden, WV 25510

RFerguson@RCLBurco.com

304-562-2442 ext 147

304-562-3498 fax#

(no subject)

Barbara Lynn Spurlock <barbaralynnspurlock@yahoo.com> **Wed, Feb 23, 2011 at 11:54 AM**

To: urs@movingteaysvalley.com

I thank that one of the most bebefical ways in which to reduce the local traffic congession, especially near and around the Hurricane I-64 Interchange, is to build an I-64 Culloden Interchange at Benedict Road. I understand the WVDOH owns the property for those exits since 1964.

Traffic

Gary <Gadkins4074@suddenlink.net> **Fri, Feb 18, 2011 at 9:11 PM**
To: URS@movingteaysvalley.com

One of the most logical and effective ways to reduce the traffic congestion near and around the Hurricane I-64 Interchange and Marketplace Shopping Center would be the construction of an interchange at Culloden at Benedict Road. The state already owns the property since 1964, for this interchange.

Gary Adkins

TV Transportation Study

Dave Alvis <DAlvis@summcos.com> **Tue, Feb 8, 2011 at 3:13 PM**
To: "urs@movingteaysvalley.com" <urs@movingteaysvalley.com>

If there is a transportation study for Teays Valley, how do we get a copy? Please advise.

David E. Alvis, Manager

Four S Development

dalvis@summcos.com

P.O. Box 2388

Charleston, WV 25328

Office 304-345-8700

Fax 304-345-8704

APPENDIX F: SUMMARY OF SCREENING METHODOLOGY AND PROCESS

TEAYS VALLEY SUBAREA TRANSPORTATION STUDY

Technical Memorandum #2: Summary of Screening Methodology and Process

URS

Prepared for the Regional Intergovernmental Council

July 7, 2011

Overview

The multimodal transportation improvement alternatives analysis conducted as part of the Teays Valley Subarea Transportation Study incorporates quantitative and qualitative analyses in reviewing the range of concepts. While there are scenarios in which quantitative analysis and testing alone may be preferable, it became evident early in the process that both types of analysis would be needed in this case. The diversity of public opinion which exists in what should be considered as priorities (new highway construction, pedestrian system improvements, transit expansion, etc.) necessitates that community input be incorporated equally alongside technical analysis in the screening process.

Through the alternatives analysis the range of improvements in each of the modal systems (roadway, transit and non-motorized) includes:

- Travel demand management (TDM): TDM alternatives are characterized as those intended to reduce the level of vehicle or person travel over the course of a day or in the peak travel hours. Examples of TDM measures include carpooling/ vanpooling, staggered work hours (flex-time), telecommuting, etc.

- Transportation system management: Concepts within this category of improvement alternatives include adding turn lanes to intersections, improving signal system efficiency to increase throughput capacity of an intersection or corridor, conversion of two-way streets into one-way flow, modification of transit routes or arrival/departure times at specific locations to better serve transit patrons, add electronic fare collection to improve the efficiency of moving people onto transit vehicles, adding user amenities to a trail corridor, etc.

- Expansion of current facilities and/or development of new facilities: Improvements in this category include providing additional through capacity in existing corridors, construction of new roadway or pedestrian/bicycle routes, adding service hours along a current transit route, extending multi-use trails, increasing the frequency of buses in a corridor, etc.

As with each of the key elements of the plan, the transportation goals and objectives will be incorporated into the multimodal alternatives analysis. Incorporation of the goals/objectives is accomplished through the measures of effectiveness employed in the alternatives screening. The measures of effectiveness were developed as part of the transportation goals and objectives preparation and represent the benchmark criteria against which each of potential improvement will be compared. *Table 3* displays where the measures of effectiveness fit in the overall goal development process.

Screening Process

The alternatives analysis for the roadway, transit and non-motorized systems follows similar screening processes in evaluating the universe of alternatives. The steps for the non-motorized and transit systems, however, can be streamlined from the process employed for the roadway system. Streamlining is possible because there is not the same level of selection between multiple improvement options to address a particular issue as is needed for the roadway system. Thus, for the non-motorized system the process can proceed forward to the second level screening (documented below) and for the transit system only the first level of screening needs to be conducted. The generalized screening process is completed through the following steps:

- Define current and future multimodal transportation needs in the region. Current and future needs will be defined through information gathered during the public participation process and through technical analysis of the system safety, traffic operations, and economic development.

- Work with the steering committee to identify a range of improvements that would address the transportation issue identified in the existing or committed systems. Many of the identified improvements may be based on subjective understanding of the system operations. Other suggestions may be based on technical analysis previously prepared by the Regional Intergovernmental Council, WVDOT, the City of Hurricane, or Putnam County.

- Working through the URS Team, develop multimodal system improvements to supplement the ideas and concepts identified by the steering committee. URS will provide ideas that would address capacity deficiencies identified through the existing conditions analysis and/or the 2040 traffic on the Existing Plus Committed network, safety issue locations, missing connections/links in the non-motorized system, and others that could be derived through technical analysis of the transportation system data at hand.

- Prepare documentation of the range of improvements.

- Conduct an initial screening of the range of alternatives. The steering committee and the consultant generate lists of potential improvements including multiple alternatives for addressing a specific need or deficiency. The goal of the Teays Valley Transportation Study is to identify a set of proposed transportation improvements for the region. Thus, for those locations where multiple concepts have been identified to address a specified need or issue, an initial screening will be conducted in order to reduce the range of potential alternatives to a preferred concept.

  Analyses that address the traffic impacts of the alternatives and a general assessment of the physical impacts to the adjacent area will be conducted for individual areas of need rather

than grouping them into packages of improvements. Through this individual idea analysis, the positive and negative impacts of the specific concept can be documented. By having the unique concept summaries available as system alternatives (which represent combinations of individual concepts), a greater level of flexibility can be incorporated into subsequent analysis of the system. The increased flexibility is possible because the effects of the individual parts may be already known and for many of the areas of analysis (for example, whether there are minor, moderate or significant impacts to adjacent properties, whether the alternative would result in a safety improvement, etc.). As such, the system level impacts simply reflect the summation of the individual elements. For other criteria (for example: traffic impacts), however, the benefits of the system improvement would be better observed only when the entire system improvement is in place.

- Conduct a second level screening through which each of the alternatives maintained through the initial screening will be reviewed in greater detail. The alternatives will be reviewed relative to the following perspectives:

  - Social acceptability/effects
  - Engineering feasibility; operations and safety benefits
  - Environmental impacts
  - Financial cost/feasibility

  In the second level screening a project scoring system will be employed to identify a hierarchy of how each of the projects would meet the goals and objectives of the plan and how they may be perceived by the community. Using the scoring system, each improvement concept will be evaluated using a scale from 0 to 3 in a broad range of criteria categories. The criteria will address the impacts/benefits of a project from a social, engineering, environmental and fiscal perspective. Categories of assessment included:

  - Level of support from the local community.
  - Multimodal support provided by the concept.
  - Consistency with local and regional plans.
  - Connectivity within the system.
  - Level of impact to vehicle miles of travel (VMT), vehicle hours of travel (VHT) or trip generation.
  - Impacts to regional air quality.
  - Impacts to the adjacent properties/ development.
  - Economic impacts.
  - Cost/Fiscal Feasibility (qualitative estimate of order of magnitude costs relative to anticipated annual local funding levels).
  - Operations and maintenance needs.
  - Safety.

- Consistence with design standards.
- Constructability
- Potential for congestion relief

Within the categories of each of the measures of effectiveness listed above, qualitative and quantitative definitions for the scores from 0 through 3 will be derived. A matrix of the scoring definitions by measure of effectiveness is documented in *Tables 4 through 6*.

The desired outcome of this screening exercise will be a list of proposed projects that address the transportation goals and objectives and have the support of the local community, the steering committee, and the RIC Board.

- For each of the concepts maintained through the second level of the screening, develop a cost estimate that includes construction, right-of-way and associated utility improvement costs. The cost estimates will be developed through applying generalized unit cost estimates associated with the various components of a project or program to the number of units of the particular component that would be included in the project or program. The unit costs used in the analysis will be reviewed by WVDOT staff prior to completing the analysis.

- Prepare and screen a series of preliminary project/program "packages" that address various transportation needs and will be within the anticipated funding availability through the 2040 planning horizon. Packages that focus on a range of themes will be presented to the steering committee. Packages will reflect concepts that:

  - Incorporate improvements for each transportation system element: roadway, transit and non-motorized.
  - Directly address many of the key transportation needs in the area.
  - Support economic growth/stability by including projects located in on-going and future development areas within the study area as well as currently developed neighborhoods.
  - Support the transportation goals and objectives.
  - Are within the anticipated funding constraints of the region

Table 3: Overview of Development and Review of Transportation Goals

Transportation Plan Element	Description	Developed By	Public Review Opportunities
Goals	*eneral statement of irection for the multimodal ansportation system*	*MPO Staff, Steering Committee*	*March 2011 Public Meeting* *Posted on Blog* *Alternatives Screening Report*
Objectives	*ctions needed to be ompleted in order to achieve oal*	*MPO Staff, Steering Committee*	*March 2011 Public Meeting* *Posted on Blog* *Alternatives Screening Report*
Measures of Effectiveness	*echmarks/Performance easures for quantifying rogress towards achieving bjectives*	*MPO Staff, Steering Committee*	*Alternatives Screening Report* *August 2011 Public Meeting*
Strategies/ Concepts	*pecific programs, system odifications/ improvements tended to address goals*	*MPO Staff, Steering Committee*	*August 2011 Public Meeting* *Posted on Blog* *December 2011 Recommended Plan*
Actions	*asks/Steps required to nplement the rategies/concepts*	*MPO Staff, WVDOT*	*Posted on Blog* *December 2011 Recommended Plan*

Table 4: Alternatives Screening Scoring Criteria - Social

Measure of Effectiveness	Score / Definition			
Social	3	2	1	0
Local Public Support for Project / Program	Significant Community Support / Consistent with Other Plans / Guidelines	Moderate Support from Community / Leaders	Minimal Support from Community / Leaders	No / Limited Support
Multimodal Support	Project Includes Significant Multimodal Links (transit/non-motorized/roadway); Incorporated into Design	Project Includes Moderate Multimodal Links (transit/non-motorized/roadway)	Project Includes Minimal Multimodal Links (transit/non-motorized/roadway)	Project Does Not Address Multimodal Connectivity
Consistency with Local Plans	Supports the Planning District / Comprehensive Plan Concepts and is in TIP	Supports the Planning District / Comprehensive Plan Concepts	Not Addressed in Other Plans	Inconsistent with Planning District / Comprehensive Plan Concepts
Connectivity / Continuity	Provides Significant Connections (roadway/trail/transit) Between Key Areas in Study Area	Provides Connectivity Between Neighborhoods, Limited Impact to Neighborhood Integrity	Provides Improved Circulation Within a Neighborhood, Limited Impact to Neighborhood Integrity	Isolated Route (new road) / Provides Access to Growth Area, But No Through Connection

Table 5: Alternatives Screening Scoring Criteria - Engineering

Measure of Effectiveness	Score / Definition			
Engineering	3	2	1	0
Safety	Project Targets Known High Accident Location	Project Targets Known Moderate Accident Location	Generally Safer Design Concept Relative to Existing / No Perceived Accident Problem	No Impact
Design Standards	Addresses All Deficient Standards (Width / Grade / Alignment / Surface)	Addresses Most Deficient Standards (Width / Grade / Alignment / Surface)	Addresses Some Deficient Standards (Width / Grade / Alignment / Surface)	Project Does Not Address Design Standard Deficiencies
Feasibility to Construct	Concept Plan Reasonable Reflects Design Standards / Practices. No Substantial Change in Access Required	Critical Design Criteria Can Be Met, But Moderate Changes in Access are Needed.	Minor Design Criteria Must be Relaxed and Moderate Changes in Access are Needed	Concept Plan Does Not Meet Design Requirements Without Substantial Modification to Current Access
Congestion Relief	Mitigate Congestion in a Corridor Currently Severely Congested	Mitigate Congestion in a Corridor Currently Moderately Congested or Forecast to be Severely Congested	Mitigate Congestion in a Corridor Forecast to be Moderately Congested	Limited / No Impact on Corridor Congestion

Table 6: Alternatives Screening Scoring Criteria - Environmental

Measure of Effectiveness	Score / Definition			
Environmental	3	2	1	0
Level of Impact to VMT / VHT / Trip Generation	Positive Impact by Reducing Growth in VMT, VHT, or Trips	Moderate Impact by Slightly Slowing the Increase in VMT, VHT, and/or New Trips	Minimal Impact on Rate of Change in VMT, VHT, and/or New Trips	No Impact / Increases in VMT, VHT, and/or New Trips
Impacts to Adjacent Built / Natural Environment	No / Few Impacts to Adjacent Homes, Businesses, Natural Features	Minimal Impacts to Adjacent Homes, Businesses, Natural Features	Moderate Impacts to Adjacent Homes, Businesses, Natural Features	Significant Impacts to Adjacent Homes, Businesses, Natural Features
Economic Impact	Project Would Result in Significant Improvement to Goods and People Movement	Supports Improvement to Goods and People Movement	Project Supports Speculative / Temporary Opportunities	No Impact / Negative Impact
Cost	Low Cost (Locally) and Within Reasonable Transportation Budget Constraints	Moderate Cost (Locally) and Within Reasonable Transportation Budget Constraints	Moderate / High Cost (Locally), Within Reasonable Transportation Budget Constraints	High Cost (Locally) and Not Within Reasonable Transportation Budget Constraints
Operations and Maintenance	High Maintenance Priority/ Would Significantly Reduce Operations / Maintenance Costs	Moderate Maintenance Priority/ Reduce Operations / Maintenance Costs	Neutral Effect on Operations / Maintenance Costs	Results in an Increase in Operations / Maintenance Costs

APPENDIX G: IMPLEMENTATION ESTIMATES

Implementation Project	Length (mi)	FY 2011-2012 Estimated Cost	Description
Ongoing			
I-64 – Hurricane Rest Area – Construct restrooms, renovate facility	N/A	N/A	
I-64 – Crooked Creek – Scott Depot landscape interchange, light park and ride	N/A	N/A	
US 35 – Install Dynamic Message Signs	2.74	N/A	
CO 19 – Resurface CO 19 Hurricane to WV 34	0.34	N/A	
CO 33 – Teays Valley Road – Upgrade Signage	N/A	N/A	
Short Range (1-5 years)			
The West Virginia Department of Transportation is implementing an Adaptive Control System for the five signalized intersections along WV34 within the Teays Valley Interchange region. WVDOT also has a closed-circuit television (CCTV) on one of the high mast towers in that interchange (100 ft elev), that allows them to monitor events in that area.	0.65	N/A	
Variable message signs (VMS) are used to transmit information to the public with regard to accidents, construction zones, congestion, events, weather, etc. WVDOT will follow-up along this corridor in utilizing these VMS for Travel Time messaging sometime later next year or early 2013.	12.28	N/A	
All of the ITS components will be enveloped within the upcoming WVDOT statewide 511 system, which will give motorists information through their smart phones/computers.	N/A	N/A	
Access Management (Appendix C contains model ordinance language for use by local government agencies wishing to implement access management standards)	N/A	N/A	
Construct a planted median with left turn stalls between Poplar Fork Road and I-64	0.14	$ 176,700	750 feet rebuild and landscaping
Construct a directional crossover entrance to Liberty Square, allowing left turns from the main line only	N/A	$ 154,200	500 feet median reconstruction
Delineate the truck stop driveway (Go Mart) at the northwest quadrant of I-64 and provide a rear connection between the facility and Poplar Fork Road	N/A	$ 191,900	Roadway for Rear Connection say 40 feet wide by 200 feet long - Fill and walls Deliniate with curb
Construct a median over the center turn lane between Poplar Fork Road and Stonegate Drive	0.28	$ 410,600	1500 feet median with landscaping
Construct a directional crossover at Prestige Park Drive, allowing left turns from the mainline only	N/A	$ 154,200	500 feet median reconstruction
WV 34, Stonegate Drive to I-64: Install an 8' wide shared use path on east side from Putnam Village Dr. to Stonegate Drive (p. 22)	N/A	$ 772,000	1770 feet - ROW - Driveways

Short Range Continued (1-5 years)				
WV 34, Stonegate Drive to I-64: Widen shoulders by 2' to 4' to accommodate bicycle traffic	0.53	$	473,600	2800 feet - GR and Earthwork fo at least 1/2
WV 34 – Teays Valley Interchange – Add right turn lane (p. 24)	N/A	$	266,600	SB on 34 for 270 feet
Consider signal timing adjustments at Hospital Drive (p. 24)	N/A	$	23,500	Counts, Analysis, Implementation, Monitoring
Develop a right stacking turn lane into West Teays Elementary School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times. The stacking lane should extend as far as possible along the school property to allow the maximum amount of vehicles egress from the WV 34 travel lanes. (p. 24)	0.13	$	273,400	500 feet
Develop a right stacking turn lane into Hurricane High School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times. The stacking lane should extend as far as possible along the school property to allow the maximum amount of vehicles egress from the WV 34 travel lanes. (p. 24)	0.23	$	372,000	700 feet.
Realign the northbound approach of Teays Lane at the pharmacy (southeast corner of Teays Lane and Teays Valley Road) to create a four-leg intersection at Hospital Drive (p. 24)	N/A	$	134,900	Match on to existing drive adjacent to CVS 600 feet long - 300 new align and 300 on exsiting, 40 feet wide
Construct a single direction directional crossover at the salvage yard driveway entrance, allowing left turns into facility from westbound Teays Valley Road	N/A	$	154,200	500 feet
Construct a full directional crossover at Sunnybrook Drive, allowing left turns from main line only	N/A	$	154,200	500 feet.
Construct a full directional crossover at Taylor Drive, allowing left turns from main line onto Taylor Drive and u-turn movement from westbound direction	N/A	$	170,200	600 feet.
Construct a full directional crossover at Wethersfield Crossing ,allowing left turns from main line onto Wethersfield Crossing and u-turn movement from eastbound direction	N/A	$	170,200	600 feet.
Construct a single direction directional crossover at Lake Chadesa Drive, allowing left turns onto Lake Chadesa and u-turn movements from the eastbound direction	N/A	$	170,200	600 feet.
Teays Valley Rd (WV 34), Great Teays Blvd to CR 19: Re-stripe Teays Valley Road to provide 4' to 6' shoulders for "Share the Road." Consider reducing travel lanes to 10' width to allow for re-striping	4.49	$	390,000	Restriping
Intersection of Teays Valley Road (WV 34) and Hurricane Creek Road (CR 19): Upgrade the intersection, and the intersection to accommodate pedestrians, including crosswalks, pedestrian signals, curb ramps and push buttons on pedestrian activity approaches (p. 24)	N/A	$	46,100	6 heads, 6 buttons, 6 ramps, 3 xwalks

Project ID	Implementation Project	Length (mi)	FY 2011-2012 Estimated Cost	Description
	Short Range Continued (1-5 years)			
	Develop a right stacking turn lane into Hurricane Middle School to pull standing vehicles off Midland Trail during morning and evening peak travel times. The stacking lane should extend as far as possible along the school property to allow the maximum amount of vehicles egress from Midland Trail travel lanes. (p. 27)	0.14	$ 199,000	Restriping and minor widening, curb and sidewalk
	Midland Trail (WV 34), Lynn St to Main St: Install 5' ADA-compliant sidewalk from Lynn Street to Main Street (except where existing bridge), approximately 585 feet of sidewalk needed. (p. 27)	0.65	$ 191,900	585 feet sidewalk - 485 feet bridge. Shoulder and Guardrail.
	Provide a right-in / right-out connection between Hurricane Creek Road at Davis Ct. through to Washington Avenue and onto Virginia Avenue. (p. 27)	0.12	$ 414,100	650 feet new road
	Hurricane Creek Rd (CR 19), I-64 to Wal-Mart: Install 5' ADA-compliant sidewalk where missing from Saturn Way to the entrance of Wal-Mart. (p. 27)	0.13	$ 62,300	650 feet new sidewalk on exisitng grade
	Intersection of I-64 and Hurricane Creek Rd (CR 19) - North side of Interstate: Upgrade the intersection, and the intersection of Saturn Way, to accommodate pedestrians, including crosswalks, pedestrian signals, curb ramps and push buttons on pedestrian activity approaches. (p. 27)	N/A	$ 18,400	Assume Ped Facilities on the East Side Only At Ramp - 2 Poles, 2 heads and 2 push buttons plus x-walk = 60' At Saturn - Just x-walks across Saturn Way = 35' (No Signal) All SW Ramps in Place
	Develop a right stacking turn lane into Scott Teays Elementary School to pull standing vehicles off Teays Valley Road during morning and evening peak travel times (p. 29)	N/A	$ 124,200	300 Feet long, back to oposite Country Side Estates
	Construct a left turn lane eastbound onto Rocky Step Road (p. 29)	N/A	$ 615,900	150 feet approach and 50 feet opposite Need Walls
	Construct a left turn lane eastbound onto Bills Creek Road (p. 29)	N/A	$ 57,400	150 feet approach and 50 feet opposite
	Improve the right turn-lane geometry at Apple Estates to channelize turning movement (p. 29)	N/A	$ 86,800	300 feet curb and long island (150 feet)
	Add a signal and left turn lanes in both directions on CR 33 at Scott Lane (p. 29)	N/A	$ 218,100	200 LF on feet both approaches 400 feet Total 4 way 2 Phase Signal / With Pedestrians
	Improve sight distance at the blind curve and entrance to Saddledown subdivision (p. 29)	0.08	$ 390,700	Will have to cut back bank and move two poles, Reconstruct 100 feet @30' wide
	Bills Creek Rd, WV 817 to Teays Valley Road (CR 33): Investigate widening shoulders, and widen where feasible.	3.13	$ 1,198,400	Assume widening to 4 feet on each side for 75% of the length.
	Mid Range (6-10 years)			
	I- 64 -- Cabell County line to WV 34 – widen from four to six lanes.	7.04	$ 30,400,000	

Project ID	Implementation Project	Length (mi)	FY 2011-2012 Estimated Cost	Description
	Mid Range Continued (6-10 years)			
	I-64 -- US 35 to WV 25 (1st Avenue) – widen from four to six lanes, replace Nitro bridge	3.50	$ 89,900,000	Assume widening by 12' each side and new 12' shoulders (3.5 miles Total Length) Repalce Nitro Bridge (1425 feet long, 120 feet wide) [12 Shldr 36 WB 24 median 36 EB 12 Shldr]
	Coordinate with Kanawha Regional Transit to develop regular bus service between downtown Hurricane and Liberty Square for shopping and appointments (p. 22)	6.07	N/A	
	Interviews with parents indicate that travel to school has shifted to single automobile trips from bus travel because of the inordinate length of time needed for travel by bus. Study existing school routing plans for inefficiencies in service that would hinder the transportation network. Consider adjustments in routing that would improve travel time for students and make bus service more attractive than automobile travel.	N/A	N/A	
	Investigate the use of a counterflow lane along WV 34 in which traffic may travel in either direction, depending on certain conditions. Typically, it is meant to improve traffic flow during rush hours, by having overhead traffic lights and lighted street signs notify drivers which lanes are open or closed to driving or turning	N/A	N/A	
	Upgrade and widen Mt. Vernon Road to a full two-lane local collector classification (p. 24)	1.77	$ 4,501,000	Assume reconstruction with widening by 2' each side (to 24 feet) and new 4' shoulders (1.8 miles Total Length)
	Upgrade and widen Sleepy Hollow Road to a full two-lane local collector classification (p. 24)	1.98	$ 4,981,000	Assume reconstruction with widening by 4' each side (to 24 feet) and new 4' shoulders (2 miles Total Length)
	Construct a planted median with left turn stalls from Mt. Vernon Road to Interstate 64. Conflicting turning movements exist between Great Teays Boulevard and I-64 that could be addressed through specific stacking lanes along the corridor	0.45	$ 507,300	2,400 feet rebuild and landscaping
	Teays Valley Road (WV 34), Great Teays Blvd to Putnam County Library: Install 5' ADA-compliant sidewalk where missing on WV 34 (approximately 3,300 feet) (p. 24)	N/A	$ 415,700	Driveway crossings and ROW
	Great Teays Blvd, WV 34 to Teays Valley Road (CR 33): Install 5' ADA-compliant sidewalk the entire length of Great Teays Boulevard, install streetscape amenities and traffic calming devices (p. 24)	0.24	$ 215,600	Driveway crossings and ROW, 1,270 feet
	Construct a planted median forthe full length of the project corridor (approx 0.40 miles) with left turn stacking bays at Old Hurricane Creek Road and the McDonalds/Super Eight intersection. The entrance to the hotel property should be realigned northward to meet the access road for McDonalds and the Putnam County Bank	0.33	$ 394,600	1800 feet, 35% paved

Project ID	Implementation Project	Length (mi)	FY 2011-2012 Estimated Cost	Description
	Mid Range Continued (6-10 years)			
	Virginia Avenue: Develop sidewalks between US 60 and Cardinal Lane (approximately 3,875 feet) (p. 27)	0.70	$ 271,700	Sidwalks on one side
	Develop a roundabout at Great Teays Boulevard and CR 33	N/A	$ 567,000	No Right-of Way
	Realign Friendship Lane to create an intersection with Rolling Meadows Road (p. 29)	N/A	$ 134,900	Roadway for connection - 150 feet long x 40 feet wide, average fill depth of 2 feet, curb both sides. Extend Culvert and grade so guard rail is not needed
	Construct an exclusive southbound right-turn lane on WV 817 at the Teays Valley Road intersection (p. 29)	N/A	$ 230,000	500 feet long half flat, half heavy grading
	Improve the intersection with Maplewood Estates, aligning entrance with Erskine Lane and better delineating and consolidating the entrance to Maplewood Estates neighborhood (p. 29)	N/A	$ 568,700	Relocate 200 feet of Maplewood Drive 32 feet wide (4-24-4) with New Bridge (30 x 32)
	Construct a median in the existing continuous center left-turn lane from Rolling Meadows to Belle Acres (approx 0.40 miles)	0.30	$ 494,000	Assume 2200 feet, half landscape, half lane
	South Poplar Fork Rd, Teays Valley Rd (CR 33) to CSX Railroad: Install a 8' shared use path on one side of the roadway. (p. 29)	0.62	$ 1,320,800	Driveway crossings, grading and Drainage and ROW
	South Poplar Fork Rd, Teays Valley Rd (CR 33) to CSX Railroad: Widen shoulders to provide 4' to 6' shoulders for bicyclists. (p. 29)	0.62	$ 542,900	No Right-of Way
	Long Range (11-20 years)			
	Develop a connector road from the southern terminus of CR 19 to US 60 to provide a more direct route for traffic flowing from I-64 to US 60 and to reduce safety conflicts and congestion around Hurricane Middle School.	1.55	$ 8,263,000	One Mile road on new location, including Rail Crossing [8-12-12-8=40 feet wide]
	Southern Trail: Develop a new bicycle trail south of the CSX right-of-way connecting Hurricane Creek Road and Teays Lane	3.92	$ 11,004,000	3.5 Mile bikeway on new location, 10 feet wide, average cut/fill 2 feet over length
	Widen Teays Valley Road (CR 33) to three lanes between WV 34 and US 35 in areas where two lanes currently exist (p. 29)	1.79	$ 2,300,000	1.5 miles need to have a third lane added, assume 14 feet pavement and 4' shoulders in area
	Provide an improved north-south connection between I-64 and US 60 by widening and straightening South Poplar Fork Road and making other necessary safety improvement as needed	4.79	$ 17,358,000	4.8 miles Total Length Assume reconstruction with widening by 2' each side (to 24 feet) and new 4' shoulders for 3.8 miles Assume new alignement [4-12-12-4=32 feet] for 1 mile
	Teays Valley Road (CR 33), Great Teays Blvd to US 35: Develop a striped bicycle lane along Teays Valley Road (CR 33) as well as an 8' multi-use path in conjunction with its widening to three lanes between WV 34 and US 35. (p. 29)	1.86	$ 7,300,000	Adding 22' + 2-4' shoulders for 1.5 miles - Adding 8' + 2-4' shoulders for 0.4 miles -- Adding 10' Bikeway for 1.9 miles - 10' strip ROW acquisitons