Meeting Agenda
Jefferson County Planning Commission
Tuesday, February 11, 2025 at 7:00 PM

By order of the President of the Jefferson County Planning Commission,
Public Participation is available in-person only.
The meeting will be broadcast live via ZOOM for viewing purposes only.

In-Person Meeting Location: Jefferson High School Auditorium
4141 Flowing Springs Rd, Shenandoah Junction, WV 25442

ZOOM Broadcast Information*: Meeting ID: 823 0656 8630
Meeting Link: https://us02web.zoom.us/j/82306568630

**If watching live broadcast, please ensure your microphone is muted and be mindful that your video is streaming to others.*

1. **Approval of Meeting Minutes:** January 14, 2025 meeting

2. **Request for postponement**

The following items are open for public comment

3. **Public Workshop:** Mountain Pure Concept Plan for a Major Site Development. The proposal consists of the following: Phase 1: a 304,000 square foot bottling facility with associated parking on a proposed 30-acre parcel; and, Phase 2: a 696,000 square foot bottling facility with associated parking on a proposed 66-acre parcel. The proposal will include the required stormwater management facilities. Property Owners: Sidewinder Enterprises, LLC; 1 Grace St, Kearneysville, WV; Parcel ID: 07002200090000; Size: ~260 acres; Zoning District: Industrial Commercial; Parcel ID: 07002200320000; Size 13.22 acres; Zoning District: Rural (supply well). Property Owner: RLMHP LLC & Photoglou Living Trust; Easement Owner: Sidewinder Enterprises, LLC; Parcel ID: 07002200330009; Size: 8.31 acres; Zoning District: Rural (waterline easement) (File #24-6-SP).

There is no public comment for the following items.

4. **Reports from Legal Counsel**
5. **President's Report**
6. **Actionable Correspondence**
7. **Non-Actionable Correspondence**

DRAFT Meeting Minutes
Jefferson County Planning Commission
January 14, 2025

The Jefferson County Planning Commission met on January 14, 2025, at 7:00 pm with the following Planning Commission members present: Mike Shepp, President; Aaron Howell, Vice President; Wade Louthan, Secretary; Cara Keys, County Commission Liaison; Tim Smith; and Donnie Fisher were present in person.

J Ware was absent without notice.

Staff members present included Luke Seigfried, County Planner; and Colin Uhry, Planning & Zoning Clerk.

Mr. Shepp called the meeting to order at 7:00 pm and confirmed a quorum was present.

1. **Election of Officers**

   Mr. Howell moved to nominate Mr. Shepp as President, Mr. Louthan seconded the motion, which carried unanimously.

   Mr. Shepp moved to nominate Mr. Howell as Vice President, Mr. Louthan seconded the motion, which carried unanimously.

   Mr. Shepp moved to nominate Mr. Louthan as Secretary, Mr. Fisher seconded the motion, which carried unanimously.

2. **Approval of Meeting Minutes:** November 12, 2024 Meetings

   Mr. Shepp noted one edit to be made and stated the minutes stand approved as presented with the edits to be made.

3. **Request for postponement**

   Mr. Seigfried noted to the Planning Commission that Agenda Item 4 requested postponement to the February 25, 2025 Planning Commission Meeting.

The following items are open for public comment.

4. **Public Hearing for the Birdhill Meadows Preliminary Plat.** The proposal consists of the following: Construction of 104 Single-Family Detached Homes, Construction of 76 Townhomes, and Construction 39 Villas. The proposed site improvements will include stormwater management facilities, roadway infrastructure, and public utilities. Property Owner: Jefferson Orchards, Inc. Property Location: Vacant parcel located .35 miles northeast of the intersection of Charles Town Road and Kearneysville Pike, Kearneysville, WV. Parcel ID: 07000300290000; Size: 194.72 acres; Zoning District: Residential Growth (File #24-12-SD).

   This item was postponed until February 25, 2025 under Agenda Item 3.

5. **Public Hearing:** Waiver from Section 20.201A to reduce the required access easement width from 50’ to 30’ for a proposed minor subdivision; and, to allow more than five (5) lots to utilize said access easement. Property Owners: Cavalier Investments, LLC / Attn: Trish Sanderson. Property Location: Vacant lot at the end of Morning Star Drive, Harpers Ferry WV. Parcel ID: 04001500150000; Size: 16.48 acres; Zoning District: Rural (File # 25-1-PCW).

Mr. Seigfried provided an overview of the staff report.

Ms. Trish Sanderson, property owner, was present in person. Ms. Sanderson explained the nature of the request.

Mr. Shepp opened the floor for public comment.

The following members were signed up for public comment:

Jonathan Markowitz, Floyd Nick, Mary Nick.

Mr. Shepp closed the floor for public comment.

Ms. Sanderson provided comments to the feedback brought forward during public comments.

The Planning Commission questioned visibility along Morning Star Drive and potential proffers Ms. Sanderson could distribute to the community. Mr. Smith questioned whether or not the easement could be surveyed. Mr. Fisher questioned if Ms. Sanderson is willing to make improvements to the easement, and noted the neighborhood should be open to a road agreement, Mr. Smith agrees with this note. Ms. Keys noted the subdivision would lead to the creation of similarly sized lots. Ms. Sanderson responded to the questions posed by the Planning Commission.

Mr. Seigfried provided the Planning Commission with staff's recommendation and possible conditions of approval.

Mr. Howell motioned to deny the request as presented. No member of the Planning Commission seconded, the motion died.

Mr. Fisher noted the application presented an opportunity for a better road. Mr. Cochran noted that neither Planning Commission or staff enforce a proposed road agreement between residents. Mr. Seigfried reiterated staff's possible conditions of approval. Mr. Smith agreed with staff's recommendation of not applying the waiver to splitting up the lot development. Ms. Keys requested the applicant conducts a survey of Morning Star Drive.

Mr. Howell motioned to deny the request as presented and requested the applicant returns to the Planning Commission with more information and a survey of Morning Star Drive. Ms. Keys seconded the motion, which carried unanimously.

6. **Public Hearing:** Waiver from Appendix B, Section 10.6 and Section 2.2.K to remove the requirement of a sidewalk along West Burr Boulevard and James Burr Boulevard. Property Owner: Jefferson Rentals, LLC. Property Location: James Burr Technology Center, Lot 2A, vacant lot on the SW corner of West Burr Blvd. and James Burr Blvd., Kearneysville, WV. Parcel ID: 02000100160017; Size: 3.44 acres; Zoning District: Industrial Commercial (File # 25-2-PCW).

Mr. Seigfried provided an overview of the staff report.

Mr. Lane Tobin was present in person. Mr. Tobin explained the nature of the request.

The Planning Commission had no clarifying questions.

Mr. Shepp opened the floor to public comment.

The following members were signed up for public comment:

Christine Wimer.

Mr. Shepp closed the floor for public comment.

Mr. Seigfried provided the Planning Commission with staff's recommendation and placed emphasis on the Comprehensive Plan's priority on interconnectivity.

Ms. Keys questioned whether or not members of the public walk in the area and whether or not sidewalks would lead to more doing so. Mr. Smith noted he runs a business in Burr Business Park and does not see people walking outside often.

Mr. Tobin noted that for a previous project, the Planning Commission did not require an access easement on their property, Mr. Shepp noted the oversight and potential reasons why it may not have been required at the particular site.

Mr. Louthan motioned to grant the waiver with the conditions that the applicant follow staff's recommendations and install a 10 feet sidewalk easement along the property. Mr. Fisher seconded the motion, which carried unanimously.

There is no public comment for the following items.

7. **Discussion and Possible Action:** Related to the Comprehensive Plan Update. Report on County Commission's current status in reviewing the recommended Comprehensive Plan.

   Mr. Seigfried explained the current progress County Commission has regarding the edits of the Comprehensive Plan and when the updates will be discussed with the Planning Commission.

   All discussions regarding the recommended changes made by County Commission will be made at the February 25, 2025 Planning Commission meeting.

8. **Discussion and Possible Action:** Related to Conditions of Approval as they pertain to projects processing under the Subdivision Regulations.

   Mr. Shepp motioned to bring the meeting into executive session, which began at 8:25 pm.

   Mr. Shepp motioned to bring the meeting out of executive sessions, which resumed at 8:53 pm.

   Mr. Shepp provided clarification to staff regarding the Completeness Determination policy memorandum adopted by the Planning Commission on June 13, 2023. Mr. Seigfried asked additional questions regarding completeness reviews. Planning Commission directed staff that prior to a Concept Plans, Major Site Plans, and Preliminary Plats being deemed complete, staff must have the required permits in hand. Permits required from the Department of Highways, Health Department, and the Department of Environmental Protection, were specifically mentioned as requirements of submission prior to a complete application being brought before to the Planning Commission.

9. **Reports from Legal Counsel**

   No reports given.

10. **Planner's Memo**

    Mr. Seigfried requested direction regarding public comments made towards File #24-6-SP for the cancelled December 17, 2024 Planning Commission meeting. Mr. Shepp requested a tentative policy regarding projects with high levels of public comments and allowing for Planning Commissioners to gain extra time to review them. Ms. Keys questioned whether or not Commissioners were allowed to

bring laptops to view public comments, opposed to printing off many pages. Mr. Uhry explained to the Planning Commission the process that goes into creating a Planning Commission packet and how that is related to deadlines and printout policies with files that garner many public comments.

Mr. Seigfried questioned Planning Commissioners with which future training topics they would be interested in. Mr. Shepp, Mr. Smith, Mr. Fisher, and Ms. Keys noted their interests in discretionary and ministerial action, GIS, and Robert's Rules of order.

11. President's Report

None.

12. Actionable Correspondence

None.

13. Non-Actionable Correspondence

None.

Mr. Seigfried noted the next Planning Commission meeting will be held on February 11, 2025 in the Jefferson High School auditorium.

Mr. Smith motioned to adjourn the meeting at 9:38 pm. Mr. Fisher seconded the motion, which carried unanimously.

These minutes were prepared by Colin Uhry, Planning & Zoning Clerk.

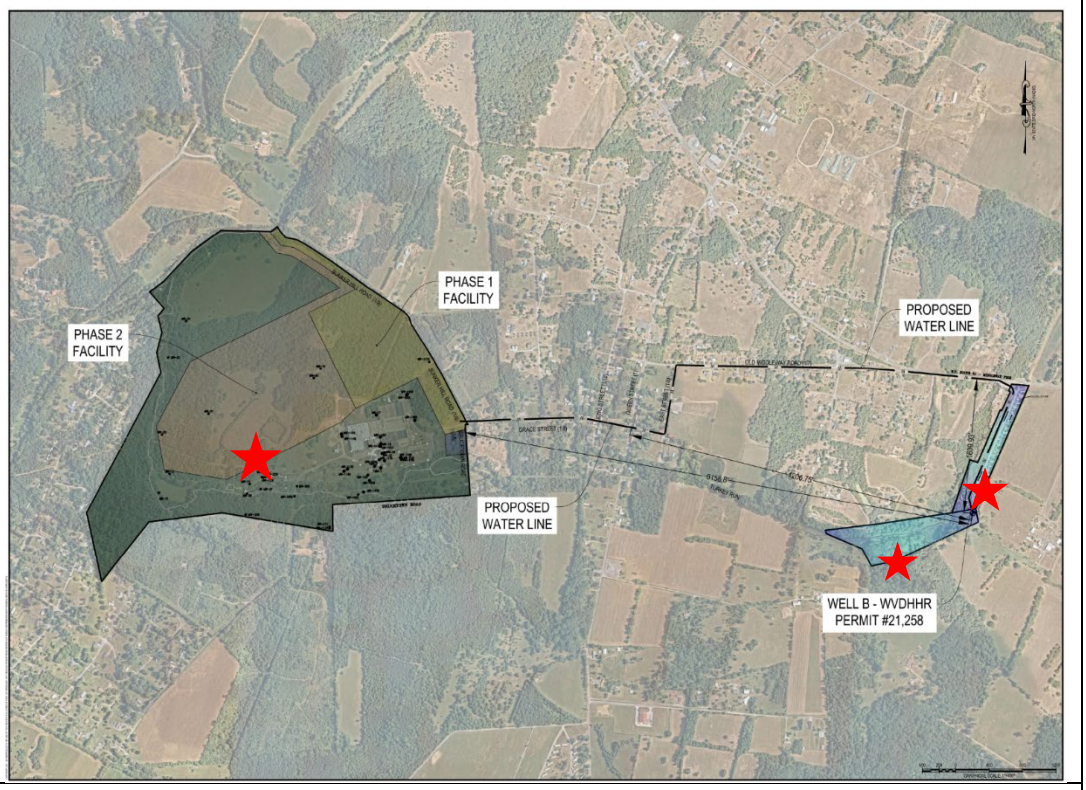
Staff Report

Jefferson County Planning Commission

February 11, 2025

Sidewinder Enterprises, LLC Revised Concept Plan Public Workshop (PC File: 24-6-SP)

Item # 3: Revised Concept Plan Public Workshop: The proposal consists of constructing two water-bottling facilities in two phases with a total of 1,000,000 square foot in new building area. The project will include internal access roads with two commercial entrances, a water treatment facility for use by a local utility company, and stormwater management.

Owners/Applicant:	Sidewinder Enterprises, LLC
Consultant:	Brooke Perry, Integrity Federal Services
Property Location & Legal Description	1 Grace Street, Kearneysville, WV; Parcel IDs: 07002200090000; 07002200340000; and 07002200330009; Size: ~260 acres; 13.25 acres; and 8.31 acres; Zoning District: Industrial-Commercial and Rural 
Adjacent Zoning:	*North, South, East, & West:* Rural
Proposed Activity:	Water Bottling Factory
History:	08/08/2023 – Planning Commission Waiver for 4-lot Subdivision Approved The site of the previous the 3M Plant (opened in 1961 and closed in 2005) and Eastman Kodak Co (2005 - 2006) S91-01 3M Plat Addition Site Plan S91-09 3M Plant Boiler Room Addition S95-11 3M Plant Oil Containment 2015 Commercial Liability Partners worked with the WV DEP on a voluntary remediation program to prepare for resale for industrial uses
Concept Plan Status:	Submitted: 09/27/2024 Sufficiency Letter, with minor comments: 10/01/2024 Planning Commission Determined Concept Plan Incomplete: 11/12/2024

Staff Report
Jefferson County Planning Commission
February 11, 2025

Sidewinder Enterprises, LLC Revised Concept Plan Public Workshop (PC File: 24-6-SP)

	Public Workshop Rescheduled:	12/16/2014

Introduction and Summary of Request

The Concept Plan for Sidewinder Enterprises, LLC consists of the following:

- The phased development of two Bottling Facility buildings on two separate parcels with a total of 1,000,000 square foot in building area
  - 304,000 square foot for proposed phase 1 Bottling Facility
  - 696,000 square foot for proposed phase 2 Bottling Facility
- A non-residential minor subdivision to create four parcels
  - Two parcels for two bottling facilities
  - One parcel for the existing facility (former 3M Plant)
  - One parcel for water treatment facility
- 569 paved parking spaces
- Two proposed access easements
- Stormwater management facilities

Zoning Information

The two heavy manufacturing and distribution structures totaling up to 1 million square feet proposed to be located on the site of the former 3M/Kodak Plant are permitted on Parcel 07002200090000 which is zoned Industrial Commercial and has historically been used for industrial/manufacturing uses.

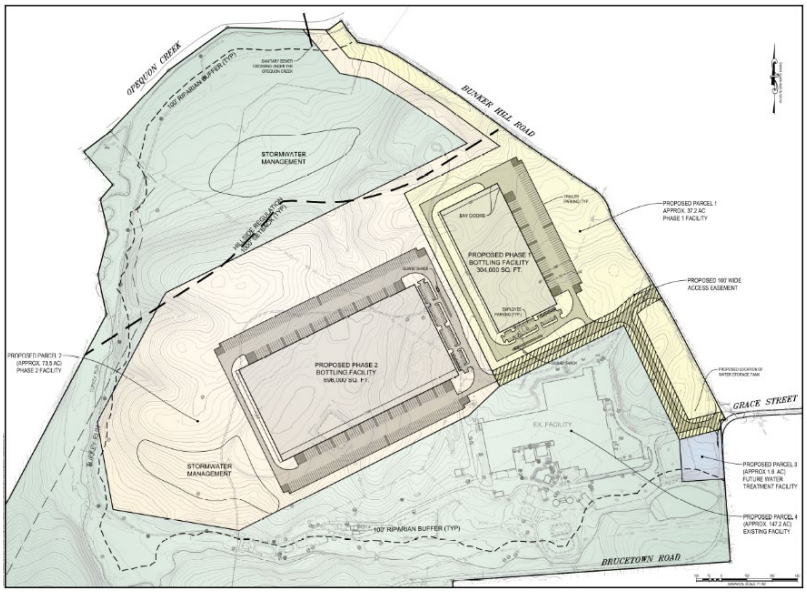
1. The proposed groundwater wells in the Rural Zoning District are permitted in accordance with the following excerpts from the Jefferson County Subdivision and Land Development Regulations and WV Code 8A:
   - Per Division 20.200 of the Jefferson County Subdivision and Land Development Regulations states that "developments for the purpose of extraction or harvesting of resources and for roads on agricultural land for the purpose of conducting the agricultural operation" are excluded from processing under the Subdivision Regulations.
   - Per WV Code Section 8A-7-10 "Effect of Enacted Zoning Ordinance" states the following:
     - (d) If a use of a property that does not conform to the zoning ordinance has ceased and the property has been vacant for one-year, abandonment will be presumed unless the owner of the property can show that the property has not been abandoned: *Provided*, That neither the absence of natural resources extraction or harvesting nor the absence of any particular agricultural, industrial or manufacturing process may be construed as abandonment of the use. If the property is shown to be abandoned, then any future use of the land, buildings or structures shall conform with the provisions of the zoning ordinance regulating the use where the land, buildings or structures are located, unless the property is a duly designated historic landmark, historic site or historic district.
     - (e) Nothing in this chapter authorizes an ordinance, rule or regulation preventing or limiting, outside of municipalities or urban areas, the complete use (i) of natural resources by the owner; or (ii) of a tract or contiguous tracts of land of any size for a farm or agricultural operation as defined in §19-19-2 by the owner. For purposes of this article, agritourism includes, but is not limited to, the definition set forth in §19-36-2.

Staff Report
Jefferson County Planning Commission
February 11, 2025
Sidewinder Enterprises, LLC Revised Concept Plan Public Workshop (PC File: 24-6-SP)

Site Plan Category

Section 20.204 Subdivision Regulations identifies a project as a *Major Site Development* if the proposal "require the development of new infrastructure or the extension of off-tract infrastructure or where the proposal does not meet the definition of a minor site development." A major site development shall adhere to Full Site Plan requirements in all proposals.

Therefore, a Major Site Plan, with a Concept Plan, will need to meet all the requirements of the Subdivision regulations. The first step in processing this Site Plan is this Concept Plan and the required Public Workshop. The graphic above depicts the proposed project.



Staff Determination of Application Sufficiency and Concept Plan Completeness Review

In accordance with the current Subdivision Regulations, the Major Site Plan Concept Plan process incorporates a sufficiency and completeness review in a single step. Upon submission and review of the applicant's Concept Plan, Staff found the submitted plan "sufficient" (i.e. meeting all requirements of Section 24.119 of the Jefferson County Subdivision and Land Use Regulations). These requirements, as well as the current review status for each requirement for the proposed Mountain Pure project, are provided below:

	Description	Status
1. General Location	A map or aerial photograph showing an area of 500 feet around the property. Zoning boundaries shall be located on this document.	Provided on the Concept Plan
2. Concept Plan	In accordance with the content and formatting guidelines provided in Appendix A, *Plan & Plat Standards*.	Provided
3. Zoning Information	a) Zoning District in which the proposed development is located. b) Density calculations. c) Site resource map d) Use designation for all adjoin and confronting parcels	Provided
4. Proposal Description	A written description of the proposal with general identification of the number of dwelling units or floor area proposed, commentary, zoning, and development option selected if the development is residential.	Provided on the Concept Plan

5. Traffic Impact Data	a) Average Daily Trip (ADT) figures for the adjoining or accessible State road. b) Trip generation figures c) Nearest key intersection that will serve the proposed project as classified by the current Comprehensive Plan. d) "Highway Problem Areas" according to the current Comprehensive Plan that falls within a one-mile radius of the project.	ADT is 29 for Bunker Hill Rd; 812 for Grace St; and 3,055 for Leetown Rd; Trip Generation: Average Daily Trips est. to be 770 trips; 610 employee trips, 160 trucks trips Key intersection: Leetown Rd and Middleway Pk; Highway Problem Area #36
6. Traffic Study	A traffic study may be required only at the request and direction of the West Virginia Division of Highways. Any required traffic study or a letter from the West Virginia Division of Highways outlining the proposed improvements shall be received with the first submission of the Site Plan.	WV DOH has responded that the 3M Site Redevelopment Traffic Impact Study (5/1/23) is sufficient.
7. Agency Reviews	The applicant shall distribute the concept plan to all reviewing agencies found in Section 23.203 and 23.204 no later than 7 days after the review.	Letters to required agencies provided. Responses received are below.
D. Department	The Department review shall include the following: 1. Whether the density, use, and plan meet the requirements of the Zoning Ordinance and any other zoning issues that can be identified at the Concept Plan submission and any zoning issues the developer shall address in a Site Plan submittal. 2. Staff opinion as to whether the plan meets the Site Plan criteria of these Regulations. The Department shall review the Concept Plan for modifications that would improve the plan.	Staff determined that the proposed Concept Plan meets the requirements of the Zoning Ordinance and the Subdivision Regulations as a Major Site Development with a Concept Plan.
E./F. WVDOH	WVDOH shall submit a letter to the Office of Planning and Zoning indicating issues and data requirements or notice that there are no issues or data requirements. If WVDOH determines that a traffic study is needed, parameters shall be provided. The review shall indicate whether a traffic impact study will be required based on analysis required in Section 24.119.B.5.	WV DOH has determined that a Traffic Impact Study for this specific project is not necessary as it was previously considered in the 3M Site Redevelopment TIS (5/1/23)
G. Public Service	The review shall indicate whether there are existing water and sewer systems in place that can handle the development. If not, the review shall indicate the type or extent of a system that shall be proposed by the developer to best meet the County's needs in that area of the County.	This project is proposed to be served public water and sewer by Berkeley County Public Service Water and Sewer Districts.
H. Recommended Conditions	All reviews shall contain recommended conditions for moving forward to a site plan or reasons why the plan should be denied.	See below

Concept Plan Review

1. External Agency Reviews (attached)

   Comments have been received from the following agencies (see attached):

   a. The applicant has provided "Intent to Serve" letter from Berkeley County Public Service Sewer District stating that domestic sewer service will be provided (but not for process water).
   b. The applicant has provided "Intent to Serve" letter from Berkeley County Public Service Water District stating that a mainline extension is required and that water service up to 10,000 gallons per day can be provided.
   c. Historic Landmarks Commission provided a letter objecting to the proposed project based on the anticipated negative impact on historic Middleway caused by the increased truck traffic required by the proposed project and impact of installing a water pipeline through Middleway.

   As of this date, no other agency review comments have been received.

2. Input received by staff from External Agencies

   Charles Town Utility Board (CTUB) has confirmed that it holds the permit from the Division of Highways to allow the proposed pipeline to connect parcel 34 to parcel 9 through the DOH right-of-way. CTUB has agreed to provide the water to the project and will take over the water treatment plant proposed to be located on Parcel 3 at a later date.

   The WV Department of Health (DH) has confirmed that the applicant has an active water well construction permit and part of the permitting process required a water well pump test to determine if withdrawal will impact other local wells. Any withdrawals above the approved pump test rate would require a new well pump test.

   The Division of Highways has approved the Traffic Impact Study for the redevelopment of the site.

3. Staff Recommendation related to Concept Plan

   The Subdivision Regulations state that unless there are reviews indicating that the development cannot conform to the Zoning Ordinance, be serviced by public services, or provide its own utilities, or other factors that make the development impossible, Planning staff is required to accept or deny the concept plan as complete. Upon accepting the application as complete, Planning staff is required to place it on the next possible Planning Commission agenda as a public workshop, which is advertised at least fourteen (14) days in advance of the meeting and posted on the property.

   Planning staff had found that the Concept Plan for the proposed Mountain Pure phased development plan to be "Complete" based on the information provided prior to the November 12th Public Workshop. Following the Public Workshop, Planning Commission found the Concept Plan to be "Incomplete", as it did not provide information on all parcels affiliated with the project. Additional information was submitted by the applicant on November 15th and staff determined it addressed what Planning Commission deemed would be necessary for the Concept Plan to be "Complete". This information included parcel information of two additional parcels included in the project and the proposed pipeline that would provide the process water to the proposed facilities. Additional information was provided including a reduction in the trip generation data based on the TIS, additional proffers, and data on the supply well.

On December 16th, the Special Meeting planned for December 17th to hold the Public Workshop was rescheduled by court order to be held on the regular Planning Commission meeting on February 11th.

The Office of Planning and Zoning Staff finds the Concept Plan for the proposed Mountain Pure phased development plan, located along Brucetown Rd and Bunker Hill Rd at the intersection with Grace Street, to be "complete" based on the information provided related to the criteria above; however, the following standards will need to be addressed prior to approval of the Site Plan, which is expected to be submitted in phases:

a. WV DOH approval for the proposed entrances, and any Traffic Impact Study recommendations, if required, will be required in conjunction with the Site Plan.

b. Water and sewer utility permits from Berkeley County Public Service Water and Sewer Districts will be required in conjunction with the Site Plan.

Prior to Site Plan approval, any state permits related to wells and groundwater extraction will be required to be submitted to the County for our files.

4. Planning Commission Direction

The Concept Plan Public Workshop allows for the Planning Commission and the general public to comment on the proposed plan before complete engineering design and cost are incurred. The Subdivision and Land Development Regulations outline the procedure:

1. The applicant makes a short presentation.
2. Staff explains outside agency comments and whether the plan can meet the standards of the Zoning Ordinance.
3. Public comment is solicited.

Following the applicant's presentation, staff's explanation, and the solicitation of public comment, the Planning Commission shall provide direction to the applicant as required under Concept Plan Direction outlined in the Subdivision Regulations. The Planning Commission has the option of providing this direction at the same meeting during which the Concept Plan public workshop takes place, or at a subsequent meeting that occurs within 14 days of the meeting at which the Concept Plan public workshop is closed.

Section 24.121 of the Subdivision and Land Development Regulations outlines the direction to be provided to the applicant during a Minor Site Plan Concept Plan review:

> "The Planning Commission shall direct the preparation of a Site Plan subject to conditions to be addressed in the site plan application. The purpose of this review is to guide the developer so that when the site plan application is formally reviewed by the staff, there should not be a whole range of issues being raised for the first time. The developer shall cite conditions and demonstrate that they have been met or otherwise addressed."

It should be noted that the direction provided to the applicant in the Major Site Plan Concept Plan Public Workshop shall be applicable for a period of two years, with the provision that any amendments to the Subdivision and Land Development Regulations or the Zoning and Land Development Ordinance in the second year shall be applicable.

ATTACHMENTS:

- Jefferson County Historic Landmarks Commission Findings (01-24-25)
- Berkeley County Public Service Sewer District (08-18-21)
- Berkeley County Public Service Water District (05-28-24)
- Traffic Impact Study (05-01-23)

November 5, 2024

To: Jefferson County Planning Commission Members

	Integrity Federal Services
Project Name:	Mountain Pure
Project/Phase:	3138-0102 – Concept Plan

The Jefferson County Historic Landmarks Commission (JCHLC) reviewed the concept plan for the Mountain Pure project and objects based on the traffic impact study alone. Increased truck traffic in the village of Middleway, which is listed on the National Register of Historic Places as a Historic District, would destroy the village's charm. As an advocate for the preservation of the village's unique character, I believe allowing heavy truck traffic through its historic streets not only threatens the integrity of the village's architectural heritage but also poses a serious risk to the safety and well-being of the community.

Middleway dates to the 18th and 19th centuries, and is home to many significant historical structures, each carefully preserved to reflect the rich cultural legacy of the area. The narrow streets and historic buildings are integral to the village's charm and historical value both for residents and visitors. Heavy truck traffic will lead to further erosion of the historic infrastructure. The vibrations and heavy loads risk damaging delicate structures and eroding the village's historic fabric in ways that may be irreversible.

In addition to the physical damage to our heritage, the presence of large trucks disrupts the pedestrian-friendly atmosphere that defines the village. The increased noise, air-pollution, and safety hazards associated with such traffic would affect the quality of life for residents. The streets were never designed to accommodate such traffic volumes and access by large trucks presents a threat to public safety and the integrity of the village's heritage

In conclusion, JCHLC objects to this plan based on the traffic impacts on the village of Middleway. JCHLC urges the JC Planning Commission to require an alternate route that bypasses the historic core of the village.

Thank you for your attention to this matter,

Martin Burke

Martin Burke
Chair, JCHLC

cc: Jennie Brockman

January 24, 2025

To: Office of Zoning and Planning/Jefferson County Planning Commission
116 E. Washington Street, 2rd Floor
Charles Town, West Virginia 25414

Project Name: Mountain Pure, 24-6-SP Concept Plan

The purpose of this letter and attached report is to provide the Jefferson County Historic Landmarks Commission's review of the Mountain Pure concept plan (File No: 24-6-SP). As a reviewing agency, the JCHLC has unanimously agreed that the plan should be denied based on the impact it would have on the historic district of Middleway. The Middleway Historic District has been on the National Register of Historic Places for more than forty years and its historic significance and unique character cannot be understated.

The Jefferson County Zoning and Land Development Ordinance, Article 4, Section 4.4.C, states that "Any development which would destroy the historical character of a property listed on the West Virginia or National Register of Historic Places *shall not be permitted*."

The developer proposes to route heavy traffic and a water transport line directly through the historic district. We urge you to deny this and any plan that routes significant truck traffic and/or any connections to the facility through the historic district. The JCHLC feels strongly that this project would destroy the historical character of the village and result in significant immediate and long-term impacts on historic Middleway including a variety of impacts from heavy truck traffic to potentially disturbing or destroying underground archeological resources through the installation of a water transport pipeline. It is the JCHLC's responsibility to protect our county's valuable historic resources and it is within your power to help us ensure their protection by denying this concept plan.

Thank you,

Addison Reese

Jefferson County Historic Landmarks Chair

Reviewing Agency Report
Jefferson County Historic Landmarks Commission
Project Name: Mountain Pure, 24-6-SP Concept Plan

Introduction

This report is provided by the Jefferson County Historic Landmarks Commission (JCHLC) pursuant to the Jefferson County Subdivision and Land Development Regulations (Subdivision Regulations). This report provides an overview of the Subdivision Regulation requirements of the JCHLC in the concept plan process, identifies and briefly characterizes historical resources that may be affected, identifies potential impacts, and provides recommendations based on these findings and the Subdivision Regulations and the Jefferson County Land Development and Zoning Ordinance.

The JCHLC recommends that Concept Plan 24-6-SP be denied based on the prohibitions in the Zoning Ordinance (Section 4.4 Prohibited Uses, C). The plan is also incompatible with Section 3.4 D. 4. a. and Section 1.1, Purpose K.

Requirement for JCHLC Review in the Subdivision Regulations (Authority)

The concept plan review process is delineated in the Subdivision Regulations, at Section 24.119. Subsection 7. describes Agency Reviews, stating in part, "The reviewing agencies shall conduct reviews of the proposed concept plan," and goes on to indicate that the reviewing agencies are listed in Section 23.203 and 23.204.

Section 23.203, Subsection C requires that: "**Jefferson County Historical Landmarks Commission**: This body shall submit a report and findings on whether historical resources exist on the site of the proposed subdivision of site development. If there are, they shall submit findings on whether the proposal meets the requirement of zoning with respect to such structures or places at Concept Plan stage."

Section 24.119. H. of the Subdivision Regulations requires that all reviewing agencies provide recommendations to the Planning Commission. Section 24.119. H. states, "**Recommended Conditions.** All reviews shall contain recommended conditions for moving forward to a site plan or reasons why the plan should be denied."

Therefore, the next two sections include findings on historical resources, whether the proposal meets the requirements of zoning with respect to these historical resources, and make recommendations to deny Concept Plan 24-6-SP.

Findings of Historical Resources

As required by the Jefferson County Subdivision and Land Development Regulations, at **Section 23.203 subsection C,** "Jefferson County Historical Landmarks Commission: This body shall submit a report and findings on whether historical resources exist on the site of the proposed subdivision of site development."

To that end, the JCHLC has considered whether historic resources exist on the site of proposed development in Concept Plan 24-6-SP and how those resources would be impacted by the proposed development. The JCHLC had a special meeting on January 15, 2025 to review the concept plan. The public was invited to comment on this concept plan prior to and during the special meeting. The board received comments from three groups working to promote historic preservation in Jefferson County including the Preservation Alliance of West Virginia, Middleway Conservancy, Jefferson County Foundation, as well as Middleway residents and business owners passionate and active in preserving the historic resources of Middleway and the surrounding area. There were no public comments in favor of the concept plan during the meeting. Commenters presented concerns regarding the possible and likely impacts of the development described in this concept plan. To better understand the implications of this development on historic resources, some members of the JCHLC conducted site visits and performed additional research pertaining to Middleway's history and the proximity of resources to the proposed development.

The development described by this concept plan includes parcels on the east side of Middleway where the groundwater wells are located, traverses through the Middleway Historic District for more than 1800 feet where the water transport pipeline will be constructed and operated, and several parcels on the west side of Middleway to the site where the developer would like to construct and operate a large-scale water extraction and bottling facility. Also, the concept plan indicates that there will be an average of 770 daily trips, including 160 tractor trailers, driving through the historic district of Middleway each day. It is important to note that the concept plan has little detail and there may be other elements of the development beyond those described here that will affect historic resources including but not limited to tall structures such as water towers, lighting, or noise.

Middleway, historically known as Smithfield, is rich in historic resources. After conducting independent research, consulting with other preservation organizations and experts, and receiving public input, the JCHLC found the following resources to be the most seriously endangered by the development described in the concept plan. Although listed separately, these resources are all interconnected as they are either physically part of the Middleway historic district or contribute to and are part of the larger history of the village.

1) **The Middleway Historic District** has been recognized by the United States Federal Government via the inclusion on the National Register of Historic Places in 1980.[1] The National Register Historic Places Inventory Nomination form will be included at the end of this report.

   The Middleway Historic District is significant because it is an exceptional example of a typical, rural, and well-preserved crossroads town from the 18th and 19th centuries—its oldest structure dating back to 1750. As outlined in the National Register of Historic Places Inventory, the historic district contains sixty structures, many of which are log. Additionally, the district is home to treasures like Scollay Hall, which was used as a hospital during the Civil War. The buildings in the district are mostly in good condition, and there has been a recent trend of restoration and renovation of the historic structures. The district's significance lies in its representation of a typical crossroads town from its period, with a mix of residential, commercial, religious, and social structures. It remains distinct from its surroundings due to its concentration of older buildings, making it a time capsule.

   The Middleway Historic District will be impacted by the increase in tractor trailer truck traffic by 160 heavy trucks per day. This will negatively affect both the atmosphere and the historic architectural features (buildings, sidewalks, etc.) of the Middleway Historic District. The development will traverse the Middleway Historic District through or past some of the most important features of the historic district for more than 1800 feet. Earth moving activities, trenching, and maintenance for the installation of the water transport pipe has the potential to damage or destroy historic structures, other architectural features, buried human remains, and archeological resources. The character of the Middleway Historic District may also be impacted by yet unknown elements of the development.

2) **Smithfield Crossing Battlefield** and accompanying soldiers' burial ground on East Street, Middleway. This multi-day, wide-ranging battle took place in and around Middleway at the end of August 1864. Continued development of the property west of Middleway has the potential to damage or destroy archeological resources from the Smithfield Crossing Battle. The Civil War Hospital sits at the southeast corner of Grace and Queen Streets contributes to both the Smithfield Crossing Battlefield and the Middleway Historic District. The 160 tractor trailers will rumble down just a few feet from the building as they pass each day. These trucks loaded with the heavy water from the plant will be applying the brakes as they come down to the stop sign right next to the Civil War Hospital. This truck traffic has the potential to negatively impact the Civil War

[1] Middleway Historic District. National Register of Historic Places Nomination and Inventory for Middleway, WV. Compiled by James E. Harding October 23, 1979. https://wvculture.org/wp-content/uploads/2021/03/Middleway-historic-district.pdf

Hospital both catastrophically through a truck accident and insidiously over time through increased vibration, exhaust, dust, and road treatment chemicals.

3) **Burial Grounds.**
    a. The Soldiers' Burial Ground was a temporary burial field for soldiers who died during the Smithfield Crossing battle (and other nearby battles), or died later as a result of their injuries or disease at the war hospital in Middleway on the north side of the Union Church. James E. Taylor's famous Civil War-era sketchbook depicts the soldiers' burial ground and shows the temporary markers that were erected at the time (see image in Appendix A). In addition to the unmarked soldier burials, there are two other cemeteries along the path of development. The Episcopal Graveyard on the corner of Grace and East Street as well as the Union Cemetery along East Street may also be impacted by the portion of the development that traverses East Street (see photos in Appendix A). There are two marked graves for Civil War soldiers in front of Grace Church but it has been reported that ground penetrating radar (GPR) located three burials in that place. Additionally, 76 other burials were located with GPR across the street at the Union Cemetery (Photos in Appendix A). These burial grounds may be impacted by the portion of the development that traverses East and Grace Streets. There is a high likelihood of additional unlocated/unmarked burials, and human remains, along with grave markers and/or funerary objects could be disturbed or destroyed during the construction of the water transport pipeline or during operation and maintenance of this portion of the development.

The JCHLC would also like to note that this revised concept plan still leaves a great deal of uncertainty. The concept plan includes a Phase 2 component of the project, the details of which are not included in this version of the concept plan. The tenth page of the concept plan shows that Phase 2 is more than double the size of the building suggested in Phase 1, however, no details are given to help us understand the impacts of a second phase of the development. We therefore reserve the right to evaluate the project again and submit additional reports such as this one as further details become available.

Requirements of Zoning

As required by the Jefferson County Subdivision and Land Development Regulations, at **Section 23.203 subsection C,** (Page 48) "If there are (*Historic Resources*), they (*JCHLC*) shall submit findings on whether the proposal meets the requirement of zoning with respect to such structures or places at Concept Plan stage."(Emphasis added for clarity). We therefore performed a review of the Jefferson County Zoning Ordinances. Our review found that this project **does not meet the requirements of the Zoning Ordinances** and is in fact incompatible with them. It therefore should be denied.

It is in **Section 4.4 Prohibited Uses, C** (Zoning Ordinance, page 50) we find the strongest evidence that **Concept Plan 24-6-SP does not meet the requirements** of Jefferson County Zoning Ordinances. It states, "Any development which would destroy the historical character of a property listed on the West Virginia or National Register of Historic Places *shall not be permitted."* (Emphasis added).

According to **Section 3.4 D. 4. a**. (Zoning ordinance page 48), the Middleway Historic District qualifies as a **Category I Historical Site,** as it is listed on the National Registry of Historic Places. **Section 4.4 Prohibited Uses, C** (Zoning Ordinance, page 50) states, "Any development which would destroy the historical character of a property listed on the West Virginia or National Register of Historic Places *shall not be permitted."* (Emphasis added).

The JCHLC finds for the reasons stated below that this development will destroy the historic character of the village of Middleway through the impacts of the increased vehicular traffic, the portion of the development that traverses the historic district (water transport pipeline), and possibly yet unknown elements of the development that may impact the development.

The increased truck traffic by 160 tractor trailers a day (one truck every 9 minutes on average) will be associated with noise, vibrations, dust, exhaust, displacement of road treatment chemicals onto sidewalks and historic structures, safety risks, risk of catastrophic structure damage due to vehicular accident, and visual offense that will clearly and obviously destroy the historic character of the village of Middleway. Immediately the atmosphere that is critical to the historic character of the village will be destroyed. Over time the very structures that make up the historic district will be deteriorated or destroyed.

The construction activities related to the water transport pipeline has the potential to cause damage to historic structures, buried human remains, and other archeological resources related to the historic district, the cemeteries, and the battlefield.

There also may be yet unknown elements of the development that will contribute to or on their own destroy the historical character of the historic village of Middleway. This would include but not be limited to elements that interrupt the view shed such as smokestacks, water storage

towers, light pollution from outdoor lighting, or noise from the development that could be heard from the historic district.

Section 1.1 Purpose K (Zoning ordinance, page 9) lists "**Encourage Historic Preservation**" as one of eleven purposes for which the zoning ordinances were created. In listing this purpose, the zoning ordinances are clearly seeking to protect and preserve the historic resources of Jefferson County that impart a distinctive character to the county. The JCHLC seeks to honor this purpose.

We believe that allowing the proposed development will deteriorate and may sabotage the historic preservation that is currently ongoing and discourage further preservation efforts. The JCHLC notes that a project such as this, where the proposed development dwarfs the current established settlement by many folds, where the construction of and continued operation puts historic resources at risk and forces dramatic changes to the traffic to the detriment of the historic preservation, is the antithesis of the idea of encouraging Historic Preservation. **We therefore find this Concept Plan, 24-6-SP to be incompatible with Zoning Ordinance Section 1.1 Purpose K.**

As the Middleway Historic District is a Category I Historical Site, **Section 4.6, subsection A** (Zoning Ordinance, Page 52) is triggered. This subsection defines that "Industrial uses are subject to this subsection, unless otherwise specified in this Ordinance. Any uses (not including parking) or buildings subject to compliance with this Section shall be located at least 200 feet from: 4. Any parcel, historic structure, or designated historic district which has been listed on the West Virginia or National Register of Historic Places."

Applicant has characterized its land use as an Industrial User in their Concept Plan, thus triggering this subsection. The portion of the development that traverses the Middleway Historic District (water transport pipeline) is a "use" as defined in **Section 4.6, subsection A**. The zoning ordinance is therefore clear. As a listed historic district on the National Register of Historic Places, Middleway must be provided with a 200-foot buffer zone from the proposed development.

The JCHLC finds that the development described by Concept Plan 24-6-SP will destroy the historical character of a property listed on the National Register of Historic Places. For this reason, the development fails to meet the requirement of zoning with respect to historical resources, and according to the Zoning Ordinance this Concept Plan **shall be denied.**

The JCHLC also finds that the development described by Concept Plan 24-6-SP will not adhere to the setback limitations for historic resources and will actively deteriorate current and deter further historic preservation efforts in direct contradiction to the goals of the Zoning Ordinance. In addition, this development will destroy the historical character of the Middleway historic district and adds an additional risk of physically damaging or destroying other historical resources.

Recommended Conditions

As required by S**ection 24.119. H. "Recommended Conditions.** All reviews shall contain recommended conditions for moving forward to a site plan or reasons why the plan should be denied." On January 15, 2025, after comment from the public and discussion among members, the JCHLC unanimously voted to recommend that Concept Plan 24-6-SP be **denied** due to obvious and unavoidable conflict of the site development with the elements of the Zoning Ordinance as described in the above section. We reiterate these reasons below.

Denial of Concept Plan

JCHLC recommends denial of the concept plan as the development will destroy the historic character of the village of Middleway as described in **Section 4.4 C** of the Jefferson County Zoning Ordinance. Furthermore, we find this project to be counterproductive to the **Purpose K in Section 1.1** (Zoning Ordinance, page 9) "**Encourage Historic Preservation**", as this project will put at risk the historic preservation that has occurred in Middleway and threatens continued and future preservation efforts.

Regardless, the 45-day review period provided in the Jefferson County Subdivision and Land Development Regulations Section 24.119 for reviewing agencies such as the JCHLC should restart as the applicant failed to give notice to the board in the time required by the regulation. All conditions listed below should be included in the resubmission. Additionally, JCHLC reserves the right to produce and submit a second report to complement this one during the 45-day review period.

Recommended Conditions

The JCHLC urges you to deny this concept plan for the reasons described above. However, in the event that the Planning Commission decides to accept this Concept Plan despite this strong recommendation and the clear requirement in the Zoning Ordinance, we strongly recommend the following conditions, that are each based in the Zoning Ordinance as cited above, be placed on your direction as permitted in Section 24.121 A and B:

1) **A vehicle bypass that avoids the Middleway Historic District with a 200-foot buffer zone.** Upon our study of the area surrounding Middleway, there appears to be the potential for several such bypasses. As our expertise is in historic preservation and not civil engineering, we make no direct suggestion for a location of a bypass, but encourage the applicant to find several alternative, viable paths that can be examined by the JCHLC at a future date. This bypass must respect the 200-foot buffer rule established by **Section 4.6, subsection A.**

2) **Any waterline to the facility should completely bypass the Middleway Historic District.** The water transport pipeline should be built such that it does not enter the

Middleway Historic District. **Section 4.6, Subsection A** requires that industrial developments cannot be closer than 200 feet to a Historic Resource on the National Register. This is measured from the center of a building or a property. In this case, because we are considering a district composed of many structures, we suggest that the 200-foot buffer zone be made from either the perimeter of the district or each Structure on the outside perimeter of the district.

3) **The development shall not have any other elements that would impact the historical character of the historic district of Middleway.** This would include but not be limited to vertical structures (water storage tanks, smokestacks, etc.) interrupting the viewshed or creating significant noise, or light pollution. Proof of an uninterrupted viewshed would need to be provided to JCHLC in the form of balloon height tests, in which large, brightly colored weather balloons are raised to the height of the tallest structures and observed from multiple locations around the Historic District and from the Structures within the Historic district

4) All efforts should be made to avoid damage to the historic resources already identified as well as underground resources. As such, the JCHLC recommends that the entirety of the village of Middleway, including the Historic District as identified on the National Register of Historic Places, and the area immediately outside the Historic District should be avoided by all construction having to do with the development including for but not limited to water transport pipes or roadways, and by the eventual ongoing operations included in the proposal.

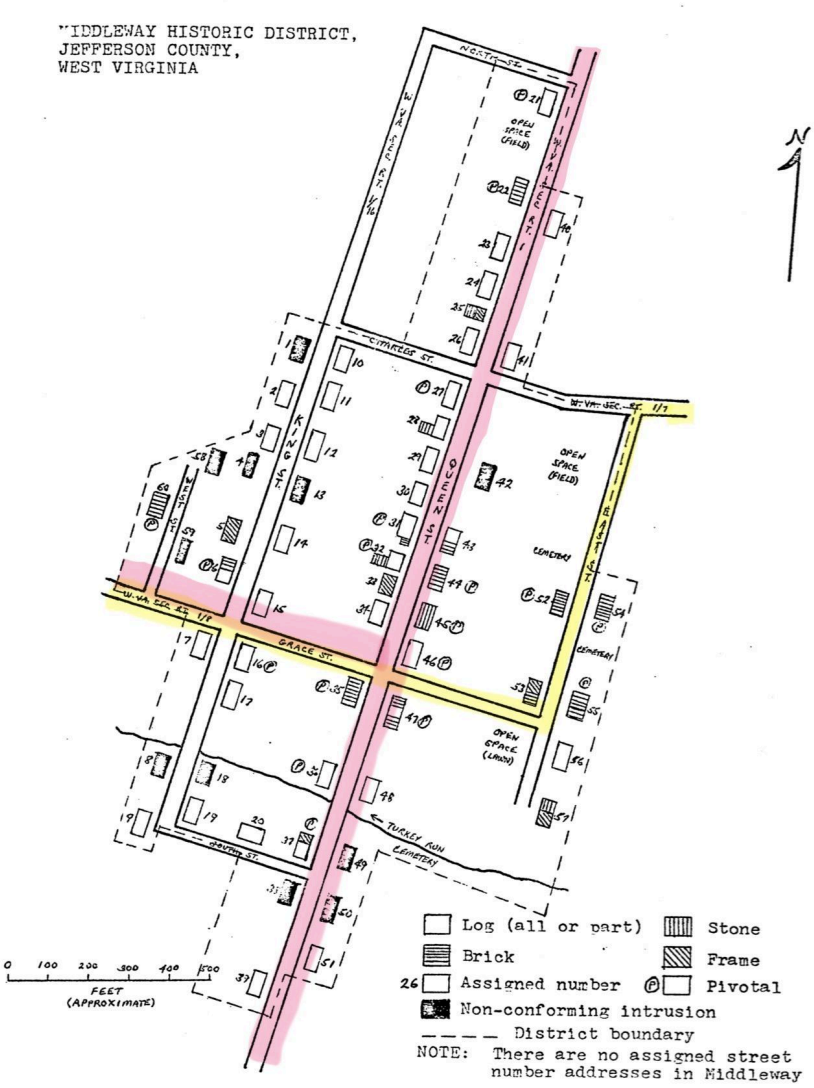
Conclusions

Although it is outside the scope of this report, the JCHLC would like to note that this report is just a brief overview of the historic resources in Middleway along the development path. The approval of this concept plan would destroy the historic character of the historic district of Middleway and would consequently harm their historic tourism hub. The JCHLC strongly encourages Jefferson County agencies and government to prioritize investment in existing resources, both historical and otherwise, and to oppose development projects that seek to fundamentally alter the county's character.

Again, the Jefferson County Historic Landmarks Commission urges the Jefferson County Planning Commission to follow the Jefferson County Zoning Ordinances and Jefferson County Subdivision and Land Development Regulations they were appointed to uphold and deny Concept Plan 24-6-SP.

Appendix A – Historic Resources and Source Documents

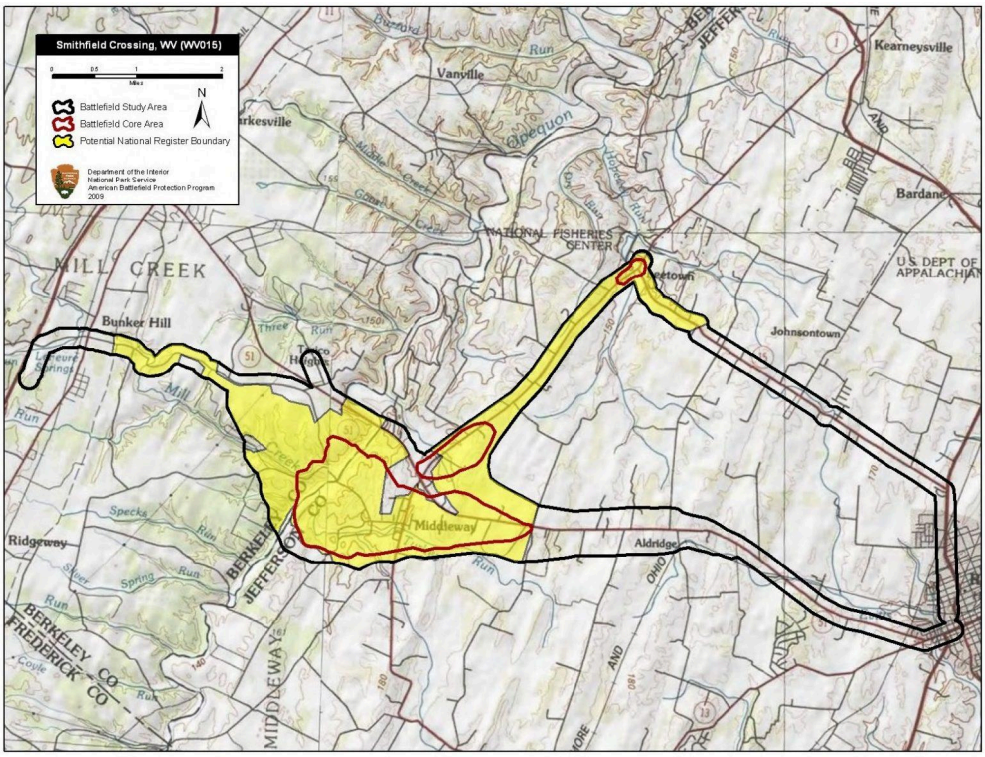
1) **Middleway Historic District -** In 1980, the village of Middleway was accepted for inclusion on the National Register of Historic Places, maintained by the U.S. Department of the Interior. The original application and inventory of resources will be included with this report. Below is an image from the nomination. The yellow highlighted path is Grace and East Street, the path of the proposed water line. The pink highlighted path is Queen Street to Grace Street, the planned throughway for heavy traffic.



Above: Oldest confirmed structure in the historic district (circa 1750). The house has multiple historic names including Sam Stones Tavern, Virginia Inn, and the Bates House. It sits at the corner of Grace and Queen. Photo courtesy of Jessie Norris (Middleway Conservancy).

2) **Smithfield Crossing Battlefield-** The Battle of Smithfield Crossing was fought over several days from August 25,1864 to August 29, 1864. "This broad skirmish extended from Leetown, WV on the north, almost to Bunker Hill, WV on the west, and to Childs Road to the east. The most intense fighting occurred between Opequon Creek and Childs Road with fighting occurring throughout the village of Smithfield, as Middleway was generally known at that time. The battle, which resulted in some 300 casualties, was significant as the beginning of the final act between Confederate General Jubal Early's retreating forces and Union General Philip Sheridan's troops in the final Shenandoah Valley campaign. The outcome of the battle is considered a draw, but allowed Union forces to regain control of the Opequon Creek crossing on Bunker Hill Road after having been driven back towards Charles Town."[2] In August 2014, the Middleway Conservancy held commemorative events, including a battle reenactment, to honor the 150th anniversary of the Battle of Smithfield Crossing. There is great potential for historic tourism development related to this battle.

[2] The Battle of Smithfield. Middleway Conservancy. https://middlewayconservancy.org/battle-of-smithfield



The Battle of Smithfield Crossing: https://alfredgibbs.com/smithfield-va-aug-28-1864/

3) **Cemeteries**

a. **Soldier's Burial Ground-** At the corner of East Street and Grace Street is the site of a former burial ground for soldiers killed in the Battle of Smithfield Crossing and other nearby Battles including the Battle of Antietam. Sollay Hall, which at the time of the Civil War was being used as a hospital, hosted the recuperation of many soldiers. These included participants of the Battle of Smithfield Crossing and other nearby battles including Antietam, among others. Those who passed in battle or died later from injuries or disease were interred in a field. Intended as a temporary burial ground, many men were later claimed by family members and disinterred. However, an unknown number of unmarked graves still exist, some of which may be located near to or under the current road. The Middleway Conservancy has been concerned for many years about the uncertain scale of this graveyard and that it remains unmarked. The construction of the water transport line to service the bottling plant could disturb remaining burials.

Image from Google Earth of the field that was the burial ground for soldiers (Retrieved 1-20-25)

A depiction of the soldiers' burial ground. **Graves of Union Cavalry and Infantry killed in the battle of Smithfield**, Aug. 29, 1864[3]

b. The proposed water pipeline path would go past multiple known burial grounds. The cemetery at Grace Episcopal Church Cemetery (circa 1850) and the Union Church Cemetery (circa 1805). As with many other old graveyards, there are unmarked burials. Some modern fencing had been erected to protect but the cemeteries have generally been unfenced since their inception. The proximity of

[3] Taylor, James E. With Sheridan Up the Shenandoah Valley in 1864: Leaves from a Special Artist's Sketchbook and Diary. Cleveland, OH: Western Reserve Historical Society. 1989. 332.

the proposed water transport line to these graveyards is extremely concerning as there is potential for unmarked burials up to and under the road. Additionally, ground destabilization could cause grave markers to sink or become damaged during the construction and continued operation of the suggested waterline.

Left: Grace Episcopal Cemetery, Right: Union Cemetery. East Street is part of the proposed path for the water transport line.

In *July 2023*, members of Grace Episcopal Church pursued ground penetrating radar at the Union Church to locate burials in an open portion of the graveyard. The final ground penetrating radar report identified 76 unmarked burials.

GPR, July 2023. East Street in background

. Example of a buried grave marker identified through GPR.
Photos courtesy of Grace Episcopal Church.

Above: Page 8 of the water transport pipeline engineering packet.[4] The portion of the proposed water transport pipe depicted in this diagram is drawn on the map below to provide context.

This map shows the burial grounds along the path of the proposed water transport pipeline. The yellow line represents the proposed path.

[4] Middleway Water Bottling Project Design Documents. https://wearetheobserver.com/wp-content/uploads/2025/01/CTUB-FOIA-2025-001-Response-Sidewinder-pipeline-design-2023.pdf

Appendix B – Potential Impacts on Historic Resources From this Development

This appendix highlights the potential impacts from this development foreseen in Concept Plan 24-6-SP.

Trucks and Increased Traffic Volume

The issue brought up by most public commenters, and the one seen as detrimental by JCHLC, is dramatically increased traffic through the historic district of Middleway, WV. Middleway has been faced with increasing amounts of traffic, especially trucks. The community has pushed for years to have a bypass road or additional safety measures put in place. Multiple homeowners have faced vehicles wrecking into their homes, some of which are situated just feet from the modern road.

The concept plan predicts approximately 160 tractor trailer trucks traversing the streets of Middleway daily, or the equivalent of one truck every nine minutes. These trucks will enter Middleway from Route 51 onto Leetown Road. They will continue into Middleway on Queen Street (Leetown Road becomes Queen Street at the eastern border of Middleway and reverts to Leetown Road on the western border) and will take a right onto Grace Street to proceed to the facility.

Images from Google Earth (Retrieved 1/20/25). Note the proximity of historic homes to the road.

The concept plan provides parking for several hundred employees (400 parking spaces), all of whom would be driving to the facility and leaving via Grace Street.

View from Grace Street approaching the stop sign at Queen Street. Image retrieved from Google Earth 1/22/25

View from Grace Street. Image retrieved from Google Earth 1/22/25

Undoubtedly, this increased volume of large vehicle traffic and commuting employees will corrode the historic character of Middleway. More specifically, the JCHLC is concerned about the following vehicle-related issues affecting the Historic District of Middleway.

1) **Vibration –** Large-scale vehicles driving through Middleway have the potential to cause damage to the delicate historic properties that line the streets of Middleway.[5] As previously mentioned, most of the structures in the historic district are situated within several feet of the road, and the fear is that non-stop vibration will cause damage to all parts of these historic structures, including foundations, basements, walls and roofs. Unless a specific study is undertaken, the extent of the potential damage is uncertain. Regardless, JCHLC believes this damage can be avoided by denying the concept plan or requiring a bypass road to avoid the Historic District.

2) **Noise –** Another concern is the noise associated with increased traffic. It has been suggested by independent civil engineers that in order to make the turn on to Grace Street, trucks may need to use their Jake Brake (aka compression release brake or decompression brake). This braking system is known to be extremely noisy and sometimes jarring. Due to the compact nature of the village, the entire historic district would be impacted by the increase in noise–making it less desirable for tourism and potentially unnerving for residents.

3) **Truck Exhaust –** The trucks incoming and outgoing each day to the facility would expel diesel fumes in Middleway. Exhaust has a corrosive effect on durable materials such as the brick buildings and log cabins in Middleway. Due to the close proximity of homes to the road, some trucks could be idling just feet from the front door of a historic home. Additionally, the exposure for residents and visitors is another concern. The smell of exhaust would certainly impact the historical character and would impact the visitor experience, negatively impacting historic tourism.

4) **Traffic Accidents-** The streets of Middleway were laid out centuries ago and designed for foot traffic, horses and carriages. The large trucks that would be required to transport the facility's product are too large to safely traverse the narrow streets of Middleway. Trucks already cross into oncoming traffic when turning onto Grace Street, and residents have reported vehicles driving into yards or walkways and/or striking a building. The number of trucks per hour increases the likelihood that accidents may occur. As the historic structures are located quite close to the road, there is concern that they could be struck. Beyond the primary concern of safety,

[5] Impact of Traffic Vibration on Heritage Structures. International Journal of Advanced Technology in Engineering and Science Volume No.03, Issue No. 03, March 2015
http://www.ijates.com/images/short_pdf/1425546317_P6-15.pdf

these accidents can cost homeowners tens of thousands of dollars and oftentimes things that are damaged are irreplaceable (American chestnut logs, original bricks, etc.). Even if repairs are possible, skilled craftspeople are often difficult to find. The JCHLC is aware of several historic structures in the Middleway Historic District that have already been involved in and damaged by vehicular accidents within the past several years. This increase in traffic also creates concerns for the safety of visitors and residents of Middleway walking through the village.

These photos were submitted to the JCHLC by a Middleway resident whose historic home was struck by a vehicle (2023). Damages totaled more than $60,000

This is an example of mismatched bricks after the structure was hit by a vehicle. (Middleway, WV)

5) **Potential for Fuel Spill-** The tight turning radius onto Grace Street, and the general narrow width of Queen Street and other streets in Middleway, make the potential for road accidents high. JCHLC is concerned that the accompanying potential for fuel spills

6) **Need for Bollards-** The suggestion has been made informally by the applicant that the potential for traffic accidents could be reduced by the installation of bollards in front of historic structures. Bollards throughout the historic district would significantly alter the historic character of the district and further narrow the already narrow streets.

Heavy truck traffic through a historic district would have a significantly negative impact, causing damage to the physical structures due to vibrations and weight, physically striking buildings, disrupting the aesthetic appeal with noise and visual intrusion, and creating safety concerns for pedestrians and residents. Middleway is a hub for heritage tourism, and heavy traffic will negatively impact the ability of visitors (and residents) to appreciate the historic district and the historic structures. Visitors typically park their cars on the side of the street and walk across the narrow streets of the village. This amount of heavy traffic will make it unsafe and undesirable for visitors. Additionally, this heavy traffic will deter people from providing activities and historic-related businesses, as the safety of their patrons would be a concern.

Water Transport Line

Although not included in Concept Plan 24-6-SP, the critical piece of infrastructure for this project is a water pipeline connecting the Applicant's wells on Russell Lane (outside of Middleway), underneath Old Middleway Lane, left onto East Street, and finally right onto Grace Street to arrive at the facility site.

1) **Damage During Construction** - All construction equipment and supplies will be transported to the site through Middleway via Queen Street and Grace Street. The installation of the subterranean pipeline will occur on East Street and Grace Street. The JCHLC fears the historic structures that line these streets to be in danger of damage.

2) **Grave Sites** – Both the **Grace Episcopal Cemetery, Union Church Cemetery,** and **Soldier's Burial Ground** contain an unknown number of graves that lay on or over the surveyed boundaries and may continue under the current road. It is likely that the installation of the water transport line would disrupt unmarked graves, grave markers or other funerary objects. Unless a professional archeologist is on-site, the contents of unmarked burials may be difficult to spot amongst construction rubble.

3) **Water Leakage** – Due to the area's karst topography, sinkholes are a common feature in Middleway and Jefferson County at large. A leak in the water transport line could provoke the development of a sinkhole, potentially causing catastrophic damage to the historic structures along the pipeline's path.

Additional Potential Impacts

As mentioned above, there are many unknowns about the true scope of the project described in Concept Plan 24-6-SP. There is no publicly available information about the design of the facility or the second phase of this project which is expected to be twice the size of the initial phase. These are a few additional potential impacts on the historic district:

1) **Viewshed –** A visual impact assessment is impossible to conduct at this time as there is no publicly available design plan. However, the viewshed of Middleway Historic District could be impacted if the design plan includes things like smoke stacks or water towers. The JCHLC is only a "reviewing agency" during the concept plan stage and not the site plan stage where more information related to these concerns would be available.

2) **Light Pollution** – Outdoor night lighting in the parking lots of the plant portion of the development described by this concept plan will create light pollution in the Middleway Historic District. This would impact the historic character of the Middleway Historic District.

3) **Noise** – The scale of this operation will result in noise coming from the facility. Additional noise could impact the historical character of the district.

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United States Department of the Interior
Heritage Conservation and Recreation Service

National Register of Historic Places Inventory—Nomination Form

See instructions in *How to Complete National Register Forms*
Type all entries—complete applicable sections

For HCRS use only
received
date entered

1. Name

historic Smithfield; Middleway; Wizard Clip

and/or common Middleway Historic District (preferred)

2. Location

street & number CR1 off US51 ___ not for publication

city, town Middleway ___ vicinity of congressional district Second

state West Virginia code 54 county Jefferson code 037

3. Classification

Category	Ownership	Status	Present Use	
_X_ district	___ public	_X_ occupied	_X_ agriculture	___ museum
___ building(s)	_X_ private	_X_ unoccupied	_X_ commercial	___ park
___ structure	___ both	_X_ work in progress	___ educational	_X_ private residence
___ site	**Public Acquisition**	**Accessible**	___ entertainment	_X_ religious
___ object	___ in process	___ yes: restricted	___ government	___ scientific
	___ being considered	_X_ yes: unrestricted	___ industrial	___ transportation
		___ no	___ military	_X_ other: lodge

4. Owner of Property

name Multiple ownership

street & number

city, town ___ vicinity of state

5. Location of Legal Description

courthouse, registry of deeds, etc. Jefferson County Courthouse

street & number Washington and George Streets

city, town Charles Town state West Virginia

6. Representation in Existing Surveys

title Jefferson County Historic Landmarks Commission has this property been determined elegible? _x_ yes ___ no

date 1972-73 ___ federal ___ state _x_ county ___ local

depository for survey records c/o Dr. John A. Washington Harewood, R.F.D. 2

city, town Charles Town state West Virginia

7. Description

Condition		Check one	Check one
___ excellent	___ deteriorated	___ unaltered	_x_ original site
_x_ good	___ ruins	_x_ altered	___ moved date _____
___ fair	___ unexposed		

Describe the present and original (if known) physical appearance

Middleway community is located in the rolling farmland of Jefferson County, West Virginia, just off State Route 51 and about one mile east of Opequon Creek, the divide between Jefferson and Berkeley counties. The countryside in this area is rapidly changing; a history of more than two hundred years of crops, livestock and orchards is being constantly pressed by housing developments and industry. A manufacturing plant has located about ½ mile west of Middleway in recent years, taking advantage of the waters from an underground lake that feeds Turkey Run, the town's raison d'etre and power source for its once prominent mills. While the old north-south Shepherdstown-Berryville Road and east-west Charles Town Turnpike are no longer main thoroughfares except for local traffic, their former routes comprise the street system which includes Queen, King, Grace, Charles, North, South, East and West, appropriately assigned names from the days of the community's birth.

A comparative flatness of land from north to south gives way to gentle rises on both east and west. Building location and design continues in patterns well established, with densest concentrations along Queen and King streets, especially between Grace and Charles. Open spaces still abound, however, comprised of lots long vacant or set aside as cemeteries and the large backyards prevalent in days of greater self-sufficiency in foodstuffs. Outbuildings remain, too, log and stone smokehouses and small stone barns that attest to rustic qualities which seem quickly devoured by nearby development (or lack of proper development in the sometimes uncontained sprawl of mobile home parks and commercial strips) stretching out from Charles Town.

Perhaps because of these pressures, Middleway has not only discovered itself but has also been discovered as a rather tightly knit grouping of building types and vernacular architecture representative of this rural Jefferson County town of eighteenth and early nineteenth century roots. Houses arose as products of nature and necessity, a fact evident in the district's sixty major buildings, more than half of which are primarily or partly constructed of logs. And while brick is the next most evident facing material, rough field stone is seen in both residences and outbuildings, forming an in-town complement to grand and beautiful local farmhouses built of native limestone.

Central-entrance, single-pile, two-story, gable-roofed dwellings predominate, many having an ell formed from a now attached outside kitchen or somewhat later extension. An exterior end chimney of stone to the second level with brick cap above is common to log houses (e.g., sketch map #36), while the inside end chimney is seen in most brick residences (e.g., #44). Dormers appear occasionally (e.g., #45), 6/6 window sash are (were) predominant (e.g., #46), and louvered shutters (wooden rather than plastic or aluminum) are frequently seen (e.g., #32). In a community that probably has the greatest concentration of log dwellings in the county, it is striking, however, that logs are rarely seen except in outbuildings. The reason for this is that clapboards were early applied (e.g., #16), and where they were not used a covering

of hand-split laths and plaster (e.g., #41) put a polished face on what might have been thought a too crude or rough framed house in a crossroads town of the early 1800s.

Colors are mostly subdued, blending with natural surroundings; weathered gray exteriors are intermixed with red brick, limestone, blue- and yellow-painted clapboards and white plaster shells. The recurring standing-seam metal roofs are in hues of red, gray and rust. Decorative features on the outsides are simple for the most part, but the fanlighted entrance and Ionic capitals of porch columns at Scollay Hall (#47) stand out, as do the board-and-batten sided front of the former Daniel Fry House (#27) and a significant number of later nineteenth-century porches with saw-worked balusters and brackets and some turned posts (e.g., #44).

As originally laid out, the town was to consist of two major north-south and east-west streets, the former named King and Queen and the latter called Grace and Charles. In addition, connectors serving as boundaries were added as North, South, East and West streets. An east-west alley system (long unmaintained) was also included. Lots of an approximate one-third acre in size (roughly 90' x 180' rectangles) were standard. This fundamental layout remains intact today, and a grouping of houses on King and Queen streets between South Street and the Methodist Church (#22) is basically unchanged.

Buildings along Queen Street have facade lines quite close to the road, with concentrations here being densest in the community. Lots at extremities have apparently remained unused for buildings over the years and are now more akin to small farms (e.g., #21 at Queen and North streets). Especially close are buildings along Queen Street between the corners of South and Charles, where a business center originally developed. Smith Tavern (no longer standing), a former landmark of importance, was located on the east side of Queen Street just south of Turkey Run; Scollay Hall (#47), the brick store that served as a hospital during the War between the States (#35), and the Virginia Inn (#46) share a corner at Grace and Queen, and shops and a former post office (#27) located northward.

Elsewhere the concentration of buildings is somewhat less dense, if only because structures are often times of smaller dimensions than those along Queen Street. King Street is a principal residential neighborhood, with a house on nearly every lot from South Street to Charles. West Street has never really developed (in fact, this

"street" is hardly worthy of a name), but East Street has always been the center of religious and social activity, for here Episcopal and Lutheran churches (#55 and #52, respectively), an A.F. & A.M. lodge (#54), and two cemeteries located. Vacant and open lots (about 15% of the lots and perhaps 20% of the land) now form grown-over fields, garden plots, and storage and parking areas.

Outside of Turkey Run, which flows from east to west between Grace and South streets, there are no natural features of enduring importance. Changes in the overall layout of the town have been few, and alterations of housing types, densities and relationships to open spaces have not been appreciable over the years, except for deterioration and loss of several of the older buildings which had been part of community evolution.

Middleway's significance primarily lies within its existence as a reasonably prosperous crossroads town from mid-eighteenth through the nineteenth centuries. Rather than having been center of one or more important or momentous events, home of especially noteworthy individuals, or a concentration of outstanding architectural styles, technologies, interpretations and designs, the community merely has survived, well intact, as a fitting example of its period.

During this time, the configuration of buildings, open spaces, roads and natural features was about as it is today. Dwellings, outbuildings, business structures, churches and lodge primarily were constructed from around 1790 (perhaps sections of some as early as 1750) until 1860, with a few replacements or additions of note coming after the War between the States (e.g., the 1883 Methodist Church, #22). Materials were fundamentally those logs, bricks and stones yet remaining, activity probably concentrated around churches, lodge, stores and inns still in use, and traffic crossed through on its way to Shepherdstown, Berryville and Charles Town via extant roadways. What has changed, however, is that the mill is long since gone, stores are now conveniences for local trade, inns are known today by name only, and roads simply act to siphon passersby and residents alike to newer thoroughfares that bypass the community.

As has been true always, buildings of the town are primarily dwellings; even where commercial or professional uses existed before (e.g., the office at house #31), these were frequently adjunct to residential purposes. The two stores on Queen Street (buildings #33 and #35) have served that function, at least at times, during a long past, and the same may be said of the churches and lodge.

Scollay Hall (#47) has a large space set aside today as a commercial dining room of the "country inn" variety, but old Virginia Inn (#46) is strictly residential now. At various intervals during the nineteenth and early twentieth centuries, at least two dwellings (#36 and #48) were used in part as "academies" or schools; this pattern became extinct, however, with the advent of a better free school system, community school movements and more recent consolidation practices.

As little as ten years ago one might have passed through Middleway and remarked that its buildings were in various states of repair or disrepair, with generally good to fair conditions evident and a downward trend noted. Today there has been a turnabout of sorts, but in some ways it is not too much for the better. Remaining buildings are being lived in more and left vacant less, they are undergoing a "clean up, paint up, fix up" cycle in various degrees, and many have been or are being "restored, rehabilitated, renovated and modernized." Fortunately, most of what is being accomplished is carried out slowly and with thought, but aluminum siding, replacement windows with 1/1 or 2/2 sash, composition roofs, and "mobile" homes are exceptions. The general condition of buildings is now into the "good" range and the trend is upward, yet, as is true in most instances, a lack of knowledge and a need for an education program point to a possibility of difficulties still to come.

What direction Middleway takes is important, because it is now distinct from its surroundings in many respects. Of foremost significance is its existence as a town with a concentration of older buildings. To its north, along W.Va. Route 51, is a conglomeration of newer dwellings, trailer parks, gas stations and convenience groceries. To its east is a large amount of open land and strip housing development of the post-1950 era, a similar occurrence as to its south. This type of housing continues a short distance out of town on the west, almost reaching to the location of a large industrial plant operated by Minnesota Mining and Manufacturing Corporation (fittingly, this complex is near the site of early town mills, the eighteenth century industry that gave rise to the community itself).

Archeological potential of this area is uncertain. Located as it is along a spring-fed run that empties into Opequon Creek about a mile west of town, prehistoric migrations and settlements might possibly have occurred. Most of the land has been disturbed for housing, farming and industrial purposes, however, and archeological potential is more probably limited to the historic era, perhaps in the study of building history through site excavation along the run. In addition,

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Civil War activity was prevalent over a period, for Middleway was on direct lines from Harpers Ferry (through Charles Town) and Sharpsburg (via Shepherdstown), and remnants of passage of troops might remain.

There are sixty major buildings within district boundaries, eleven of which merit rating as non-conforming intrusions (see sketch map). At least eight log or stone smokehouses, two older frame barns (there are also a few newer, small, frame barns), and two small stone barns add to the distinction of the district. Following is a list of all major buildings with assessment as to character and a brief description where necessary:

1. Non-conforming intrusion (mid-twentieth century house).
2. Typical small, two-story log (at least in part) dwelling.
3. Typical small, two-story log (at least in part) dwelling. This building has recently burned and is now in a deteriorated state.
4. Non-conforming intrusion (mobile home).
5. This is a newer building, but it does not detract from the district. Size, design and materials are such that it blends well.
6. Pivotal structure. Good example of a double house with sections of log and brick. The former is a typical, two-story unit with plaster-covered exterior.
7. Typical small, two-story log (at least in part) dwelling with ell.
8. Non-conforming intrusion (new two-story, round-log house).
9. Typical small, two-story log (at least in part) dwelling with rear extension or addition.
10. Typical small, two-story log (at least in part) dwelling.
11. Larger two-story log (at least in part) dwelling with ell. Aluminum siding is now replacing clapboards and several alterations have been made to doors and windows.
12. Typical small, two-story log (at least in part) dwelling.
13. Non-conforming intrusion (mid-twentieth century cinder block house).
14. Typical small, two-story log (at least in part) dwelling.
15. Typical small, two-story log (at least in part) dwelling.
16. Pivotal structure. This example of the typical three-bay, single-pile, two-story log house with stone exterior end chimney and clapboarded facade, although deteriorating, may represent a directional force. Whether it is torn down or rehabilitated and reused can influence Middleway's future.
17. Typical small, two-story log (at least in part) dwelling.
18. Non-conforming intrusion (mid-twentieth century, single-story house).
19. Typical small, two-story log (at least in part) dwelling with a frame addition to the east side.

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Middleway Historic District, Jefferson County, West Virginia

20. Typical small, two-story log (at least in part) dwelling. It has been covered with a false-brick siding.
21. Pivotal structure. Substantial two-story log house with plaster-covered exterior. The property includes a large open space, and the dwelling (with associated log smokehouse) is important as a northern boundary to the district. The potential exists for use of its surrounding land for newer housing.
22. Pivotal structure. Although plain in appearance except for detailing in a brick cornice and open bell tower, the brick Methodist Church of 1883 (it has a newer addition) has a long tradition in community religious and social history.
23. This dwelling is probably partly of log construction, but it has had a number of alterations to basic lines.
24. Typical small, two-story log (at least in part) dwelling with associated log smokehouse. It has been covered with a false-brick siding.
25. This old storage and work shop or garage consists of a stone rear section and a frame addition at the front.
26. Typical small, two-story log (at least in part) dwelling with rear extension. A log smokehouse is on this lot.
27. Pivotal structure. Large two-story log (at least in part) dwelling with clapboarded sides and board-and-batten sided front. This is a good example of the five-bay log house found on Queen Street. A small stone barn is at the rear of the property.
28. This is a sizable log and stone house with a small stone barn on the back lot.
29. Typical small, two-story log (at least in part) dwelling.
30. Typical small, two-story log (at least in part) dwelling. There is also a log smokehouse on this property.
31. Pivotal structure. Another good example of the longer log house; a small, one-story brick office is on the south side.
32. Pivotal structure. This two-section log house includes a one-story stone ell that may be one of the oldest buildings in town.
33. Around 1850 a two-story frame store/house was constructed on this lot. Until this day it remains as the only building with its gable facing the street (except for the brick churches and lodge).
34. Typical, small, two-story log (at least in part) dwelling with a frame addition to the rear.
35. Pivotal structure. This two-story brick store has inside end chimneys, jack-arch lintels and a corbeled cornice. It was used as a hospital after the battle at Antietam Creek in 1862.
36. Pivotal structure. Excellent example of the small, two-story log house. The front section is plaster covered, while an ell

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has clapboards. The north end chimney is stone to the second level and brick above. A stone smokehouse is at the rear.

37. Pivotal structure. Combination log, frame and half-timber house. A frame section along the north front was added to the original log part, and a half-timbered, brick-infilled passageway was later constructed to attach what was probably a log kitchen at the rear.
38. Non-conforming intrusion (mid-twentieth century, one-story house).
39. Typical small, two-story log (at least in part) dwelling.
40. Larger two-story log house. It has had a number of alterations, including changes to window and door configuration.
41. Typical small, two-story log (at least in part) dwelling. This plaster-covered building has had several small additions; it now lists to one side.
42. Non-conforming intrusion (mid-twentieth century, single-story house).
43. Another example of the combination house, part log and part brick.
44. Pivotal structure. This is a long, two-story brick house with a one-story brick kitchen unit attached at the south end. It includes a good example of the later nineteenth century porch, with saw-worked balusters and brackets, that abounds in the community.
45. Pivotal structure. This is the only all stone house in town. It is 2½ stories high with an ell, inside end chimneys and dormers. There is a stone smokehouse at the rear.
46. Pivotal structure. Log sections of one, 1½ and two stories combine to form a long and deep ell-shaped dwelling. The property includes a stone smokehouse and small frame barn.
47. Pivotal structure. Two brick sections (one of two stories and the other 2½) are to either side of an older log unit. Detailing, though not extravagant, is probably the best in Middleway. It includes a geometrically divided fanlight and sidelights around the entrance to the newer brick section and a porch with a roof supported by Ionic capitaled columns. There is also a log smokehouse and small frame barn on the large lot.
48. Typical small, two-story log (at least in part) dwelling with an ell that includes a small stone unit.
49. Non-conforming intrusion (mid-twentieth century, one-story house).
50. Non-conforming intrusion (mid-twentieth century, one-story house).
51. Typical small, two-story log (at least in part) dwelling.
52. Pivotal structure. Former Union Church is a large brick edifice of c. 1823 construction with an open bell tower added around 1853. Plain, almost severe lines are part of its attraction. It is now used as an adjunct to Grace Episcopal Church.

53. Combination house of brick and frame sections; the latter includes late nineteenth century elements seldom seen (but not distracting) in Middleway.
54. Pivotal structure. Triluminar Lodge, A.F. & A.M. Simple rectangular, two-story brick building with a 1960s, brick-veneered addition at the rear. This 1851 lodge hall has served an important function in the social life of the community.
55. Pivotal structure. The Gothic features of the c. 1851 Grace Episcopal Church, including the high spires of its bell tower, are impressive in this town of simplicity.
56. Small, two-story log or frame dwelling with ell.
57. Larger house consisting of an older frame section and a more recent stone addition.
58. Non-conforming intrusion (mid-twentieth century, one-story house).
59. Non-conforming intrusion (mobile home).
60. Pivotal structure. This small brick church was constructed about 1887. Along with building #22 it represents the long division of American Methodism, this being the Methodist Protestant Church and that being the Methodist Episcopal Church, South. It is now used as the Middleway Full Gospel Pentecostal Church.

8. Significance

Period	Areas of Significance—Check and justify below				
___ prehistoric	___ archeology-prehistoric	___ community planning	___ landscape architecture	_X_ religion	
___ 1400–1499	___ archeology-historic	___ conservation	___ law	___ science	
___ 1500–1599	___ agriculture	___ economics	___ literature	___ sculpture	
___ 1600–1699	_X_ architecture	___ education	___ military	___ social/ humanitarian	
_X_ 1700–1799	___ art	___ engineering	___ music		
_X_ 1800–1899	___ commerce	_X_ exploration/settlement	___ philosophy	___ theater	
___ 1900–	___ communications	___ industry	___ politics/government	___ transportation	
		___ invention		_X_ other (specify) Community development	

Specific dates **Builder/Architect**

Statement of Significance (in one paragraph)

Middleway Historic District is significant because it has survived, rather well intact, through nearly two centuries of growth and decline, varying degrees of prosperity and poverty, and changing tastes, attitudes and styles. A boom during the so-called Smithfield Promotion of the 1790s combined with increasing population and community commitment before the War between the States to produce a concentration of buildings reflecting time and place: the late eighteenth and early nineteenth centuries on the fringes of a frontier only recently gone farther west. What remains is a grand collection of log, brick and stone structures representative of a simple vernacular interpretation of period architecture and a town plan that is both fundamental and characteristic of its day. Holding this together is a thread of strong tradition, running from a consciousness of the town's former importance, through a continuation of the Wizard Clip legend, to a potential rallying of revived community spirit.

Explanation of Significance Statement

The John Smiths, senior and junior, along with Rees Smith, son and brother, apparently first visited the area of today's Middleway about 1729. By 1734 they had established a grist and hemp mill (the latter did not prosper) along Turkey Run just west of the present town, a mill that soon became a point of concentration for farming families and later tradesmen who stopped and settled nearby. Thoughts of laying out a legislatively incorporated village must have occurred to the Smiths even before the Revolutionary War, for when it finally came to fruition in 1798, its main streets were called King and Queen, hardly appropriate if not decided upon before 1776.

The 1790s were important in area history for two major reasons: first, the Smithfield Promotion got underway (a concerted effort to gather a town population with attendant trade activity), and secondly, Adam Livingston became exceedingly troubled by the unexplained sound of snipping scissors. In consideration of nomination of Middleway Historic District, the former is by far the more meaningful, but the latter adds an element not normally encountered.

A small settlement composed primarily of simple log cabins or houses had begun along Turkey Run by the middle of the eighteenth century. What the John Smiths wanted, however, was a full-fledged corporate entity with trustees and regulations. A promotion to accomplish this began about 1794, several years after a sawmill was added to their industrial complex about ½ mile west of the proposed town. By 1798 when Smithfield was chartered by an act of the Virginia legislature, many, maybe most, of the lots had been subscribed and buildings were quickly erected (within three years of sale as required by law). These early structures might

have been expected to give way to second and third generation houses over a period of more than 175 years, but because of a downturn in community development after the War between the States, rarely did buildings go beyond enlargement of the early log dwelling with a rear addition.

These residences usually had three bays across the front with center entrance, a single-pile, two-story configuration, and a stone chimney, often with a brick cap, on one side. Because this was a growing and important crossroads town, the rough finish of logs was not suitable, so wide clapboards from the sawmill were applied or split laths and whitewashed plaster were employed to cover the exterior. By about the second decade of the nineteenth century, brick came into popular use, especially in dwellings, stores and offices along Queen Street (the central business district, so to speak), and this material was usually used for churches and such mid-century edifices as Triluminar Lodge (#54).

That second major occurrence of the 1790s will be noted briefly, for it did not fundamentally change Smithfield's history or have an ingrained effect on the community. As a legend, though, it has always held a grip on the minds and imaginations of townsfolk, for they have referred to the village as Wizard Clip or Clip and called themselves Clippers. Basically, as some versions of the story go, a traveler took lodging with one Adam Livingston, a gentleman who lived with his family on the road out of town to the west, because there was no room at the local inn. During the night he died, seized by a sudden illness and crying at times for the Livingstons to summon a priest. Soon after this stranger's burial, Adam Livingston saw coals popping out of his fireplace, he and a passerby tried to remove a nonexistent rope from the road in front of Livingston's house, and an almost constant clipping sound, as if scissors were snipping, invaded his dwelling. Townspeople who would dare to enter the house would come out with tattered clothes cut into crescent shapes, the "scissors" seeming to have been maneuvered to reduce them to shreds or half-moons. After seeking advice in Smithfield, Winchester and Leetown, Livingston, a mental wreck by this time, went to Shepherdstown to seek aid from a priest. After much discussion, Father Dennis Cahill visited Livingston's house and exorcised the spirit, leaving the town to consider these unexplained events for generations to come.

Returning to the more mundane, Smithfield was fortunate to have reached an era of some prosperity by 1810, when the town included two meetinghouses, three stores, an apothecary shop, a distillery, four

shoemakers, five weavers, three blacksmiths, three tailors, a wagon maker, a saddle-tree maker, one hatter, an attorney and a physician. It was about this time, too, that the name of Middleway was more and more used, despite the fact that the corporate title of Smithfield remained unchanged. Apparently the U.S. Post Office Department forced this change, for confusion arose with mails destined for an older Smithfield, Virginia, along the James River. Conjecture is that the Middleway designation was chosen because it was approximately fifteen miles between the village and each of the towns of Martinsburg, Shepherdstown, Harpers Ferry and Winchester.

From a population of 221 in 1810, Middleway grew to 337 in 1820. By 1850 there were 349 whites and 95 slaves, and in 1870 the census indicated 267 whites and 94 blacks. Little had changed over this sixty year period insofar as the community's building stock was concerned. There were, however, at least two significant alterations which have had a lasting effect. The first was the War between the States, an occurrence that elicited a strong outflow of sympathy and support for the Confederacy; the second was an end to prosperity and a general decline in population as well as status.

Smithfield had sponsored a military company, called the Middleway Blues, almost since its creation. Although ceremonial in nature, its activities must have impacted the community in many respects, and a pride in service and strong ties to the southern militia tradition were instilled. With the coming of civil strife, Middleway sent forth many of its young men to join Confederate forces. Those who remained knew their village was located on a direct route to the arsenal and armory town of Harpers Ferry, and they well might have expected movements in and out of the area. These expectations came to pass, but it was the unexpected clash at Antietam Creek near Sharpsburg that had a greater effect, for after that 1862 engagement, troops departed Shepherdstown and headed south through Middleway, a large group of wounded being cared for at the former store/house on the corner of Queen and Grace streets (#35). A semblence of quiet was broken again in 1864, when the so-called Battle of Smithfield, a modest affair, encircled the town with skirmishing for several days. When war ended, men returned to reminisce, but southern sympathies in this new state of West Virginia led to some difficulties.

While the Civil War occurred at such a time that it appeared to cause the beginning of decline for Smithfield, the real genesis may have been earlier opposition to running a proposed valley branch of the Baltimore and Ohio railroad line from Harpers Ferry to Winchester

via Middleway. This happened in the 1850s, and the railroad eventually skirted the town, following a route several miles to the south and east. By the 1870s, Smithfield's roads were no longer so important; commodities that had once come to the mill for processing were sent elsewhere. Complications led to a significant population decline as many moved west, leaving the corporate shell to wither away by the end of the century. Eventually it became a quiet, unincorporated village, totally bypassed by more important thoroughfares farther north and east.

This decline has proved to be the savior of Middleway's late eighteenth and early nineteenth century character. The remaining log and brick buildings display a setting of materials and associations that has retained the historical and architectural cohesiveness established during the Promotion of the 1790s and continued through the 1850s. General age, density, size and construction techniques of these buildings form a physical and mental image of what a small, aspiring rural town was like during that period, and what non-conforming intrusions exist today have generally concentrated on the edges of the district, thereby creating minimal effects of pressures from without rather than from within. Even with the demolition of several important structures over the years, overall character has only recently been affected internally with increased use of modern materials, such as aluminum siding. Integrity of the district has not been impaired overly or even significantly, but small inroads have the potential to become major concerns.

Middleway Historic District basically follows the boundaries of John Smith's original town, but the scope of his paper layout has been circumscribed where necessary to exclude newer development that would change the character and impair district integrity if included. As a town with a considerable concentration of log buildings, in particular, and simple vernacular architecture from the late eighteenth and early nineteenth centuries, in general, Middleway has a quality unlike that of other communities in Jefferson County and relates only marginally to other towns in the region or state as a whole. This quality is inherent in building relationships and materials; the integrity of place and time is well established and retained.

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Middleway Historic District, Jefferson County, West Virginia

UTM References (continued):

I. 18/242950/4354440
J. 18/242900/4354240
K. 18/242760/4354270
L. 18/242750/4354220
M. 18/242660/4354240
N. 18/242680/4354340
O. 18/242610/4354350
P. 18/242560/4354330
Q. 18/242600/4354530
R. 18/242560/4354660
S. 18/242600/4354650
T. 18/242720/4354750
U. 18/242780/4354740
V. 18/242830/4354970

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Middleway Historic District, Jefferson County, West Virginia

Verbal boundary description and justification (continued):

file with the Historic Preservation Unit, Department of Culture and History, The Cultural Center, Capitol Complex, Charleston, WV 25305. Included are lots 6, 7, 8, 9, 10, 11, 12, those sections of 18 marked as old lots (41), (44), (45) and (48), 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 49, 50, 51, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73 and 74 on Map 22A and lots 2, 3, 4, 5, 6, 7, those sections of 8 marked as old lots (86), (87) and (90), that section of 9 marked as old lot (91), 10, 15, 16, 17, 18, 19.1, 19.2, 20, 21, 22, 22.1, 22.2, 23, 24, 25, 26, 27, 28 and 29 on Map 22 B.

Beginning at the corner of North and Queen Streets, the boundary follows Queen Street southward to the line dividing lots 45 and 49 (Map 22A), turning eastward along that line to the line dividing lots 49 and 48 (Map 22A), thence southward in a straight line to Charles Street. Here the boundary follows Charles Street eastward to its intersection with East Street, thence southward along East Street to the parking lot adjacent to (on the north side of) Triluminar Lodge, A.F. & A.M., turning eastward to the end of that lot, then southward to the north line of lot 74 (Map 22A), turning eastward along that lot line to its eastern end, then southward along that lot line to its southern end, then eastward along that lot line to its intersection with the eastern line of lot 28 (Map 22B). From that point it turns southward and continues in a straight line to include lots 19.1 and 19.2 (Map 22B), turning westward along lot 19.2 (Map 22B) to lot 18 (Map 22B), then southward along lot 18 (Map 22B) to its southern end, then westward along lot 18 (Map 22B) to its intersection with lot 16 (Map 22B). It turns southward along the eastern end of lot 16 (Map 22B) and continues in a straight line to the southern end of lot 15 (Map 22B), thence along the southern edge of lot 15 (Map 22B) to the intersection with Queen Street. It continues southward along Queen Street to the intersection with the southern end of lot 10 (Map 22B), turning westward along lot 10 (Map 22B) to the west edge of old lot 91 as marked in parentheses (Map 22B), then northward in a straight line to the intersection with South Street. It continues westward along South Street to its intersection with King Street, thence southward along the eastern edge of lot 4 (Map 22B), then northward along the western end of lots 4, 3 and 2 (Map 22B) to the intersection of the latter with Grace Street. Crossing Grace Street, it continues northward along the western end of lot 6 (Map 22A) to its northern end, thence eastward along that line to the intersection of West Street. It continues northward along the western line of lots 10, 11,

Verbal boundary description and justification (continued):

and 12 (Map 22A) to the intersection with the dividing line between lots 22 and 40 (Map 22A). The line then continues northward in a straight line along this dividing line between lots 22 and 40 (Map 22A) and on to the intersection with North Street. The boundary then continues eastward along North Street, connecting with the beginning line at the intersection of North and Queen Streets.

District boundaries have been selected to coincide, as much as practical, with the town map as delineated by S. Howell Brown on his map of May 12, 1883, as reproduced in Robert L. Bates' The Story of Smithfield (Middleway), Jefferson County, West Virginia (Vol. I, pp. 171-72). Modifications have been made to eliminate concentrations of what would be considered non-conforming intrusions that have been constructed on formerly vacant land at the extremities of the district.

9. Major Bibliographical References

Bates, Robert L. "Middleway, a Study in Social History," West Virginia History, XI (Oct. 1949-Jan. 1950), 5-43.

_____. The Story of Smithfield (Middleway), Jefferson County, West Virginia. 2 vols. Endicott, N.Y.: Robert L. Bates, 1958.

Marshall, A.L. Adam Livingston; The Wizard Clin; The Voice. Kearneysville, WV: Livingston Publications, 1978.

10. Geographical Data

Acreage of nominated property Approximately 40 acres

Quadrangle name Middleway, W.Va. Quadrangle scale 1:24000

UMT References

	Zone	Easting	Northing
A	18	242890	4354950
B	18	242860	4354840
C	18	242900	4354830
D	18	242880	4357200
E	18	242940	4354710
F	18	242920	4355500
G	18	243030	4355310
H	18	243000	4354200

Verbal boundary description and justification

Boundaries of Middleway Historic District are as delineated in red on tax maps for Middleway District (#7), Maps 22A and 22B, Jefferson County, West Virginia, dated April 23, 1963 (revisions on October 25, 1972), and on

List all states and counties for properties overlapping state or county boundaries

state	code	county	code
state	code	county	code

11. Form Prepared By

name/title	James E. Harding, Historian
organization	Historic Preservation Unit Dept. of Culture and History
date	October 23, 1979
street & number	The Cultural Center Capitol Complex
telephone	(304) 348-0240
city or town	Charleston
state	West Virginia

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

___ national ___ state X local

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the Heritage Conservation and Recreation Service.

State Historic Preservation Officer signature Clarence Illsley

title State Historic Preservation Officer
Director, Historic Pres. Unit, W.V. Dept. of Culture and History date December 17, 1979

For HCRS use only

I hereby certify that this property is included in the National Register

date

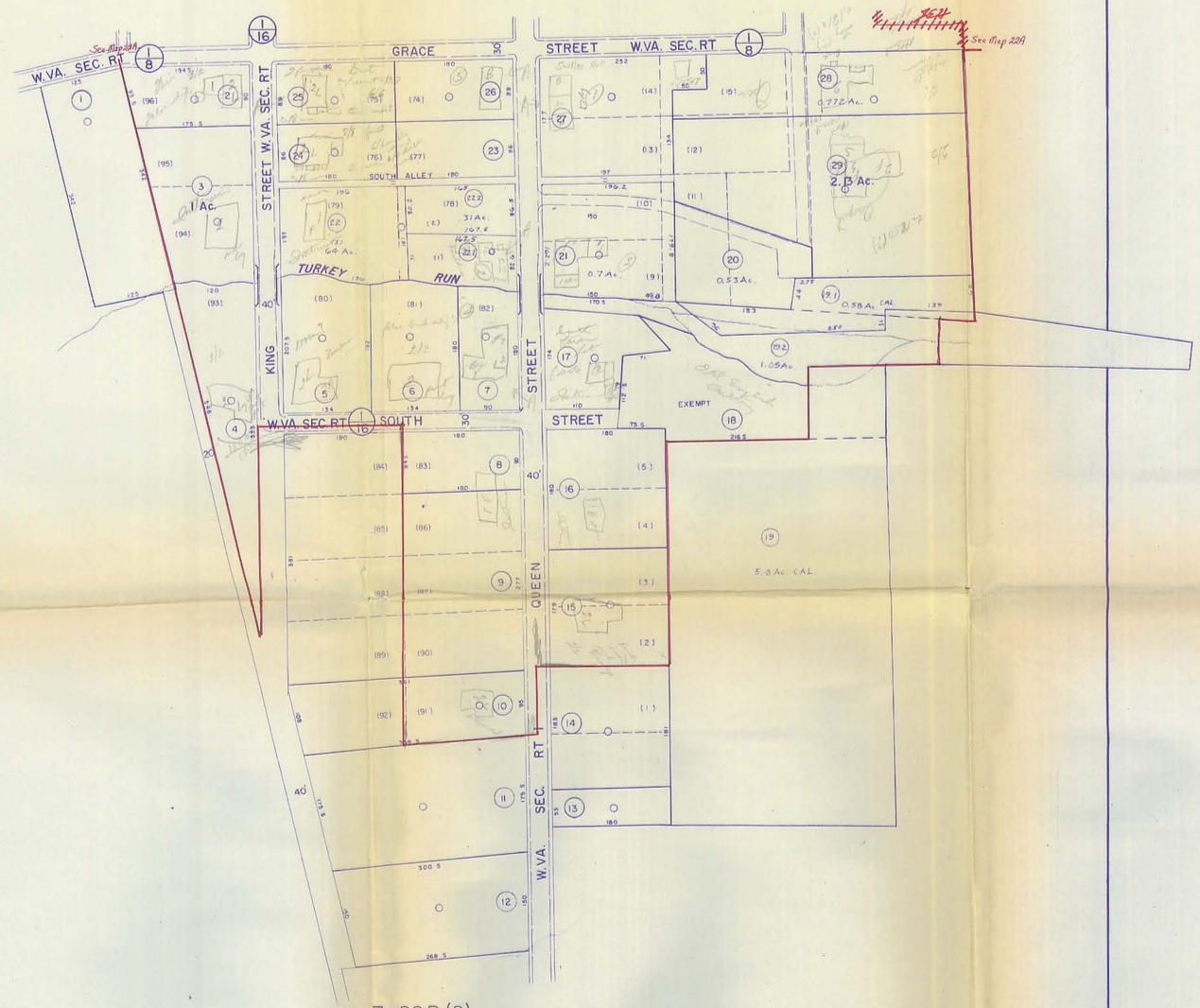
Keeper of the National Register

Attest: date

Chief of Registration

GPO 938 835

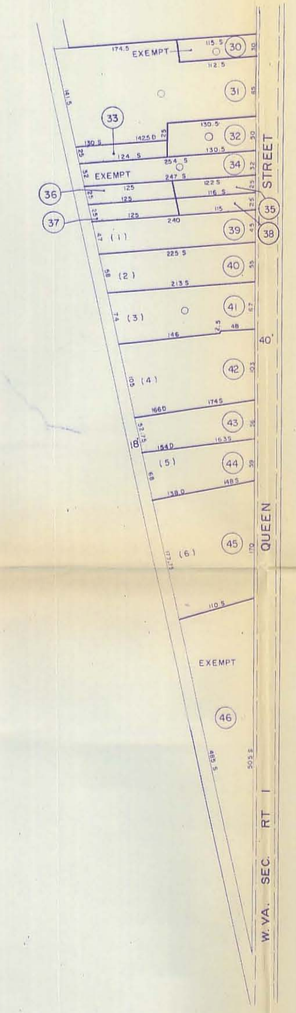
7-22 A



7-22B(2)

(1)

7-22B(1)



(2)

Boundary, Middleway Historic District

For Tax Purposes Only

Prepared by
American Air Surveys, Inc.
Pittsburgh, Pa.

Legend

Property line		Original lot line	
Edge of pavement or roadway		Deed lot number (in parenthesis)	(15)
Corporation line		Parcel or index number (in plats)	99
District line		Improvement	
County line		Railroad	
Stream		District Number	13
		Scaled Dimension	
		PLAT DIMENSION	

Revisions

1	4-23-63		9		17
2	10-25-72		10		18
3			11		19
4			12		20
5			13		21
6			14		22
7			15		23
8			16		24

COUNTY OF JEFFERSON

Office of Assessor

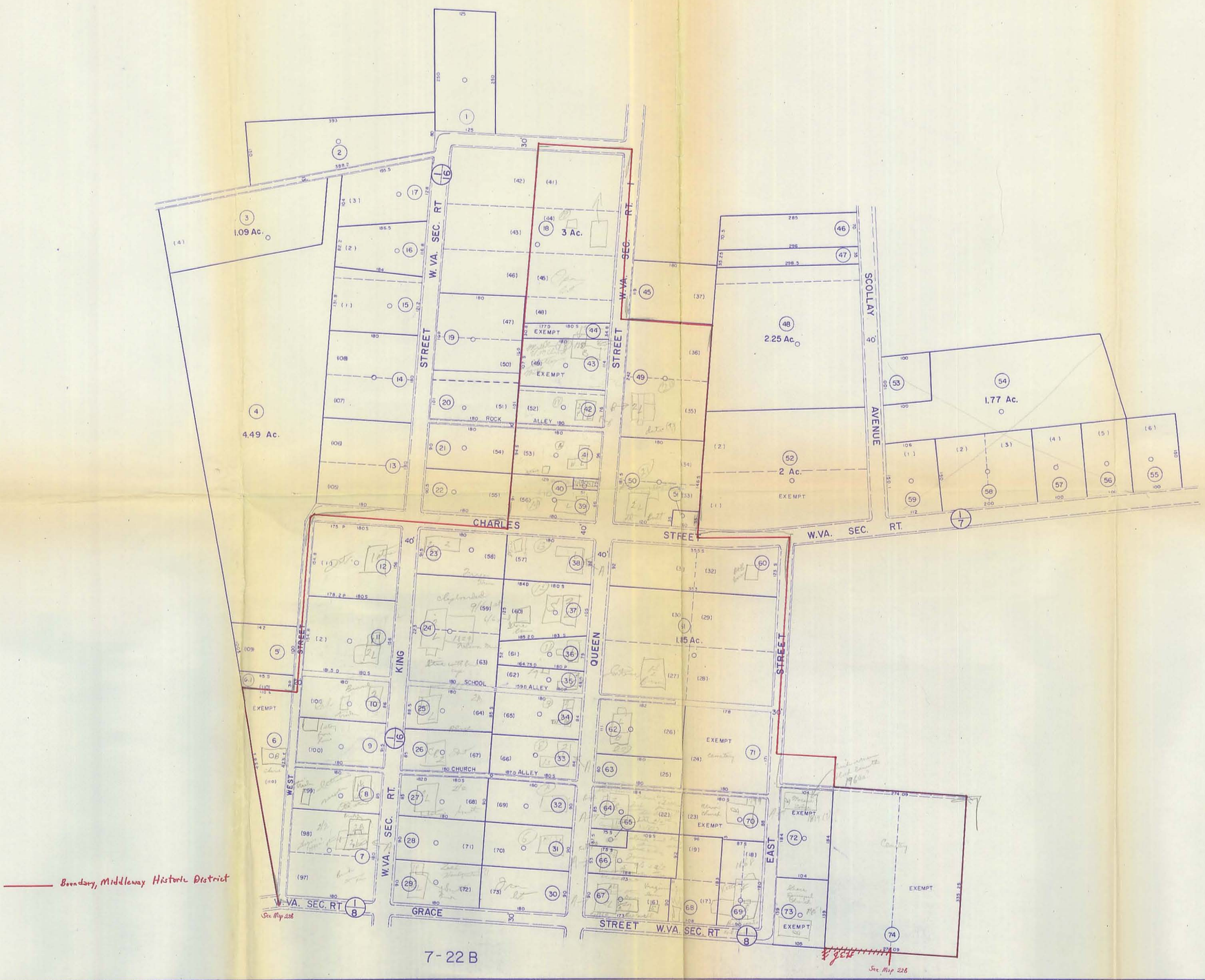
CHARLES TOWN, W. VA.

MIDDLEWAY DISTRICT

District 7 Map No. 22 B

Date, Aerial Photography: 1962 Date, Map: April 23, 1963

Photo No.: 156 Scale: 1" = 100'



Boundary, Middleway Historic District

7-22 B

For Tax Purposes Only

Prepared by
American Air Surveys, Inc.
Pittsburgh, Pa.

Legend

Property line		Original lot line	
Edge of pavement or roadway		Deed lot number in parenthesis	(15)
Corporation line		Parcel or index number in circle	(99)
District line		Improvement	
County line		Railroad	
Stream		District Number	(13)
PLAT DIMENSION	P	Scaled Dimension	S
DEED DIMENSION	D	PLAT DIMENSION	P
		DEED DIMENSION	D

Revisions

1	4-23-63		9		17
2	10/26/72 SHF		10		18
3			11		19
4			12		20
5			13		
6			14		
7			15		
8			16		

COUNTY OF JEFFERSON

Office of Assessor

CHARLES TOWN, W. VA.

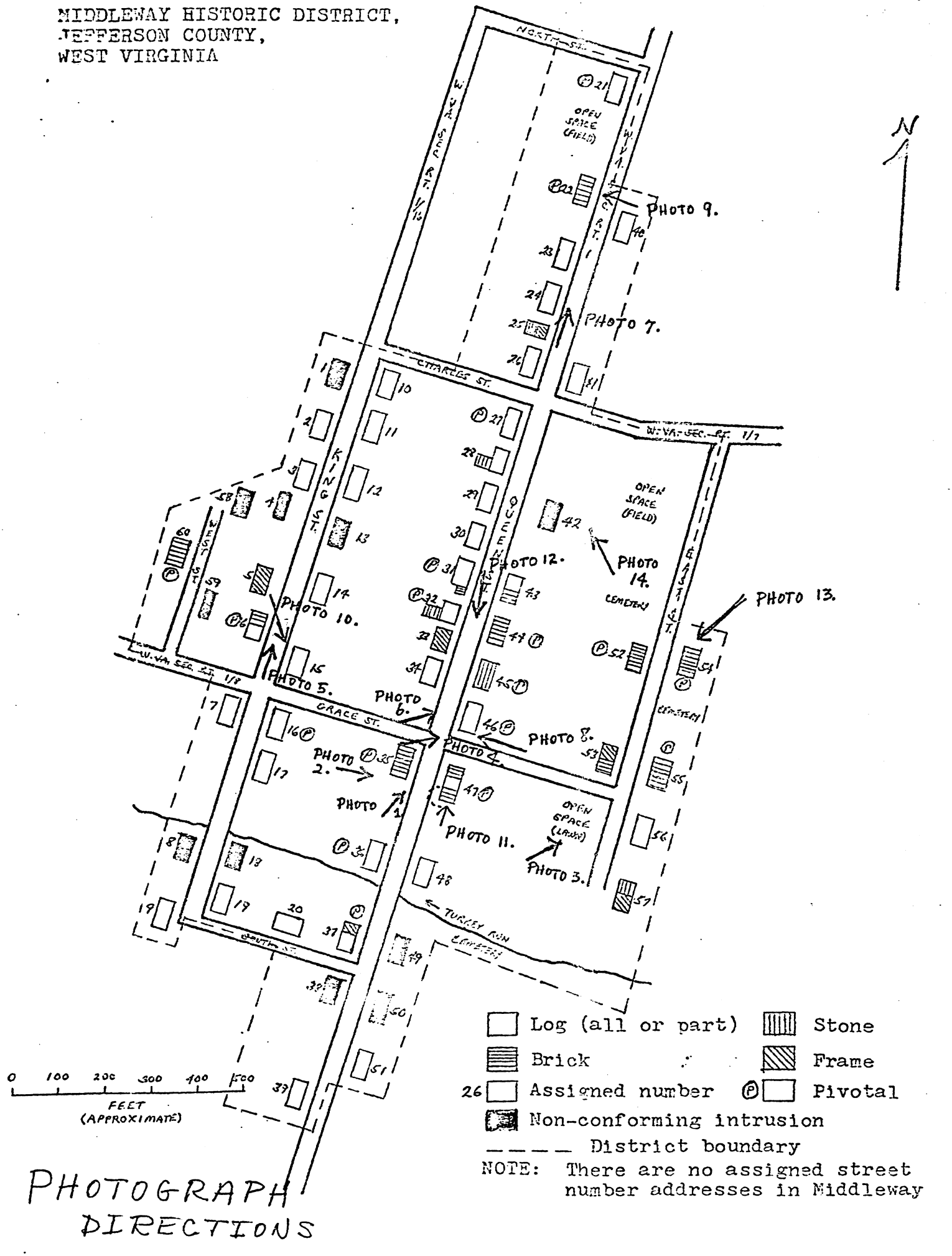
MIDDLEWAY DISTRICT

District 7 Map No. 22 A.

Date, Aerial Photography: 1962 Date, Map: April 23, 1963

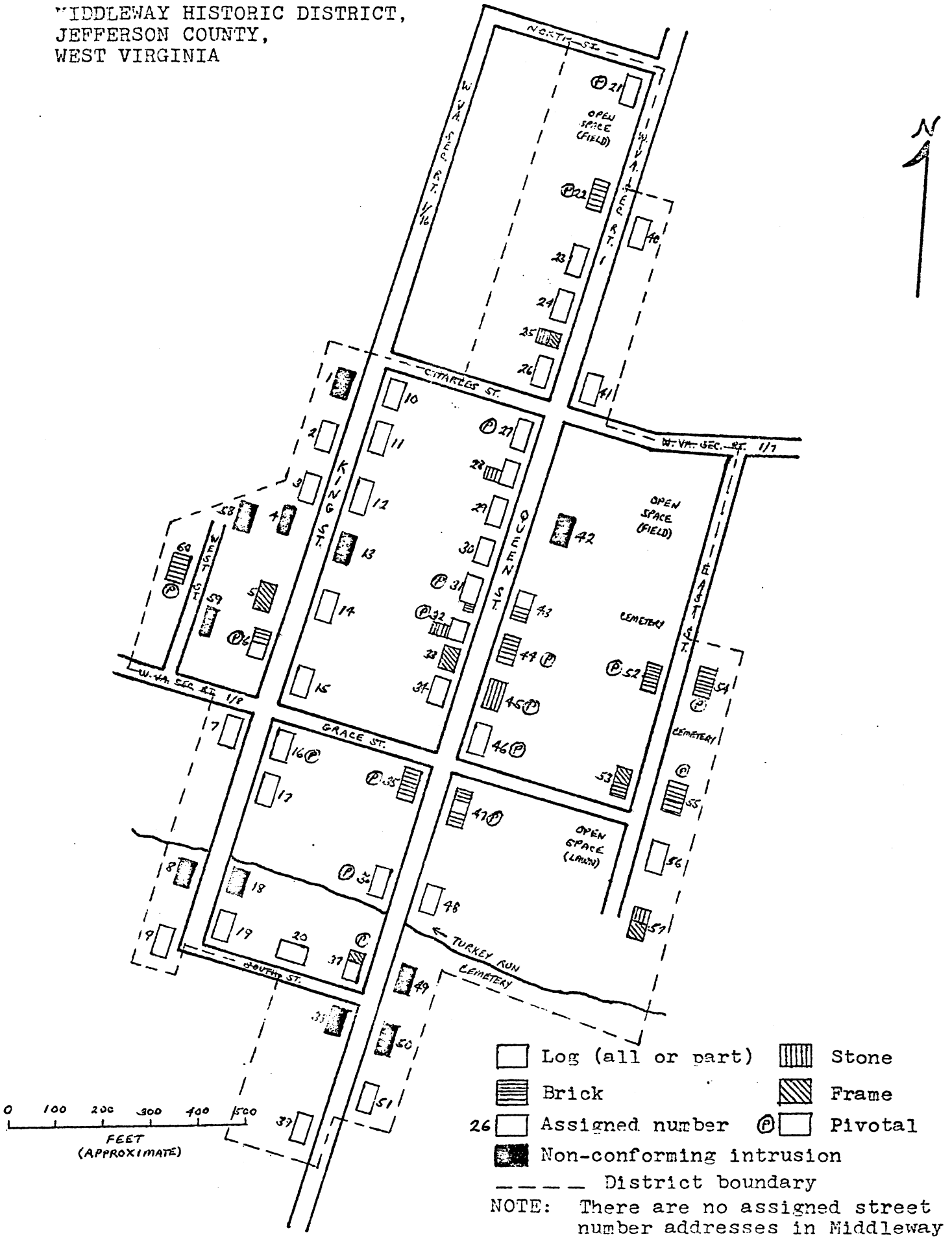
Photo No.: 156 Scale: 1" = 100'

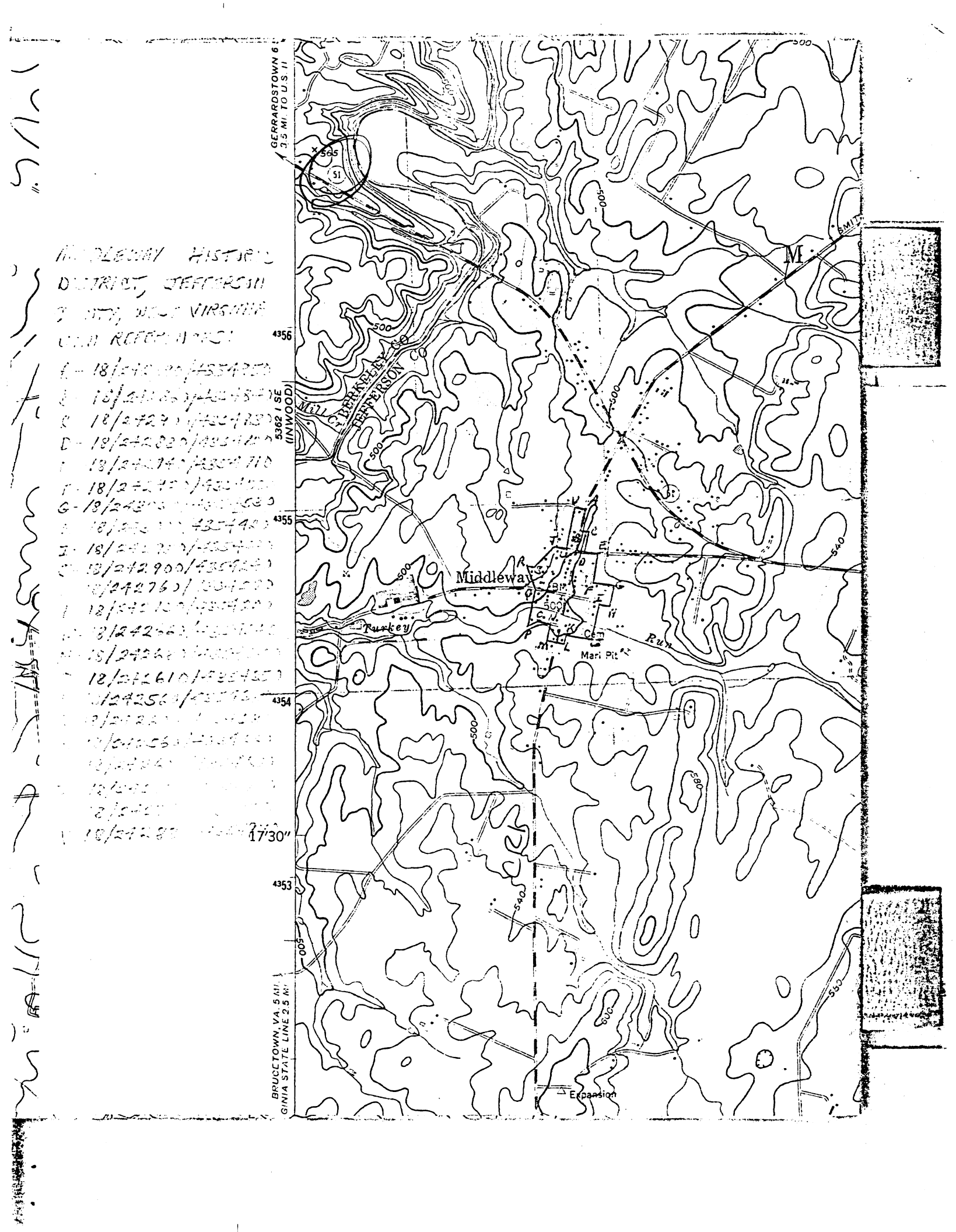
MIDDLEWAY HISTORIC DISTRICT,
JEFFERSON COUNTY,
WEST VIRGINIA



PHOTOGRAPH DIRECTIONS

"IDDLEWAY HISTORIC DISTRICT,
JEFFERSON COUNTY,
WEST VIRGINIA




GERRARDSTOWN 6
3.5 MI. TO U.S. 11
BERKELEY CO
JEFFERSON CO
5362 I SE
(INWOOD)
Middleway
Turkey
Run
Mari Pit
Cem
Expansion
BRUCETOWN, VA. 5 MI.
GINIA STATE LINE 2.5 MI.
17'30"
4356
4355
4354
4353
500
540
580
560


GARBER'S
ICE CREAM
COLLAY HALL

Planning Department

From: Planning Department
Sent: Monday, January 27, 2025 9:22 AM
To: 'Addison Reese'
Subject: RE: Mountain Pure, 24-6-SP Concept Plan

Good morning Addison,

This email is to confirm receipt of your response on behalf of the Historic Landmarks Commission for the Mountain Pure Bottling Facility Concept Plan Public Workshop, which is scheduled for February 11, 2025.

A copy of this letter will be included in the project's agency review comments folder.

Thank you and have a nice day.

Jennilee Hartman, Zoning Clerk
Office of Planning and Zoning
304-728-3228

From: Addison Reese <addisonrreese@gmail.com>
Sent: Thursday, January 23, 2025 10:44 PM
To: Planning Department <PlanningDepartment@jeffersoncountywv.org>
Subject: Mountain Pure, 24-6-SP Concept Plan

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.
The Jefferson County Historic Landmarks Commission is a reviewing agency for Mountain Pure's Concept Plan, 24-6-SP. The attached document contains the JCHLC's review of the concept plan, historic resources in the project area, and recommendations based on our assessment. As the chair of the JCHLC, I would also like to present this information at the February 11th meeting during the public workshop.

Thank you,

Addison Reese
JCHLC Chair

BERKELEY COUNTY PUBLIC SERVICE WATER DISTRICT

251 Caperton Blvd.
Martinsburg, WV 25403
Telephone: 304.267.4600 & FAX: 304.267.3864

To Whom It May Concern:

INTENT TO SERVE PUBLIC WATER
FOR SUBDIVISIONS AND/OR LAND DEVELOPMENTS

Property Owner: Sidewinder Enterprises, LLC
4340 Von Karmen
Ste 380
Newport Beach, CA 92660

Phone: (310)365-5183

Property Location: Jefferson Co Tax Map 22 Parcels 3.01, 9, 32, 34 and Map 22B Parcel 19.02
Property Address: TBD

Description of Proposed Project: Commercial/Industrial (2 lot subdivision with 2 services)

[ ] Has public water service. Water main of adequate size exists in the public right-of-way adjoining the property. All lots must have frontage on public main in order to have water service. All lots of proposed subdivision/land development that do not have frontage on an existing water main will require a mainline extension for water service. As the details of the project are reviewed and hydraulic model evaluations are determined, additional infrastructure provisions, onsite and offsite, may be required to ensure adequate service to existing customers as well as the proposed development.

[x] Requires a mainline extension for public water service to and/or within the proposed subdivision/land development. Interior of proposed subdivision/land development will require a mainline extension for water service. The Developer shall execute an alternate mainline extension agreement with the District for the above noted project which must be approved by the Public Service Commission of West Virginia. Pursuant to the agreement not to exceed 10,000 gallons of water per day. Proposed mainline extension is from the District's existing main on Specks Run Road. All mainline extensions shall be completed in accordance with the Berkeley County Public Service District Developer Policy, Procedures and Standards for Water Systems.

This Intent to Serve Public Water is only an intent to serve water. Water service is not guaranteed until a tap application (i.e., a formal request for immediate and continuous service) is approved for an individual lot(s). This Intent to Serve Public Water does not convey District acceptance or approval of the proposed project for permitting by State or other regulatory agencies.

This Intent to Serve Public Water expires one year from date of issue.

BERKELEY COUNTY PUBLIC SERVICE WATER DISTRICT

By: Robin Shade Date: May 28, 2024

Its: District Representative

FOR PLAN REVIEW PURPOSES ONLY. NOT TO BE USED TO OBTAIN BUILDING PERMIT.

BERKELEY COUNTY
PUBLIC SERVICE SEWER DISTRICT
P.O. Box 944
Martinsburg, WV 25402
Phone: (304) 263-8566
Fax: (304) 267-7478

Curtis B. Keller
General Manager

August 18, 2021

Mr. Jason Gerhart
Gordon
148 S Queen Street, Suite 201
Martinsburg, WV 25401

Re: Intent to Serve – Middleway Property – Map 2, Parcel 9

Dear Mr. Gerhart

This letter is to provide notice of the Berkeley County Public Service Sewer District's intention to serve the proposed Middleway Property, located in Jefferson County, Map 2, Parcel 9. The sewer service for this property is for domestic purposes only and not for any process water with an estimated 10,000 gpd maximum. All design and construction of on-site and off-site line extensions including the Opequon Creek crossing will be the responsibility of the contractor.

The District will provide sanitary sewer service to the project and may enter into a COVA Agreement with the developer for construction of the necessary improvements, which may include both on-site and off-site improvements along with an on-site pump station. Individual applications will need to be completed and payment of the tap fee may be required before construction of the project on the lot(s) will be permitted.

If you have any questions, please feel free to call my office at 304-263-8566.

Sincerely,

Rodney Hanes
Assistant General Manager

Berkeley County Public Service Sewer District
PO Box 944, Martinsburg, WV 25402
Telephone Direct 304-263-8566

Jennilee Hartman

From: Luke Seigfried
Sent: Friday, November 15, 2024 12:46 PM
To: Jennifer Brockman
Subject: FW: Mountain Pure; Project in Jefferson County
Attachments: Mountain Pure Concept Plan.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

FYI

Best,
Luke

Luke Seigfried (He, Him, His)
County Planner
Department of Engineering, Planning, & Zoning
Jefferson County, WV

From: Clohan, Kenneth L <kenneth.l.clohan@wv.gov>
Sent: Friday, November 15, 2024 12:06 PM
To: Luke Seigfried <lseigfried@jeffersoncountywv.org>
Cc: Kevin A McDonald <kevin.a.mcdonald@wv.gov>; Perry J Keller <perry.j.keller@wv.gov>; Luke I Miller <Luke.I.Miller@wv.gov>
Subject: Re: Mountain Pure; Project in Jefferson County

Luke,

The size of development was already considered in the approved Traffic Impact Study for 3M Site Redevelopment by AMT dated 5/1/23 so there shouldn't be a need for further traffic study.

Also, the design has started for a single-lane roundabout at WV 51 and Leetown Road based on the existing traffic. Ideally, this would be built prior to opening of the Mountain Pure facility but construction may not start on the roundabout until spring of 2026.

Ken
Kenneth L. Clohan, Jr., P.E.
District Five Traffic Engineer - WVDOH
304-350-3670

On Fri, Nov 1, 2024 at 12:30 PM Luke Seigfried <lseigfried@jeffersoncountywv.org> wrote:

> Good afternoon Ken,
> I am sorry if I should be directing this to someone else but I wanted to know if DOH has determined if a Traffic study will be required for the Mountain Pure project? The right of way entry permit is 05-2024-0381. If you do not know, who should I be speaking with about the need for a traffic study?
>
> Best,

Luke

Luke Seigfried (He, Him, His)
County Planner
Department of Engineering, Planning, & Zoning
Jefferson County, WV

Form MM-109 Revised 05-17-2023

West Virginia Department of Transportation
Division of Highways
Right of Way Entry Permit Application

PERMIT NO. 05-2024-0381

By signing below, APPLICANT agrees to all terms and conditions (see page 2) associated with this permit to enter upon, under, over, or across the state road right(s) of way of the State of West Virginia.

Applicant: **SIDEWINDER ENTERPRISES**

Address: **4340 VON KARMAN AVENUE, 380** City: **NEWPORT BEACH** State: **CA** Zip **92660**

Phone Number: **3103655183** Email: _____

Route Type: ☐ US ☐ WV ☒ County Route Number: **1/8** Milepost **2.846** County: **19 - Jefferson**

☐ Interstate ☐ HARP

Latitude/Longitude at/along Roadway (in decimal degrees): **39.30371/-77.98996**

Description of Work: **To maintain an existing entrance to Sindwinder Enterprises, LLC. (old 3M Plant) it is being issued as a residential entrance. This shall be maintained so that water and debris will not flow or be tracked onto the roadway. Also, should this parcel be used commercially, farther subdivided, or be located within a subdivision with internal access, this permit will be invalid. Applicant shall apply for a new permit to fit altered conditions.**

Length of Installation: _____ Estimated Construction Duration: _____

DOH Project Number/Name (if applicable): _____

Inspection Fees (must check one):

- ☐ For any inspection fees incurred under this permit
- ☐ At $0.85 per linear foot of water line installed under this permit
- ☐ At $3.37 per linear foot of sewer line installed under this permit

APPROVED
AUG 29 2024
WV DOT
District 5

Applicant: _____ Applicant Title: Co-MANAGER

Applicant Printed Name: SEAN Masterson Date: 6/28/24

DOH Reviewer: _____ DOH Reviewer Title: Permit Supervisor

DOH Approver: J. Lee Thorne DOH Approver Title: District Manager/Engineer

FOR DIVISION USE ONLY

DEPOSIT/BOND REQUIRED: ☐ YES ☑ NO DEPOSIT/BOND AMOUNT: $ _____

☐ Check Attached ☐ Bond Attached ☐ Bond On File BOND NUMBER: _____ DATE: _____

INSPECTION: ☐ By Owner/Consultant ☐ By Division

☐ Full Time ☐ Part Time ☐ Periodic

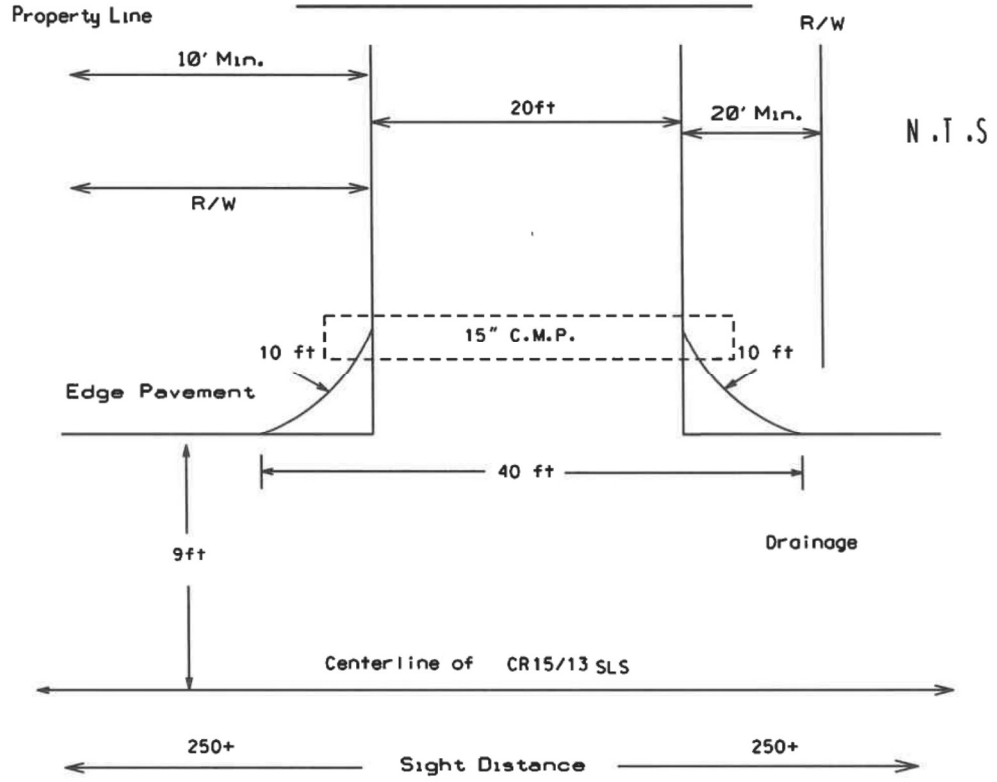
☐ Reimbursable (Authorization _____) ☐ No Cost

PERMIT ISSUE DATE: **6/14/2024**

TERMS AND CONDITIONS

1. This permit, between the WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, a statutory corporation, hereinafter called "DIVISION" and APPLICANT, a person, firm or corporation, listed on page one.
2. In consideration of the conditions hereinafter set forth and in accordance with all state and federal laws, including but not limited to, W. Va. Code §17-2E-1 et seq., §17-4-8, §17-16-6, §17-16-9, §31H-1-1 et seq., and any related rules, regulations, policies, manuals, or guidelines, APPLICANT does hereby apply to enter DIVISION's right(s) of way listed on page one, for the purpose listed in Description of Work on page one.
3. APPLICANT shall deposit with DIVISION an official, certified or cashier's check, or executed bond with surety satisfactory to DIVISION to cover any damage and inspection costs DIVISION may sustain by reason of the issuing of this permit, including any expense incurred in restoring said right(s) of way to original condition or the proper repair of any and all damages arising from, related to, or otherwise connected to said entry.
4. APPLICANT agrees to reimburse DIVISION for inspection costs as listed on page one.
5. **APPLICANT shall notify DIVISION at least 48 hours in advance of the date the work will begin. Failure to comply may result in cancellation of this permit.**
6. APPLICANT shall notify DIVISION upon completion of any work authorized under this permit. If APPLICANT's work is anticipated to extend beyond the estimated construction duration indicated on page one, APPLICANT shall notify the DIVISION as soon as possible. Failure to comply may result in additional charges.
7. APPLICANT agrees to protect all users of the road right(s) of way, as well as all employees and equipment of APPLICANT and DIVISION, at all times in accordance with the current Division of Highways manual,"Manual on Temporary Traffic Control for Streets and Highways" (https://transportation.wv.gov/highways/traffic/Pages/default.aspx).
8. APPLICANT agrees to comply with all applicable state and federal laws related to the entry that is the subject of this permit, including but not limited to the requirement to provide DIVISION copies of any NEPA clearance documentation for utility installations along or across the Interstate Highway System and/or controlled-access right(s) of way.
9. The person, firm or corporation to whom a permit is issued agrees to defend, indemnify, and hold the State of West Virginia and DIVISION harmless on account of any damages to persons or property which may arise during the process of the work authorized by this permit or by reason thereof.
10. Applications for permission to perform work within highway right(s) of way shall be made on DIVISION's standard permit form and shall be signed by the authorized representative of the person, firm or corporation applying.
11. The APPLICANT shall give detailed information concerning the nature of the entry and any work to be performed, and the application must include plans sufficient to show the same.
12. Any work authorized under this permit shall be completed on or before one calendar year from the issue date listed on page one, unless otherwise specified or approved by DIVISION.
13. APPLICANT, its agents, successor, heirs or assigns, contractors or any other person, firm or corporation working under APPLICANT's real or apparent authority, shall perform the work in a manner satisfactory to DIVISION. Damage to the right(s) of way resulting at any time from work authorized under this permit shall be repaired by APPLICANT. Unsatisfactory repairs, at the sole discretion of DIVISION, may be corrected by DIVISION or its authorized agent and the cost thereof paid by APPLICANT.
14. DIVISION shall not be liable for any damage or costs incurred by APPLICANT arising from or related to DIVISION's construction or maintenance of DIVISION's facilities.
15. Utility installation(s) shall be in accordance with the current manual, "Accommodation of Utilities on Highway Right of Way" (https://transportation.wv.gov/highways/right-of-way/Pages/Utility-Publications.aspx).
16. Driveway construction shall be in accordance with the current manual, "Rules and Regulations for Constructing Driveways on State Highway Rights-of-Way" (https://transportation.wv.gov/highways/traffic/Pages/default.aspx).
17. DIVISION reserves the right to cancel this permit at any time.
18. This permit is issued only insofar as DIVISION has a right to do so. APPLICANT has sole responsibility to secure all necessary rights or permissions for any third-party property interests related to the entry, known or unknown. APPLICANT, by signing on page one, hereby warrants that, to the extent its entry onto DIVISION's right(s) of way involves or affects any other entity's property, real or personal, on or within DIVISION's right(s) of way, that APPLICANT has full legal authorization or the legal right to do so. To the fullest extent permitted by law, APPLICANT agrees to defend, indemnify, and hold harmless DIVISION for damage to any persons or property arising from APPLICANT's breach of this representation and warranty.
19. All attachments are incorporated into this permit. To the extent of any conflict, the terms of this permit shall control.
20. APPLICANT agrees to keep any surface facilities installed pursuant to this permit clear of vegetation for so long as APPLICANT's facilities are located on DIVISION's rights of way. APPLICANT agrees to remove promptly any vegetation in, on, or around such facilities that poses a risk or hazard to the safety of the travelling public.

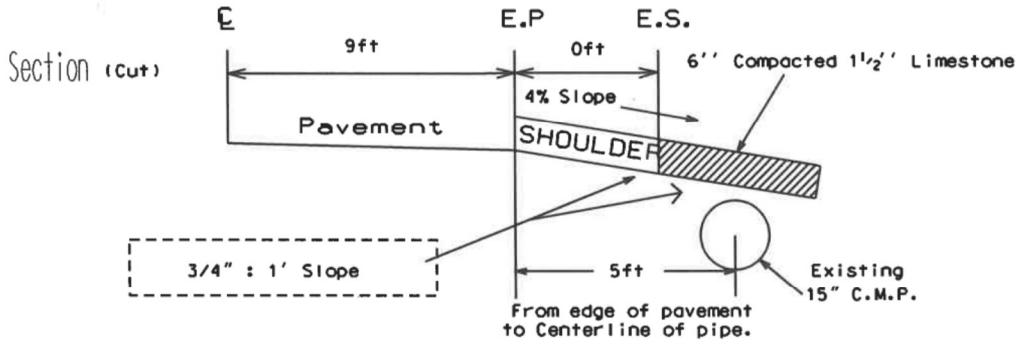
Proposed Entrance



NO OBSTRUCTION PERMITTED BETWEEN PAVEMENT EDGE AND R/W LINE

REMARKS: Existing entrance to be used as a residental entrance for Sidewinder Enterprises LLC.

Posted Speed Limit **15** MPH



GPS 39.30371
-77.98996

MP 2.846

NAME Sidewinder Enterprises LLC.

ADDRESS: 4340 Von Karman Avenue 380 Newport Beach CA 92660

LOCATION: @ inter of CR 1/8, 1/9 and Grace Street

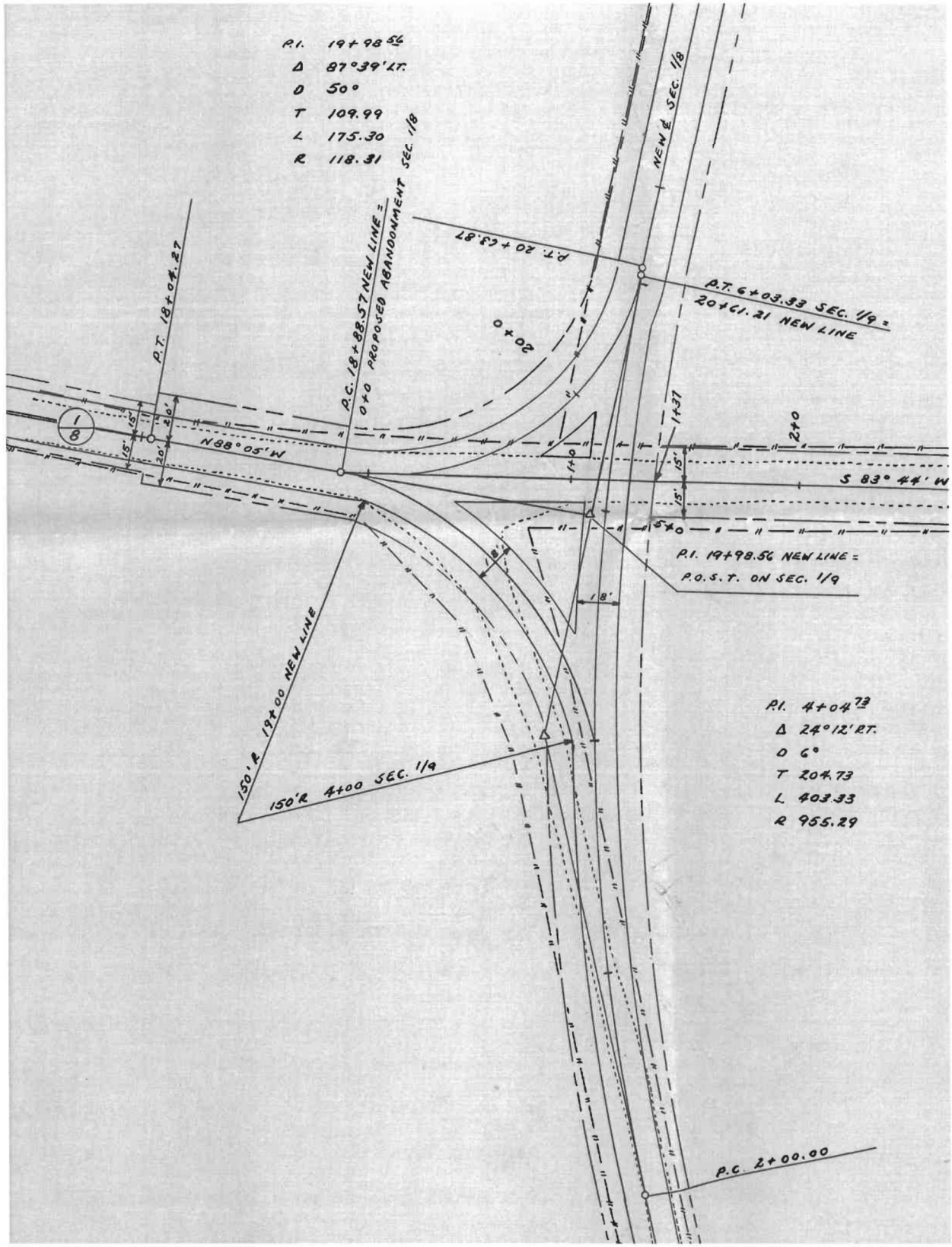
COUNTY Jefferson

ROUTE 1/8

PROJECT

DATE 6/14/24

@ intersection of
CR 1/8, 1/9 & Grace St.


P.I. 19+98.56
Δ 87°39'LT.
D 50°
T 109.99
L 175.30
R 118.31
P.T. 18+04.27
P.C. 18+88.57 NEW LINE =
0+0 PROPOSED ABANDONMENT SEC. 1/8
NE¼ SEC. 1/8
P.T. 20+63.87
P.T. 6+03.33 SEC. 1/9 =
20+61.21 NEW LINE
0+02
1+37
2+0
1+0
5+0
N 88° 05' W
S 83° 44' W
15'
20'
18'
P.I. 19+98.56 NEW LINE =
P.O.S.T. ON SEC. 1/9
150'R 19+00 NEW LINE
150'R 4+00 SEC. 1/9
P.I. 4+04.73
Δ 24°12'RT.
D 6°
T 204.73
L 403.33
R 955.29
P.C. 2+00.00

05-2024-0381

Entrance Permit Application

PLEASE PRINT LEGIBLY

DATE APPLIED FOR: April 24, 2024

COUNTY: Jefferson

OWNER/DEVELOPER NAME: Sidewinder Enterprises

ROUTE NO: 1/9

PHONE NO: 310-365-5183

Contractor or Engineer (If applicable)

NAME: Integrity Federal Services

PHONE NO: 304-725-8456

ADDRESS: 148 S. Queen St., Ste. 201 Martinsburg, WV 25401

EMAIL: mmcdonald@ifs-ae.com

ADDRESS OF APPLICANT: 4340 Von Karman Ave., #380, Newport Beach, CA 92660

EMAIL ADDRESS: sean@sidewinderenterprises.net

EXACT LOCATION OF APPROACH (Please be specific. Example: East side of John Doe Road, 1.25 miles north of Jane Doe Road): The entrance is located at the intersection of Grace St., Brucetown Rd. & Bunker Hill Rd. The entrance would be located approx. 2,000' from Leetown Rd.

NOTE: Property owner must stake location of approach or approaches out in field with blue and gold ribbon.

TYPE OF APPROACH:

	(Please mark)	WIDTH (16' – 20')	
Private	X	16'	
Commercial			min 25'
Minor Subdivision			
Major Subdivision			min 25'
Heavy Equipment			
Miscellaneous (state purpose)			

REQUIRED DOCUMENTATION

PRIVATE APPROACH (See A for required documentation)

COMMERCIAL APPROACH (See B for required documentation)

SUBDIVISION (Minor – See C for required documentation, Major – See D for required documentation)

HEAVY EQUIPMENT (See E for required documentation)

MISCELLANEOUS (See F for required documentation)

A) PRIVATE – One single lot already with a recorded deed. Must provide a deed in the applicant's name and/or a surveyor's signed plat of the entire property in applicant's name. For one single family dwelling.

B) COMMERCIAL – This also includes churches.
   Please include:
   1) Plan view of entire project (50 scale max)
   2) Plan view of entrance (20 scale)
      a) Show width, radii, and drainage structures
      b) Signage striping
      c) Traffic control
   3) Provide drainage calculation according to WVDOH Drainage Manual
   4) Show any road improvements
   5) Provide paving typical and sight distance profile
   6) Profile of entrance starting at centerline of state road and include edge line, width of pavement, drainage structures, and right of way. Must go a minimum of 50' into entrance (10 scale).
   7) Will require a bond

C) MINOR SUBDIVISION – Four lots or less, including the residue. Must provide a plat signed and stamped by a licensed surveyor. This includes parent to child transfers.

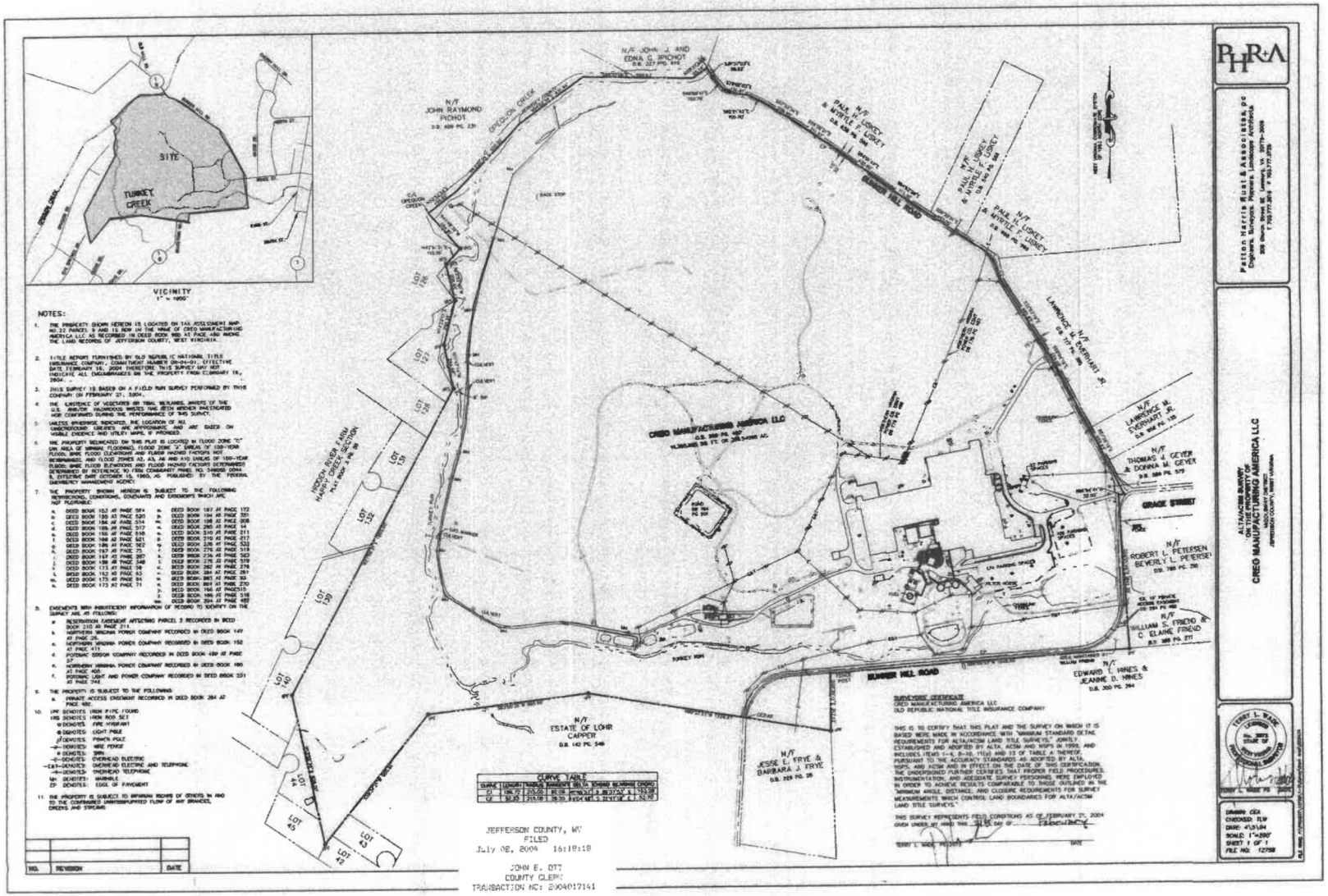
D) MAJOR SUBDIVISION – Five lots or more, including the residue. This also includes subdividing that has occurred within the last five years.
   Please include:
   1) Plan view of entire subdivision (50 scale max)
   2) Plan view of entrance (20 scale)
      a) Show width, radii, and drainage structures
      b) Signage striping
      c) Traffic control
   3) Provide drainage calculation according to WVDOH Drainage Manual
   4) Show any road improvements
   5) Provide paving typical and sight distance profile
   6) Profile of entrance starting at centerline of state road and include edge line, width of pavement, drainage structures, and right of way. Must go a minimum of 50' into entrance (10 scale).
   7) Will require a bond

E) HEAVY EQUIPMENT – This is for a temporary entrance. Must provide what it will be used for and for how long it will be used for (must have an end date). May require a bond. Includes logging operations.

F) MISCELLANEOUS – Includes fuel spills, tree plantings and removals, and other work within WVDOH rights of way. Fill out application and contact entrance permit section in Burlington for required documentation.

The above information is general in nature and may require additional information after review.

Manual on Rules and Regulations for Constructing Driveways on State Highway Rights-of-Way:
http://www.transportation.wv.gov/highways/engineering/Manuals/Traffic/Driveway.pdf



3M PROPERTY PARCELS

SIDEWINDER ENTERPRISES LLC

1 OF 1

INTEGRITY FEDERAL SERVICES
CIVIL ENGINEERING • LANDSCAPE ARCHITECTURE • PLANNING
148 S. Queen Street, Suite 201 • Phone: 304-725-8436
Martinsburg, WV 25401 • www.ifs-se.com

Entrance Permit Application

PLEASE PRINT LEGIBLY

DATE APPLIED FOR: April 24, 2024

COUNTY: Jefferson

OWNER/DEVELOPER NAME: Sidewinder Enterprises

ROUTE NO: 1/9

PHONE NO: 310-365-5183

Contractor or Engineer (If applicable)

NAME: Integrity Federal Services

PHONE NO: 304-725-8456

ADDRESS: 148 S. Queen St., Ste. 201 Martinsburg, WV 25401

EMAIL: mmcdonald@ifs-ae.com

ADDRESS OF APPLICANT: 4340 Von Karman Ave., #380, Newport Beach, CA 92660

EMAIL ADDRESS: sean@sidewinderenterprises.net

EXACT LOCATION OF APPROACH (Please be specific. Example: East side of John Doe Road, 1.25 miles north of Jane Doe Road): The entrance is located at the intersection of Grace St., Brucetown Rd. & Bunker Hill Rd. The entrance would be located approx. 2,000' from Leetown Rd.

NOTE: Property owner must stake location of approach or approaches out in field with blue and gold ribbon.

TYPE OF APPROACH:

	(Please mark)	WIDTH (16' – 20')	
Private	X	16'	
Commercial			min 25'
Minor Subdivision			
Major Subdivision			min 25'
Heavy Equipment			
Miscellaneous (state purpose)			

REQUIRED DOCUMENTATION

PRIVATE APPROACH (See A for required documentation)

COMMERCIAL APPROACH (See B for required documentation)

SUBDIVISION (Minor – See C for required documentation, Major – See D for required documentation)

HEAVY EQUIPMENT (See E for required documentation)

MISCELLANEOUS (See F for required documentation)

A) PRIVATE – One single lot already with a recorded deed. Must provide a deed in the applicant's name and/or a surveyor's signed plat of the entire property in applicant's name. For one single family dwelling.

B) COMMERCIAL – This also includes churches.
   Please include:
   1) Plan view of entire project (50 scale max)
   2) Plan view of entrance (20 scale)
      a) Show width, radii, and drainage structures
      b) Signage striping
      c) Traffic control
   3) Provide drainage calculation according to WVDOH Drainage Manual
   4) Show any road improvements
   5) Provide paving typical and sight distance profile
   6) Profile of entrance starting at centerline of state road and include edge line, width of pavement, drainage structures, and right of way. Must go a minimum of 50' into entrance (10 scale).
   7) Will require a bond

C) MINOR SUBDIVISION – Four lots or less, including the residue. Must provide a plat signed and stamped by a licensed surveyor. This includes parent to child transfers.

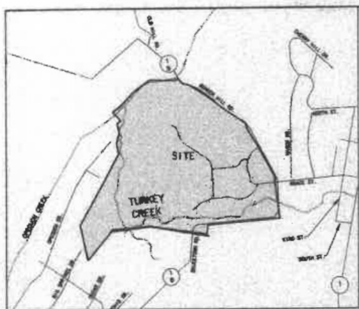
D) MAJOR SUBDIVISION – Five lots or more, including the residue. This also includes subdividing that has occurred within the last five years.
   Please include:
   1) Plan view of entire subdivision (50 scale max)
   2) Plan view of entrance (20 scale)
      a) Show width, radii, and drainage structures
      b) Signage striping
      c) Traffic control
   3) Provide drainage calculation according to WVDOH Drainage Manual
   4) Show any road improvements
   5) Provide paving typical and sight distance profile
   6) Profile of entrance starting at centerline of state road and include edge line, width of pavement, drainage structures, and right of way. Must go a minimum of 50' into entrance (10 scale).
   7) Will require a bond

E) HEAVY EQUIPMENT – This is for a temporary entrance. Must provide what it will be used for and for how long it will be used for (must have an end date). May require a bond. Includes logging operations.

F) MISCELLANEOUS – Includes fuel spills, tree plantings and removals, and other work within WVDOH rights of way. Fill out application and contact entrance permit section in Burlington for required documentation.

The above information is general in nature and may require additional information after review.

Manual on Rules and Regulations for Constructing Driveways on State Highway Rights-of-Way:
http://www.transportation.wv.gov/highways/engineering/Manuals/Traffic/Driveway.pdf



VICINITY
1" = 1000'

NOTES:

1. THE PROPERTY SHOWN HEREON IS LOCATED ON TAX ASSESSMENT MAP NO. 22 PARCEL 9 AND IS NOW IN THE NAME OF CREO MANUFACTURING AMERICA LLC AS RECORDED IN DEED BOOK 985 AT PAGE 460 AMONG THE LAND RECORDS OF JEFFERSON COUNTY, WEST VIRGINIA.

2. TITLE REPORT FURNISHED BY OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY, COMMITMENT NUMBER 0R-04-01, EFFECTIVE DATE FEBRUARY 16, 2004 THEREFORE THIS SURVEY MAY NOT INDICATE ALL ENCUMBRANCES ON THE PROPERTY FROM FEBRUARY 16, 2004.

3. THIS SURVEY IS BASED ON A FIELD RUN SURVEY PERFORMED BY THIS COMPANY ON FEBRUARY 21, 2004.

4. THE EXISTENCE OF VEGETATED OR TIDAL WETLANDS, WATERS OF THE U.S. AND/OR HAZARDOUS WASTES HAS BEEN NEITHER INVESTIGATED NOR CONFIRMED DURING THE PERFORMANCE OF THIS SURVEY.

5. UNLESS OTHERWISE INDICATED, THE LOCATION OF ALL UNDERGROUND UTILITIES ARE APPROXIMATE AND ARE BASED ON VISIBLE EVIDENCE AND UTILITY MAPS, IF PROVIDED.

6. THE PROPERTY DELINEATED ON THIS PLAT IS LOCATED IN FLOOD ZONE "C" (AN AREA OF MINIMAL FLOODING). FLOOD ZONE "A" (AREAS OF 100-YEAR FLOOD; BASE FLOOD ELEVATIONS AND FLOOD HAZARD FACTORS NOT DETERMINED), AND FLOOD ZONES A2, A3, A8 AND A10 (AREAS OF 100-YEAR FLOOD; BASE FLOOD ELEVATIONS AND FLOOD HAZARD FACTORS DETERMINED) DETERMINED BY REFERENCE TO FIRM COMMUNITY PANEL NO. 540065 0044 B, EFFECTIVE DATE OCTOBER 15, 1980, AS PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

7. THE PROPERTY SHOWN HEREON IS SUBJECT TO THE FOLLOWING RESTRICTIONS, CONDITIONS, COVENANTS AND EASEMENTS WHICH ARE NOT PLOTTABLE:

a.	DEED BOOK 153 AT PAGE 524	o.	DEED BOOK 187 AT PAGE 172
b.	DEED BOOK 155 AT PAGE 520	p.	DEED BOOK 194 AT PAGE 321
c.	DEED BOOK 166 AT PAGE 514	q.	DEED BOOK 198 AT PAGE 205
d.	DEED BOOK 166 AT PAGE 517	r.	DEED BOOK 205 AT PAGE 14
e.	DEED BOOK 166 AT PAGE 518	s.	DEED BOOK 210 AT PAGE 211
f.	DEED BOOK 166 AT PAGE 521	t.	DEED BOOK 210 AT PAGE 217
g.	DEED BOOK 166 AT PAGE 527	u.	DEED BOOK 236 AT PAGE 523
h.	DEED BOOK 167 AT PAGE 75	v.	DEED BOOK 276 AT PAGE 519
i.	DEED BOOK 167 AT PAGE 207	w.	DEED BOOK 236 AT PAGE 583
j.	DEED BOOK 188 AT PAGE 348	x.	DEED BOOK 276 AT PAGE 519
k.	DEED BOOK 173 AT PAGE 59	u.	DEED BOOK 282 AT PAGE 278
l.	DEED BOOK 163 AT PAGE 63	v.	DEED BOOK 284 AT PAGE 281
m.	DEED BOOK 173 AT PAGE 84	w.	DEED BOOK 863 AT PAGE 83
n.	DEED BOOK 175 AT PAGE 71	x.	DEED BOOK 824 AT PAGE 270
		y.	DEED BOOK 166 AT PAGE 515
		z.	DEED BOOK 166 AT PAGE 518
		aa.	DEED BOOK 294 AT PAGE 482

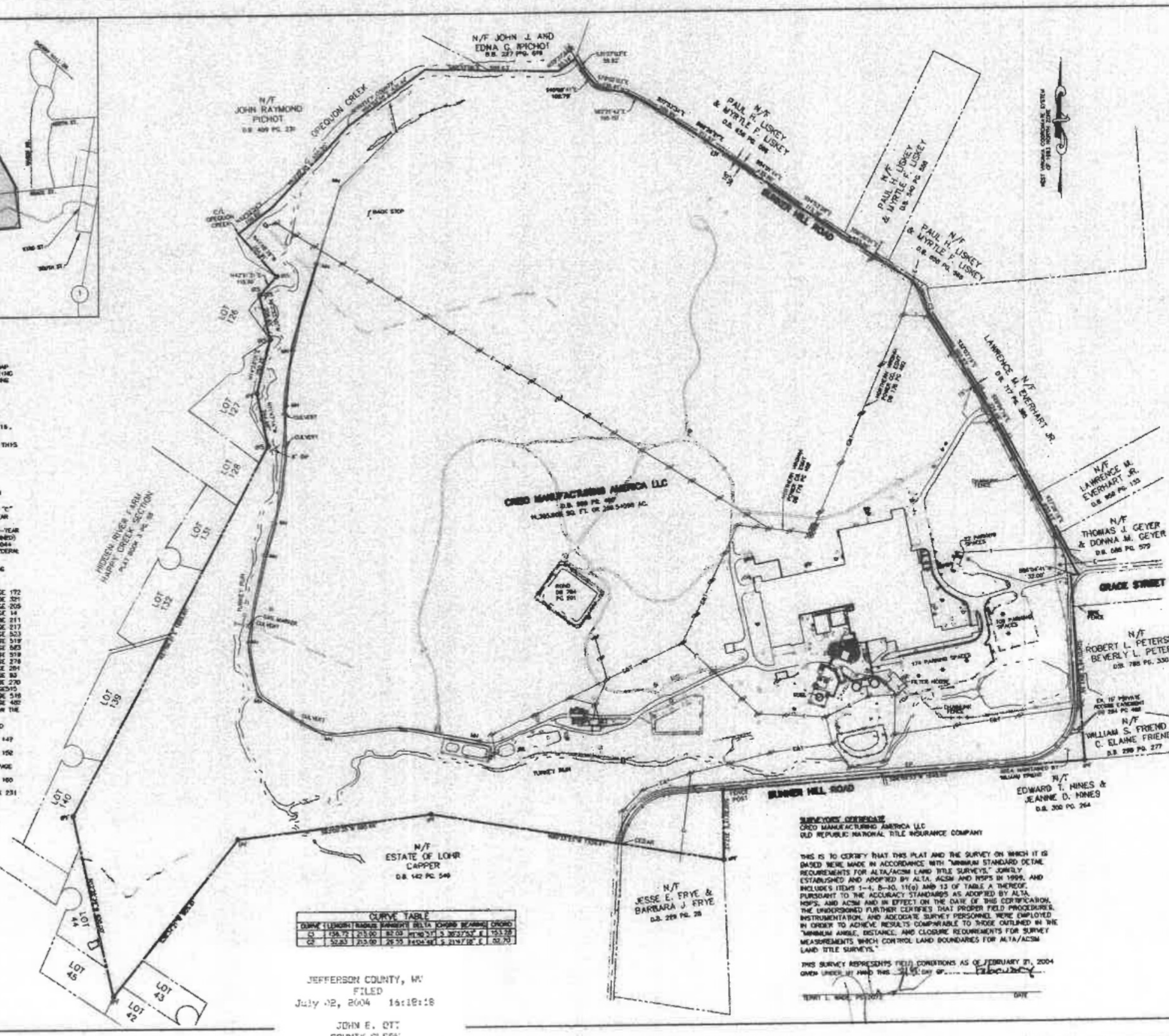
8. EASEMENTS WITH INSUFFICIENT INFORMATION OF RECORD TO IDENTIFY ON THE SURVEY ARE AS FOLLOWS:
   a. RESERVATION EASEMENT AFFECTING PARCEL 2 RECORDED IN DEED BOOK 210 AT PAGE 211.
   b. NORTHERN VIRGINIA POWER COMPANY RECORDED IN DEED BOOK 147 AT PAGE 26.
   c. NORTHERN VIRGINIA POWER COMPANY RECORDED IN DEED BOOK 152 AT PAGE 411
   d. POTOMAC EDISON COMPANY RECORDED IN DEED BOOK 489 AT PAGE 57
   e. NORTHERN VIRGINIA POWER COMPANY RECORDED IN DEED BOOK 160 AT PAGE 405.
   f. POTOMAC LIGHT AND POWER COMPANY RECORDED IN DEED BOOK 231 AT PAGE 246.

9. THE PROPERTY IS SUBJECT TO THE FOLLOWING:
   a. PRIVATE ACCESS EASEMENT RECORDED IN DEED BOOK 294 AT PAGE 482.

10. IPF DENOTES IRON PIPE FOUND
IRS DENOTES IRON ROD SET
DENOTES: FIRE HYDRANT
DENOTES: LIGHT POLE
DENOTES: POWER POLE
DENOTES: WIRE FENCE
DENOTES: SIGN
—E— DENOTES: OVERHEAD ELECTRIC
—E&T— DENOTES: OVERHEAD ELECTRIC AND TELEPHONE
—T— DENOTES: OVERHEAD TELEPHONE
MH DENOTES: MANHOLE
EP DENOTES: EDGE OF PAVEMENT

11. THE PROPERTY IS SUBJECT TO RIPARIAN RIGHTS OF OTHERS IN AND TO THE CONTINUED UNINTERRUPTED FLOW OF ANY BRANCHES, CREEKS AND STREAMS

NO.	REVISION	DATE



CURVE TABLE						
CURVE	LENGTH	RADIUS	TANGENT	DELTA	CHORD BEARING	CHORD
C1	156.72	215.00	82.02	41°46'37"	S 30°37'52" E	153.28
C2	52.83	215.00	26.55	14°04'48"	S 21°47'10" E	52.70

SURVEYORS' CERTIFICATE
CREO MANUFACTURING AMERICA LLC
OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY

THIS IS TO CERTIFY THAT THIS PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS," JOINTLY ESTABLISHED AND ADOPTED BY ALTA, ACSM AND NSPS IN 1999, AND INCLUDES ITEMS 1-4, 6-10, 11(a) AND 13 OF TABLE A THEREOF. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA, NSPS, AND ACSM AND IN EFFECT ON THE DATE OF THIS CERTIFICATION, THE UNDERSIGNED FURTHER CERTIFIES THAT PROPER FIELD PROCEDURES, INSTRUMENTATION, AND ADEQUATE SURVEY PERSONNEL WERE EMPLOYED IN ORDER TO ACHIEVE RESULTS COMPARABLE TO THOSE OUTLINED IN THE "MINIMUM ANGLE, DISTANCE, AND CLOSURE REQUIREMENTS FOR SURVEY MEASUREMENTS WHICH CONTROL LAND BOUNDARIES FOR ALTA/ACSM LAND TITLE SURVEYS."

THIS SURVEY REPRESENTS FIELD CONDITIONS AS OF FEBRUARY 21, 2004
GIVEN UNDER MY HAND THIS 21st DAY OF February

TERRY L. WADE, PS 2072 DATE

PH R+A

Patton Harris Rust & Associates, pc
Engineers. Surveyors. Planners. Landscape Architects.
208 Church Street SE Leesburg, VA 20175-3009
T 703.777.3616 F 703.777.3725

ALTA/ACSM SURVEY
ON THE PROPERTY OF
CREO MANUFACTURING AMERICA LLC
MIDDLEWAY DISTRICT
JEFFERSON COUNTY, WEST VIRGINIA

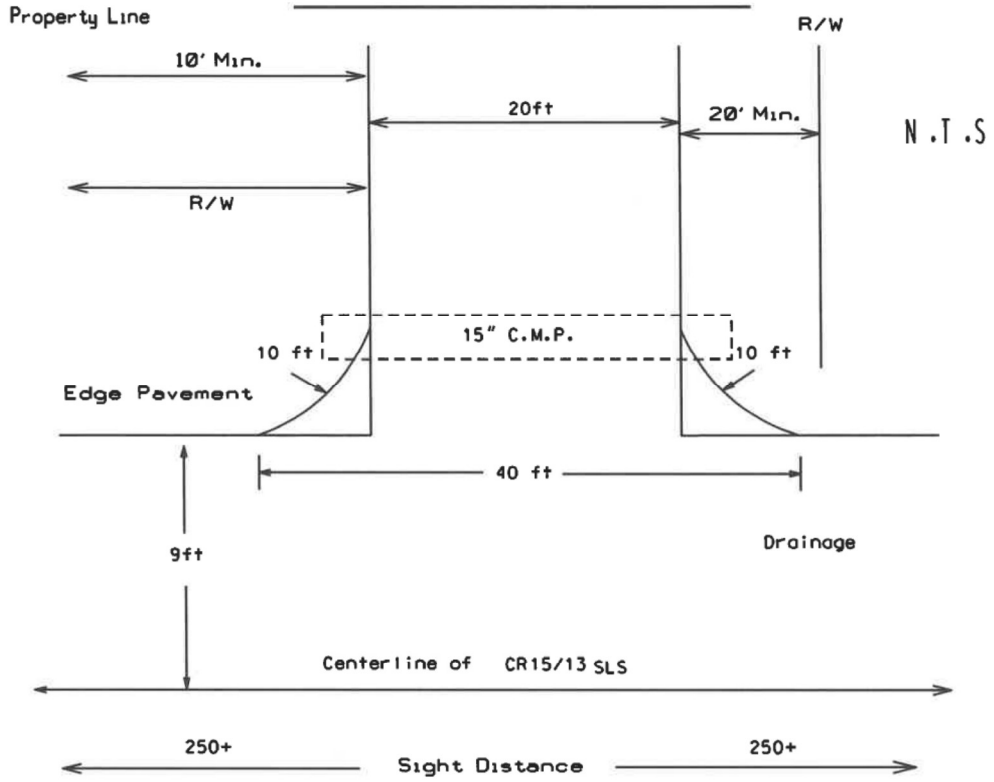
TERRY L. WADE
LICENSED
No. 2072
STATE OF
WEST VIRGINIA
PROFESSIONAL SURVEYOR

TERRY L. WADE PS DATE

DRAWN: CEA
CHECKED: TLW
DATE: 4\5\04
SCALE: 1"=200'
SHEET 1 OF 1
FILE NO: 12758

R/W

Proposed Entrance

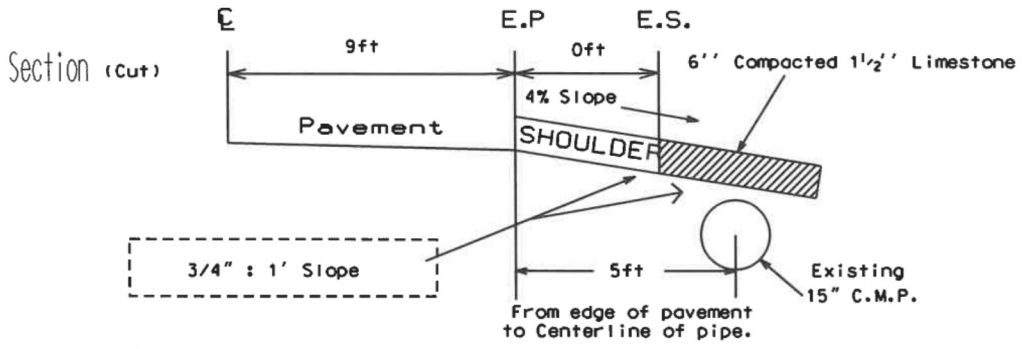


NO OBSTRUCTION PERMITTED BETWEEN PAVEMENT EDGE AND R/W LINE

REMARKS: Existing entrance to be used as a residental entrance for Sidewinder Enterprises LLC.

Posted Speed Limit **15 MPH**

R/W (see attached)



GPS 39.30371
-77.98996

MP 2.846

NAME Sidewinder Enterprises LLC.

ADDRESS: 4340 Von Karman Avenue 380
Newport Beach CA 92660

LOCATION: @ inter of CR 1/8. 1/9 and Grace Street

COUNTY Jefferson

ROUTE 1/8

PROJECT

DATE 6/14/24

INTEGRITY
FEDERAL SERVICES
CIVIL ENGINEERING • LANDSCAPE ARCHITECTURE • PLANNING
148 S. Queen Street, Suite 201 • Phone: 304-725-8455
Martinsburg, WV 25401 • www.jfs-assoc.com

SIDEWINDER ENTERPRISES
LLC

3M PROPERTY PARCELS

JEFFERSON COUNTY, WEST VIRGINIA

1 OF 1

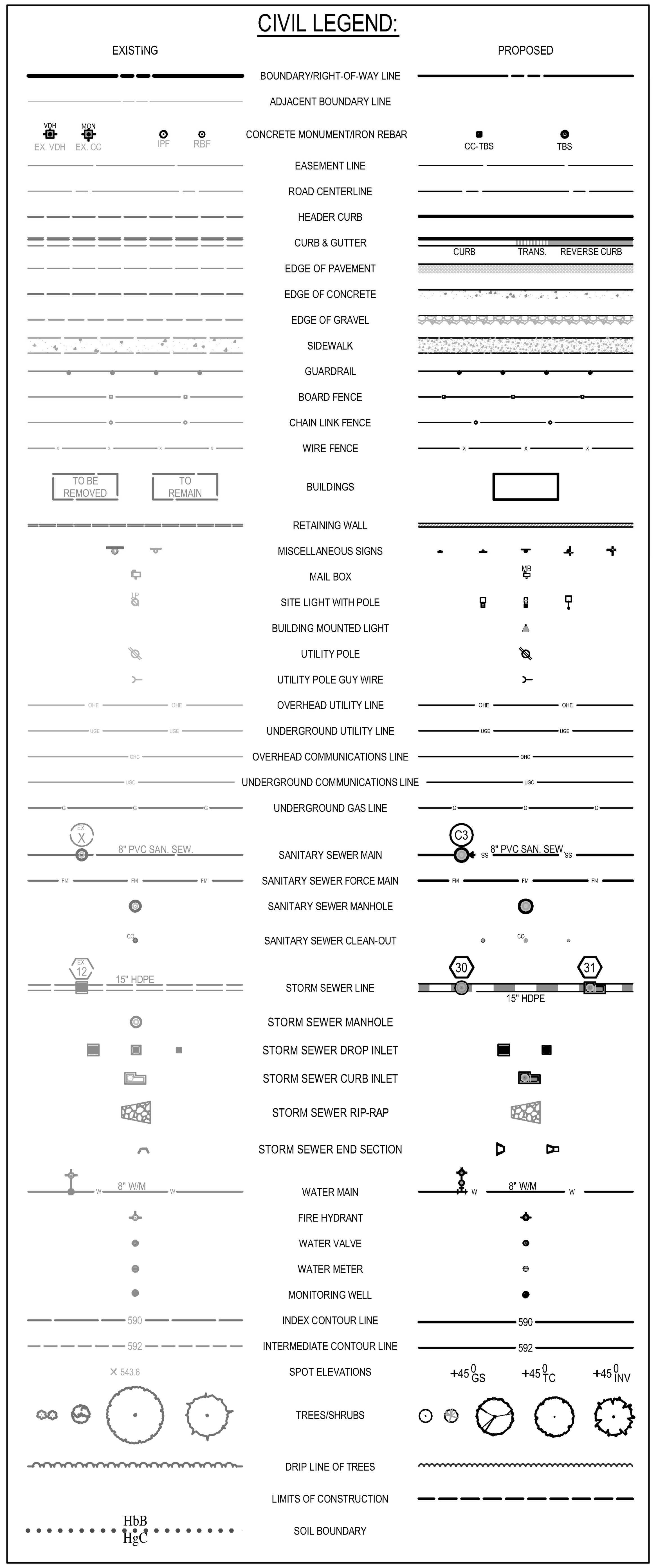
CONCEPT PLAN
MOUNTAIN PURE
MAJOR SITE PLAN

JEFFERSON COUNTY FILE NUMBER: 24-6-SP
MIDDLEWAY TAX DISTRICT JEFFERSON COUNTY, WEST VIRGINIA
TAX MAP 22, PARCEL 9; D.B. 1256, PG. 360
TAX MAP 22 PARCEL 33.9; D.B. 1271 PG. 212
TAX MAP 22 PARCEL 34; D.B. 1256 PG. 360

OWNER / APPLICANT:

SIDEWINDER ENTERPRISES, LLC &
RLMHP LLC & PHOTOGLOU LIVING TRUST
4340 VON KARMAN AVENUE, SUITE 380 NEWPORT BEACH, CA 92660
(949)-697-9993

CIVIL LEGEND:



JEFFERSON COUNTY - COMPLETE LIST OF WAIVERS/VARIANCES

(TABLE 1.2-2)

ORDINANCE	SECTION OF ORDINANCE	DESCRIPTION OF WAIVER OR VARIANCE	DATE GRANTED
SUBDIVISION	20.201C & 20.202	TO ALLOW A NON-RESIDENTIAL SUBDIVISION TO PROCESS AS A MINOR SUBDIVISION	08/08/2023

PROPOSED USE:

PARCEL 9 USE - INDUSTRIAL - HEAVY MANUFACTURING AND DISTRIBUTION
PARCEL 33.9 - WATER LINE
PARCEL 34 - EXISTING WELL, PERMIT #21,258 WILL SUPPLY WATER TO THE BOTTLING PLANT

CONCEPT PLAN REVIEW CHECKLIST NOTES:

B.1. SEE GENERAL LOCATION MAP FOR ZONING DISTRICTS WITHIN 500' OF THE SUBJECT PROPERTY.

B.2. A CONCEPT PLAN BE FOUND ON SHEET 3.
1. SEE SHEET 3 FOR THE LAYOUT OF LOTS, PARKING AREAS, RECREATION AREAS, ROADS, AND BUILDING AREAS.
2. PROPOSED BUILDING AREAS IS 1,000,000 SF TOTAL.
3. BUILDING FOOTPRINTS MAY BE MODIFIED ON SITE PLAN, BUT WILL NOT EXCEED 1,000,000 SF.

B 3. ZONING INFORMATION:
1. PARCEL 9 - INDUSTRIAL/COMMERCIAL ZONING DISTRICT
2. PARCEL 33.9, 34 - RURAL DISTRICT
3. DENSITY CALCULATIONS - N/A
4. SITE RESOURCE MAP - SEE SHEET 2 AND 3
4.1. 2' CONTOURS PROVIDED ON SITE RESOURCE MAPS
4.2. NATURAL FEATURES SHOWN ON SITE RESOURCE MAPS
4.3. SLOPE DELINEATION PER SECTION 22.50 - THE SLOPE WITHIN THE HILLSIDE SETBACK IS MEAN 10.9%.
4.4. FLOODPLAIN SHOWN ON SITE RESOURCE MAP, FEMA MAP 54037C0115E IDENTIFIES ZONE A, AE AND FLOODWAY AE ON THE SUBJECT PROPERTY.
4.5. ADJOINING PROPERTY USES ARE ON SHEET 2 AND 3

B 4. PROJECT DESCRIPTION
1. BOTTLING PLANT ZONING - THE BOTTLING PLANT IS A PERMITTED USE IN THE ZONE, USE INCLUDES HEAVY MANUFACTURING AND DISTRIBUTION.
2. WELL ARE PERMITTED IN ALL ZONES IN JEFFERSON COUNTY AND ARE NOT SUBJECT TO TABLE APPENDIX C. WELL ON PARCEL 34 IS PERMITTED THROUGH WV DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES..
3. THE CONCEPT PLAN IS FOR THE DEVELOPMENT OF TWO BOTTLING FACILITIES, PHASE 1 (304,000SF) AND PHASE 2 (696,000 SF) TOTALING 1,000,000SF. THE WELL ON PARCEL 34 IS EXISTING, THE CONCEPT PLAN SHOWS THE CONNECTION BETWEEN THE BOTTLING FACILITIES AND THE WELL INCLUDING A WATER LINE ON PARCEL 33.9.
4. THE CONCEPT PLAN INCLUDES THE PROPOSED BUILDINGS, PARKING, SWM FACILITIES AND OTHER IMPROVEMENTS REQUIRED BY JEFFERSON COUNTY REGULATIONS..
5. THE PARCEL 9 PARTICIPATED IN THE WV VRP PROGRAM, SEE SHEET 5 FOR DETAILS.
6. PARKING TABULATIONS AS FOLLOWS:
6.1. PARKING PHASE 1 - 62 STANDARD SPACES, 94 TRAILER SPACES
6.2. PARKING PHASE 2 - 101 STANDARD SPACES, 312 TRAILER SPACE
6.3. TOTAL PARKING - 163 STANDARD SPACES, 406 TRAILER SPACES
6.4. PARKING TOTALS MAY BE ADJUSTED WITH SITE PLAN, BUT WILL MEET ALL JEFFERSON COUNTY MINIMUM STANDARDS.

B 5. TRAFFIC IMPACT DATA
1. BUNKER HILL ROAD (CO. RT. 1/9):/ WVDOH ROUTE ID - 1940001090000 / AVERAGE DAILY TRIPS - 29
2. GRACE STREET (CO. RT. 1/8) / WVDOH ROUTE ID - 1940001080000 / AVERAGE DAILY TRIPS - 812
3. LEETOWN ROAD (CO. RT. 1):/ WVDOH ROUTE ID - 1940001000000 /AVERAGE DAILY TRIPS - 3,055
4. DATA SOURCE - WVDOT DIVISION OF HIGHWAYS, PERFORMANCE MANAGEMENT DIVISION, TRAFFIC MONITORING UNIT DATA SOURCE YEAR - 2023
4.1. TRIP GENERATION FOR PARCEL 9 IS BASED ON TRAFFIC IMPACT STUDY SUBMITTED TO WVDOT. PARCELS 34/33.9 IS ASSUMED TO GENERATE NO MORE THAN 2 TRIPS PER DAY TO MONITOR THE WELL AND NONE IN THE PEAK HOUR..
4.2. DAILY TRIPS 770 - 610 EMPLOYEE TRIPS, 160 TRUCK TRIPS
4.3. AM PEAK HOUR TRIPS - 182
4.4. PM PEAK HOUR TRIPS - 184
4.5. THE NEAREST KEY INTERSECTION AS DEFINED IN THE CONCEPT PLAN CHECKLIST IS THE INTERSECTION OF LEETOWN ROAD (RT. 1) AND MIDDLEWAY PIKE (WV RT 51).
4.6. HIGHWAY PROBLEM AREA #36 WITHIN 1 MILE OF PARCEL 9, IT IS 1,300' FROM PARCEL 33.9 AND 34.
4.7. PURSUANT TO SECTION 24.119.B.6. OF THE SUBDIVISION REGULATIONS, THE DEVELOPER HAS AN APPROVED TIS FROM WVDOH

B 6. AGENCY REVIEWS
1. AGENCY REVIEWS: LETTERS WILL BE SENT TO THE REQUIRED REVIEW AGENCIES AS REQUIRED BY THE CONCEPT PLAN REVIEW CHECKLIST. A COPY OF THE LETTERS WILL BE PROVIDED TO COUNTY STAFF.

B.7. A LIST OF ALL ADJOINING PROPERTIES AND OWNERS ADDRESS' ARE INCLUDED AS PART OF THIS SUBMISSION. PROPERTY OWNERS INFORMATION IS PROVIDED PURSUANT TO JEFFERSON COUNTY ASSESSOR'S RECORDS SEE TABLE LOCATED ON SHEET 2 AND 3 FOR ADJACENT PROPERTY OWNER INFORMATION.

E. A LETTER TO WVDOH HAS BEEN SENT REQUESTING THE IDENTIFICATION OF ANY ISSUES, DATA REQUIREMENTS OR NOTICE THAT THERE ARE NONE.

F. PURSUANT TO SECTION 24.119.B.6 OF THE SUBDIVISION REGULATION, THE DEVELOPER WILL PROVIDE A TRAFFIC IMPACT STUDY IN ACCORDANCE WITH WVDOH CRITERIA WITH SITE PLAN.

G. DOMESTIC WATER SERVICE WILL BE PROVIDED BY BERKELEY COUNTY PUBLIC SERVICE WATER DISTRICT (BCPWSD). AN INTENT TO SERVE LETTER HAS BEEN OBTAINED AND PROVIDED TO COUNTY STAFF.

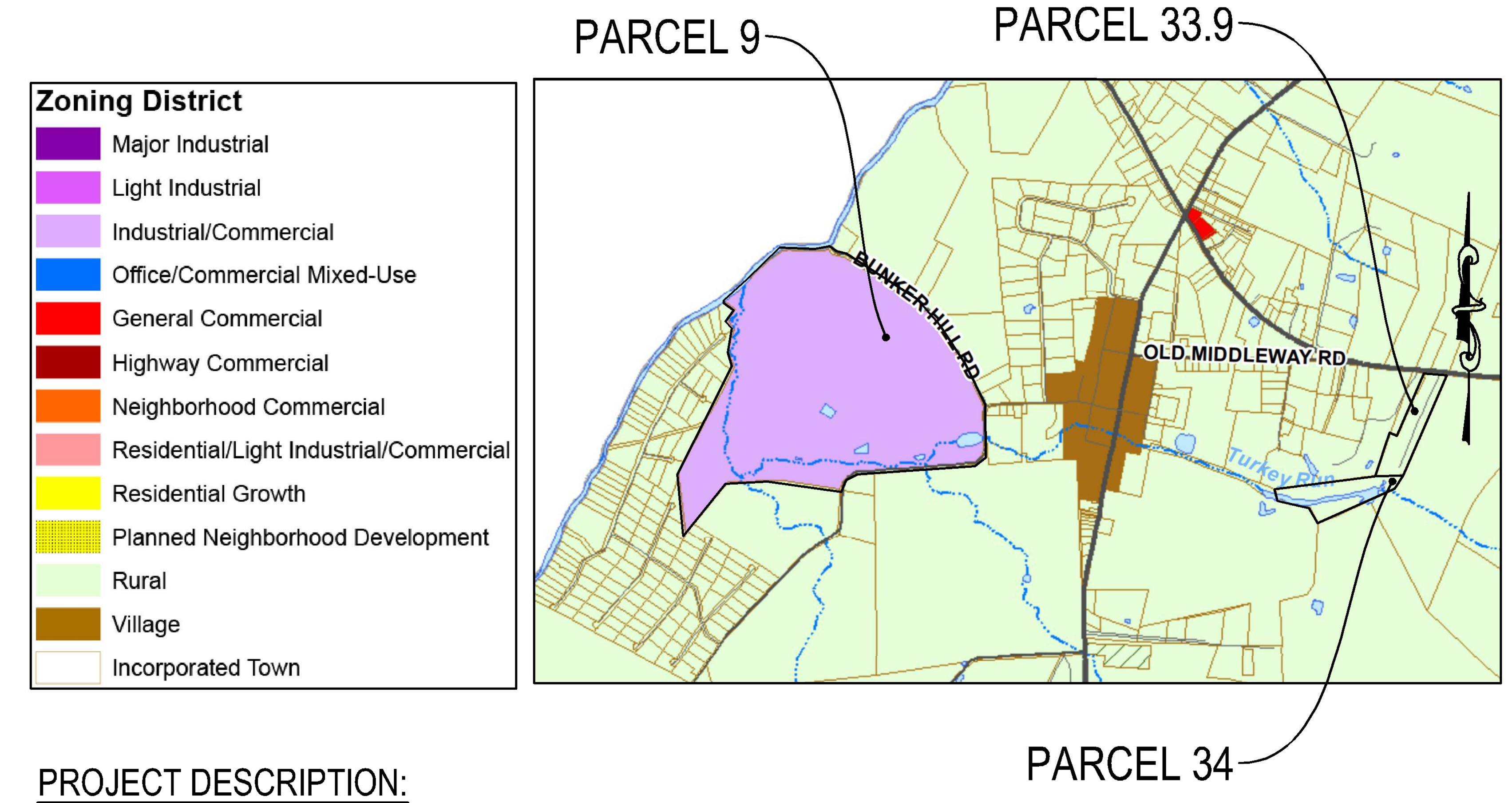
H. SEWER SERVICE WILL BE PROVIDED BY BERKELEY COUNTY PUBLIC SERVICE SEWER DISTRICT (BCPSSD). AN INTENT TO SERVE LETTER HAS BEEN OBTAINED AND PROVIDED TO COUNTY STAFF.

CONCEPT PLAN CONDITIONS:

1. PRIOR TO THE START OF PLANT OPERATIONS THE INTERSECTION OF LEETOWN ROAD AND ROUTE 51 WILL BE IMPROVED. IT IS CURRENTLY ANTICIPATED THAT THIS IMPROVEMENT WILL BE A TRAFFIC CIRCLE. THE FORM OF THE FINAL IMPROVEMENT IS AT THE DISCRETION OF WVDOH.
2. THE APPLICANT WILL SUBMIT A WELL MONITORING PLAN WITH THE SITE PLAN. THE PLAN WILL INCLUDE THE FOLLOWING:
   2.1. PROPERTY OWNERS WITHIN 1/2 MILE OF THE SUPPLY WELL MAY REQUEST WELL MONITORING
   2.2. PROPERTY OWNERS AT THE FOLLOWING LOCATIONS MAY REQUEST WELL MONITORING
   2.2.1. QUEEN STREET - FROM SOUTH STREET TO ROUTE 1/16, GRACE STREET, WEST STREET, EAST STREET, OLD MIDDLEWAY ROAD
3. THE OWNER WILL MEET WITH MIDDLEWAY RESIDENTS TO DISCUSS TRAFFIC IMPACT TO HISTORICAL STRUCTURES AND TRAFFIC CALMING PRIOR TO THE SUBMISSION OF THE SITE PLAN.
4. WATER WITHDRAWAL TO BE IN CONFORMANCE WITH WV OFFICE OF ENVIRONMENTAL HEALTH SERVICES PERMIT #21,258 WHICH PERMITS A 1,000GPM WELL.
5. APPLICANT WILL CONDUCT GROUND WATER SAMPLING ON PARCEL 9 AFTER PLANT IS OPERATIONAL. WATER SAMPLES WILL BE TAKEN FROM THE MONITORING WELLS CONSTRUCTED DURING THE VRP TESTING. WELL LOCATIONS SHALL BE SUBMITTED WITH THE SITE PLAN

GENERAL LOCATION MAP

SCALE:1"=2,000'



PROJECT DESCRIPTION:

THE DEVELOPMENT PROPOSES UP TO 1,000,000 SQUARE FEET OF BUILDING AREA FOR BOTTLING FACILITIES, FALLING UNDER HEAVY MANUFACTURING, WAREHOUSING AND DISTRIBUTION USE AND A WELL TO TRANSMIT WATER TO THE BOTTLING FACILITY. PARCEL 9 WILL BE SUBDIVIDED AS A NON-RESIDENTIAL SUBDIVISION UNDER THE MINOR SUBDIVISION PROCESS PER THE WAIVER OBTAINED ON 08/08/2023, JC FILE #23-20-PCW . THE PARCEL LINES PER THE PROPOSED MINOR SUBDIVISION ARE DEPICTED ON THE CONCEPT PLAN. TWO ENTRANCES ARE PROPOSED, WITH ACCESS TO THE SITE PROVIDED VIA A 100' EASEMENT ONTO BUNKER HILL ROAD. THE SITE'S DEVELOPMENT IS PROPOSED TO BE PHASED. THE WELL ON PARCEL 34 IS EXISTING. A WATER LINE WILL BE INSTALLED ON PARCEL 33.9 AND EXTEND TO PARCEL 9.

ZONING ORDINANCE SUMMARY:

1. **ZONING REQUIREMENTS:**

PARCEL 9
ZONE - INDUSTRIAL COMMERCIAL DISTRICT
EXISTING USE - VACANT HEAVY MANUFACTURING FACILITY
PROPOSED USE - INDUSTRIAL - HEAVY MANUFACTURING AND DISTRIBUTION

PARCEL 33.9
ZONE - RURAL DISTRICT
EXISTING USE - MOBILE HOME PARK
PROPOSED USE - MOBILE HOME PARK, AND WATER LINE

PARCEL 34
ZONE - RURAL DISTRICT
EXISTING USE - WELL B (SUPPLY WELL PERMIT #21,258)
PROPOSED USE - WELL B (SUPPLY WELL PERMIT #21,258)

2. ENVIRONMENTAL:

COVENANTS RECORDED ON PARCEL 9 IN PER VRP # 15024 WILL APPLY TO THE DEVELOPMENT. THESE COVENANTS INCLUDE NO WELL DRILLING WITHIN THE PLUME AREA AND WITHIN 300' OF MONITORING WELL 114D, CONTROLLED GRADING FOR PORTIONS OF PARCEL 9.

ENVIRONMENTAL STANDARDS CONTAINED IN SECTIONS 8.9.A.1 THROUGH 8.9.A.8 OF THE JEFFERSON COUNTY ZONING AND LAND DEVELOPMENT ORDINANCE WILL APPLY.

3. LANDSCAPING:

THE APPLICANT WILL MEET ALL LANDSCAPE AND BUFFER REQUIREMENTS OF THE JEFFERSON COUNTY ZONING AND SUBDIVISION ORDINANCES..

4. SITE LIGHTING:

SITE LIGHTING IS PROPOSED FOR THIS SITE IN THE FORM OF POLE MOUNTED STREET LIGHTS AND BUILDING MOUNTED LIGHTS. FINAL DESIGN AND LOCATION IS SUBJECT TO RECOMMENDATIONS BY A QUALIFIED LIGHTING ENGINEER.

5. USE REQUIREMENTS:

	REQUIRED	PROVIDED
LOT SIZE:	3 AC	37 AC; 73 AC
LOT WIDTH:	N/A	N/A
BUILDING HEIGHT:	75' (MAX.)	±50'
IMPERVIOUS AREA LIMIT:	90% (MAX.)	40%
BUILDING SETBACKS:		
FRONT:	50' (MIN.)	50' (MIN.)
SIDE:	50' (MIN.)	50' (MIN.)
REAR:	50' (MIN.)	50' (MIN.)
*25' (MIN.) IF ADJACENT TO AN INDUSTRIAL USE		
PARKING/DRIVE AISLE SETBACKS:		
FRONT:	25' (MIN.)	25' (MIN.)
SIDE:	25' (MIN.)	25' (MIN.)
REAR:	25' (MIN.)	25' (MIN.)
*20' (MIN.) IF ADJACENT TO AN INDUSTRIAL USE		
DISTANCE REQUIREMENT:		
FRONT, SIDE, REAR:	200' (MIN.)	200' (MIN.)
BUFFERS (SCREENED / UNSCREENED):		
FRONT:	25'(S)	25'(S)
*N/A IF ADJACENT TO AN INDUSTRIAL USE		
SIDE & REAR:	20'(S)	20'(S)
*Wide Buffer Detail M-52		

PARKING TABULATIONS:
1. REQUIRED: (MANUFACTURING PLANT)
   1 SPACE PER EMPLOYEE ON MAXIMUM WORKING SHIFT
   TOTAL PARKING SPACES REQUIRED = 150 SPACES
2. PROVIDED:
   TOTAL PARKING SPACES PROVIDED = 163 SPACES (INCLUDES ADA ACCESSIBLE SPACES)
   406 TRACTOR TRAILER SPACES

SUPPLY WELL SUMMARY:

1. THE SUPPLY WELL FOR THE BOTTLING FACILITY IS AN EXISTING PERMITTED WELL, PERMIT #21,258.
2. THE PERMIT WAS GRANTED BY THE WV OFFICE OF ENVIRONMENTAL HEALTH SERVICES, THE REGULATORY AGENCY FOR WELLS IN JEFFERSON COUNTY.
3. THE WELL PERMIT IS FOR 1,000GPM
4. THE WELL PERMIT ALLOWS THE FACILITY TO SUPPLY THE PHASE 1 INDUSTRIAL FACILITY (BOTTLING PLAN), THE PHASE 2 INDUSTRAIL FACILITY (BOTTLING PLANT AND UP TO 250 CUSTOMERS IN MIDDLEWAY.
5. PERMITTING AND REGULATION OF THE EXISTING SUPPLY WELL.
   5.1. JEFFERSON COUNTY DEPARTMENT OF ENGINEERING, PLANNING AND ZONING DO NOT PERMIT OR APPROVE WELLS, IT DOES NOT REGULATE WELLS THROUGH THE ZONING ORDINANCE OR SUBDIVISION ORDINANCE. WHEN WELL APPROVALS ARE REQUIRED DOCUMENTATION MUST BE PROVIDED FROM THE REGULATING AGENCY.
   5.2. WV STATE CODE - §8A-7-10. EFFECT OF ENACTED ZONING ORDINANCE, DOES NOT PERMIT ANY ZONING ORDINANCE TO LIMIT OR RESTRICT THE COMPLETE USE OF NATURAL RESOURCES BY THE OWNER. WHILE WELLS CAN AND ARE REGULATED BY THE STATE OF WV, JEFFERSON COUNTY CANNOT USE THEIR ZONING ORDINANCE TO REPLACE THE AUTHORITY HELD BY THE STATE.
   5.3. DURING THE PERMITTING OF WELL B (#21,258) THE APPLICANT PREPARED A DETAILED STUDY THAT WAS SUBMITTED TO AND REVIEWED BY THE WV OFFICE OF ENVIRONMENTAL HEALTH SERVICES.

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COVER SHEET
1 MIL. SQ. FT. BOTTLING FACILITY
MOUNTAIN PURE
TAX MAP 22, PARCEL(S) 9, 34, & 33.9; D.B. 1256, PG. 360 & D.B. 1271, PG. 212
MIDDLEWAY TAX DISTRICT
JEFFERSON COUNTY, WEST VIRGINIA

SCALE: HORIZ.: AS NOTED VERT.:
DATE: SEPTEMBER 24, 2024
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CADD: COVER SHEET-REV 12.3.DWG
NCS: N/A
SHEET:

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	156.73'	215.00'	41°46'00"	N 35°38'02" W	153.28'
C2	52.83'	215.00'	14°04'46"	N 21°47'27" W	52.70'

LINE	BEARING	DISTANCE
L1	S 86°04'32" W	32.00'
L2	N 40°32'03" E	114.52'
L3	N 53°37'45" E	95.14'
L4	S 31°37'12" E	59.82'
L5	S 40°09'50" E	102.79'
L6	S 79°02'12" E	136.41'
L7	S 62°21'51" E	105.70'
L8	S 54°53'37" E	113.39'

ADJACENT PROPERTY OWNER INFORMATION

ID	NAME	ADDRESS	CITY	STATE	ZIP	PARCEL ID	DEED BOOK/PAGE	USE
1	JAMES ALLEN LISKEY	584 BUNKER HILL RD	KEARNEYSVILLE	WV	25430	07 22001100020000	1225 / 46	RESIDENTIAL
2	JEFF JONES ET AL	4374 MIDDLEWAY PIKE	KEARNEYSVILLE	WV	25430	07 22001100000000	WB32 / 456	FARM
3	CHARLOTTE M WEANING	332 BUNKER HILL RD	KEARNEYSVILLE	WV	25430	07 22001100010000	540 / 556	RESIDENTIAL
4	KAY B LISKEY LISKEY FAMILY - TR	4302 MIDDLEWAY PIKE	KEARNEYSVILLE	WV	25430	07 19000700000000	1279 / 189	FARM
5	SUZIE HAGGERTY	130 BUNKER HILL RD	KEARNEYSVILLE	WV	25430	07 2200120000	717 / 394	FARM
6	PAUL JOSEPH HAGGERTY	130 BUNKER HILL RD	KEARNEYSVILLE	WV	25430	07 22001200150000	952 / 133	RESIDENTIAL
7	THOMAS J & DONNA M GEYER	49 GRACE ST	KEARNEYSVILLE	WV	25430	07 22001200020000	588 / 579	RESIDENTIAL
8	ROBERT L & BEVERLY L PETERSEN	2788 BRUCETOWN RD	KEARNEYSVILLE	WV	25430	07 22000800000000	788 / 330	RESIDENTIAL
9	WILLIAM S & C ELAINE FRIEND	2716 BRUCETOWN RD	KEARNEYSVILLE	WV	25430	07 22000800050000	298 / 227	RESIDENTIAL
10	HAROLD HAYWARD BUCHANAN	40 BURTON HILLS BLVD STE 300	NASHVILLE	TN	37215	07 22000500000000	WB28 / 262	FARM
11	JESSE R & AMANDA D MILLER	847 LOGAN'S RUN RD	KEARNEYSVILLE	WV	25430	07 22000400000000	1185 / 382	FARM
12	SIDEWINDER ENTERPRISES LLC	4340 VON KARMAN AVE STE 380	NEWPORT BEACH	CA	92660	07 22000300010000	1256 / 360	FARM
13	CINTYA P & GARY A CRAWFORD	279 PICKETT AVE	INWOOD	WV	25428	07 23007600000000	1177 / 50	RESIDENTIAL
14	DANIEL B & BRIANNA M GALLOP	337 CEDAR DR	KEARNEYSVILLE	WV	25430	07 23007500000000	1225 / 378	RESIDENTIAL
15	RONALD & ALICE HOLTZMAN	338 BIG SPRING DR	KEARNEYSVILLE	WV	25430	07 23007800000000	1144 / 598	RESIDENTIAL
16	TIMOTHY D & KATHY M WRIGHT	287 HAPPY CREEK DR	KEARNEYSVILLE	WV	25430	07 23008200000000	841 / 575	RESIDENTIAL
17	TERRY SEMAN	80 ROSE LN	KEARNEYSVILLE	WV	25430	07 23014300000000	1140 / 626	RESIDENTIAL
18	PAUL RYAN TASSONE	216 CLOSE DR	MARTINSBURG	WV	25404	07 2301420000	1151 / 354	RESIDENTIAL
19	MARGARET L & SAMUEL YOKLEY	78 TROUT CIR	KEARNEYSVILLE	WV	25430	07 22000100260000	967 / 46	RESIDENTIAL
20	MARGARET L & SAMUEL YOKLEY	78 TROUT CIR	KEARNEYSVILLE	WV	25430	07 22000100250000	967 / 46	RESIDENTIAL
21	JOSEPH WAYNE GAYNOR	796 LOGANS RUN DR	KEARNEYSVILLE	WV	25430	07 22000100220000	1191 / 325	RESIDENTIAL
22	DEL R DEHAVEN	875 LOGANS RUN DR	KEARNEYSVILLE	WV	25430	07 22000100210000	1149 / 579	RESIDENTIAL
23	CHARLES C WOLF ET AL	2626 ARTHUR AVE	SYKESVILLE	MD	21784	07 2200010020	685 / 744	RESIDENTIAL

FILE PATH: G:\PROJECT\GENERAL\313-0102_SIDEWINDER_3M PRPERTY\PLANN\COUNTY CCICEPT\CONCEPT PLAN 2 (RE- APPLICATION)\3138-0102-CO NCEPT PLAN-REV 12.3.DWG

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1 MIL. SQ. FT. BOTTLING FACILITY

MOUNTAIN PURE

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MIDDLEWAY TAX DISTRICT
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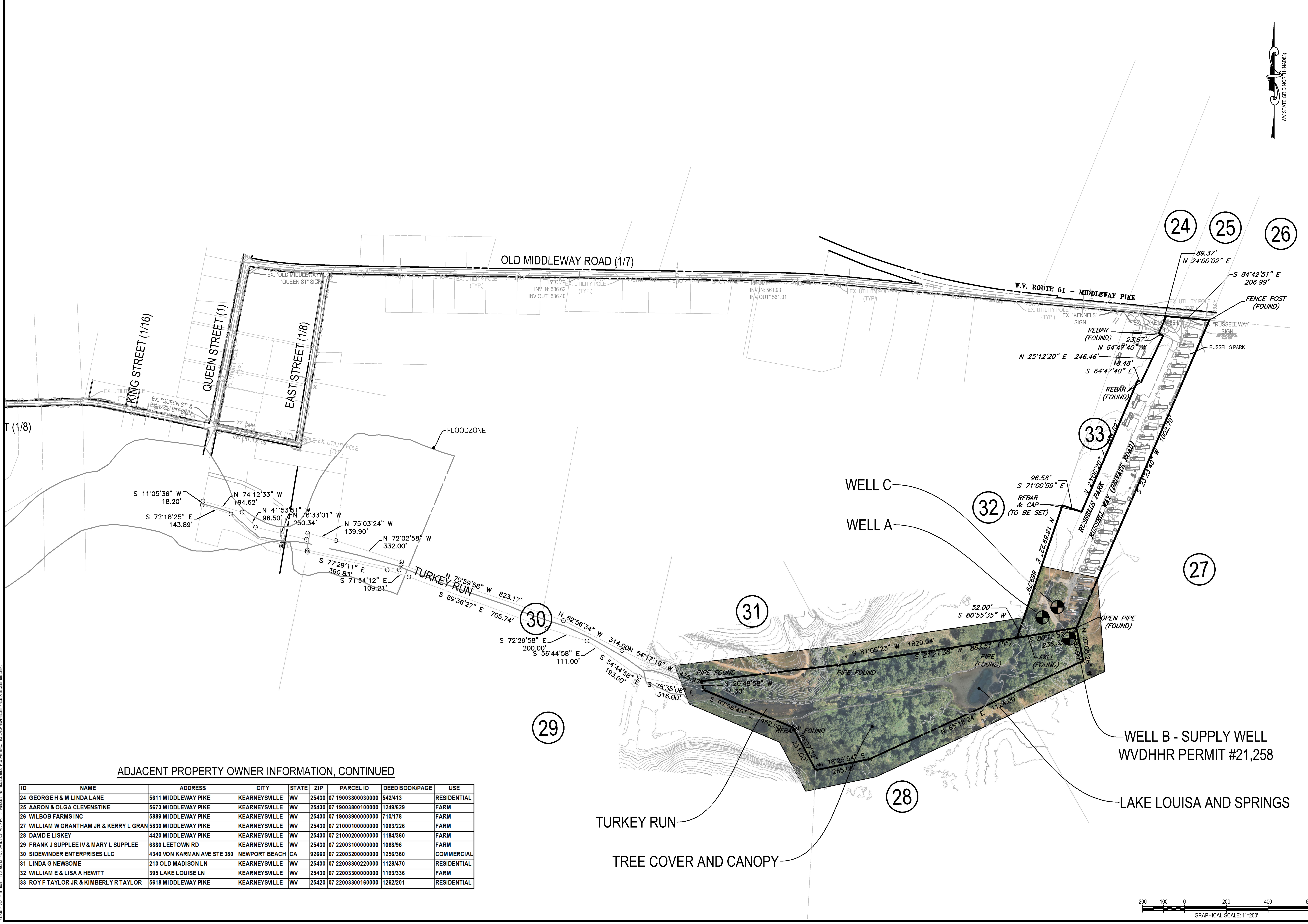
2 OF 6



ADJACENT PROPERTY OWNER INFORMATION, CONTINUED

ID	NAME	ADDRESS	CITY	STATE	ZIP	PARCEL ID	DEED BOOK/PAGE	USE
24	GEORGE H & M LINDA LANE	5611 MIDDLEWAY PIKE	KEARNEYSVILLE	WV	25430	07 19003800030000	542/413	RESIDENTIAL
25	AARON & OLGA CLEVENSTINE	5673 MIDDLEWAY PIKE	KEARNEYSVILLE	WV	25430	07 19003800100000	1249/629	FARM
26	WILBOB FARMS INC	5889 MIDDLEWAY PIKE	KEARNEYSVILLE	WV	25430	07 19003900000000	710/178	FARM
27	WILLIAM W GRANTHAM JR & KERRY L GRAN	5830 MIDDLEWAY PIKE	KEARNEYSVILLE	WV	25430	07 21000100000000	1063/226	FARM
28	DAVID E LISKEY	4420 MIDDLEWAY PIKE	KEARNEYSVILLE	WV	25430	07 21000200000000	1184/360	FARM
29	FRANK J SUPPLEE IV & MARY L SUPPLEE	6880 LEETOWN RD	KEARNEYSVILLE	WV	25430	07 22003100000000	1068/96	FARM
30	SIDEWINDER ENTERPRISES LLC	4340 VON KARMAN AVE STE 380	NEWPORT BEACH	CA	92660	07 22003200000000	1256/360	COMMERCIAL
31	LINDA G NEWSOME	213 OLD MADISON LN	KEARNEYSVILLE	WV	25430	07 22003300220000	1128/470	RESIDENTIAL
32	WILLIAM E & LISA A HEWITT	395 LAKE LOUISE LN	KEARNEYSVILLE	WV	25430	07 22003300000000	1193/336	FARM
33	ROY F TAYLOR JR & KIMBERLY R TAYLOR	5618 MIDDLEWAY PIKE	KEARNEYSVILLE	WV	25420	07 22003300160000	1262/201	RESIDENTIAL

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MOUNTAIN PURE

EXISTING CONDITIONS

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MIDDLEWAY TAX DISTRICT

JEFFERSON COUNTY, WEST VIRGINIA

SCALE: HORIZ.: 1"=200' VERT.:

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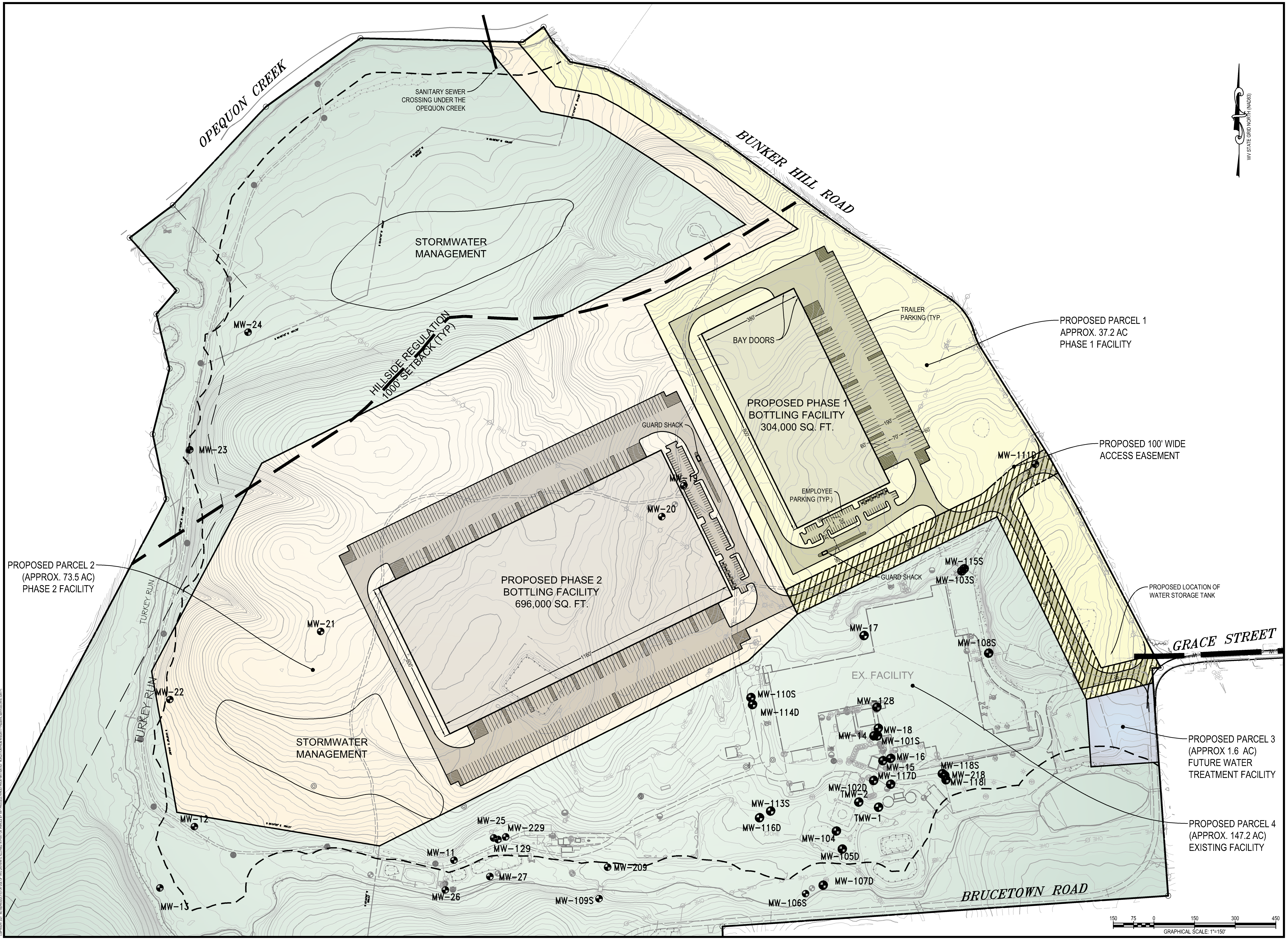
DRAWN: ABP CHECK: JPG

CADD: 3138-0102-CONCEPT PLAN-REV 12.3.DWG

NCS: N/A

SHEET:

3 OF 6



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CONCEPT PLAN
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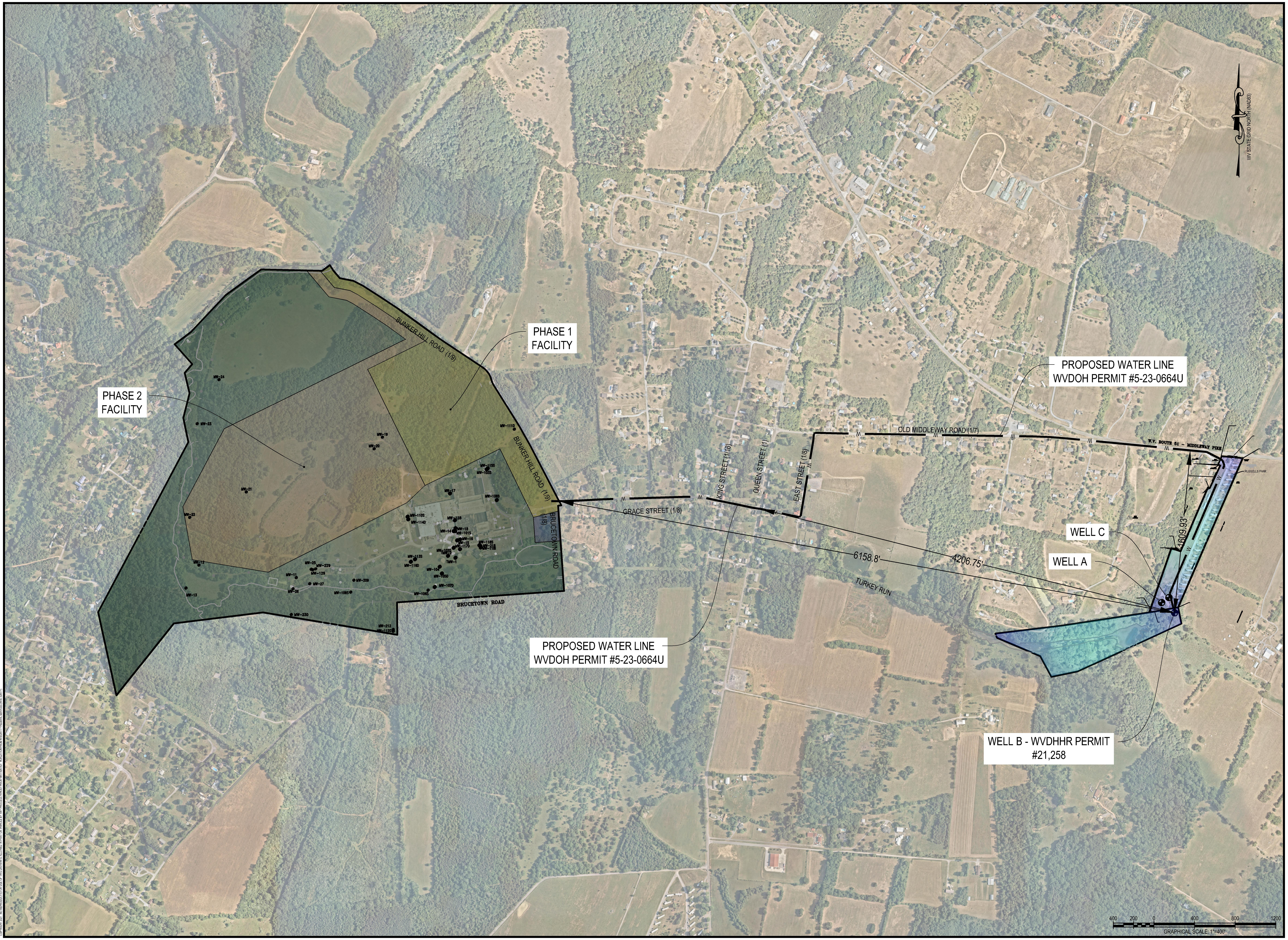
SHEET: 4 OF 6



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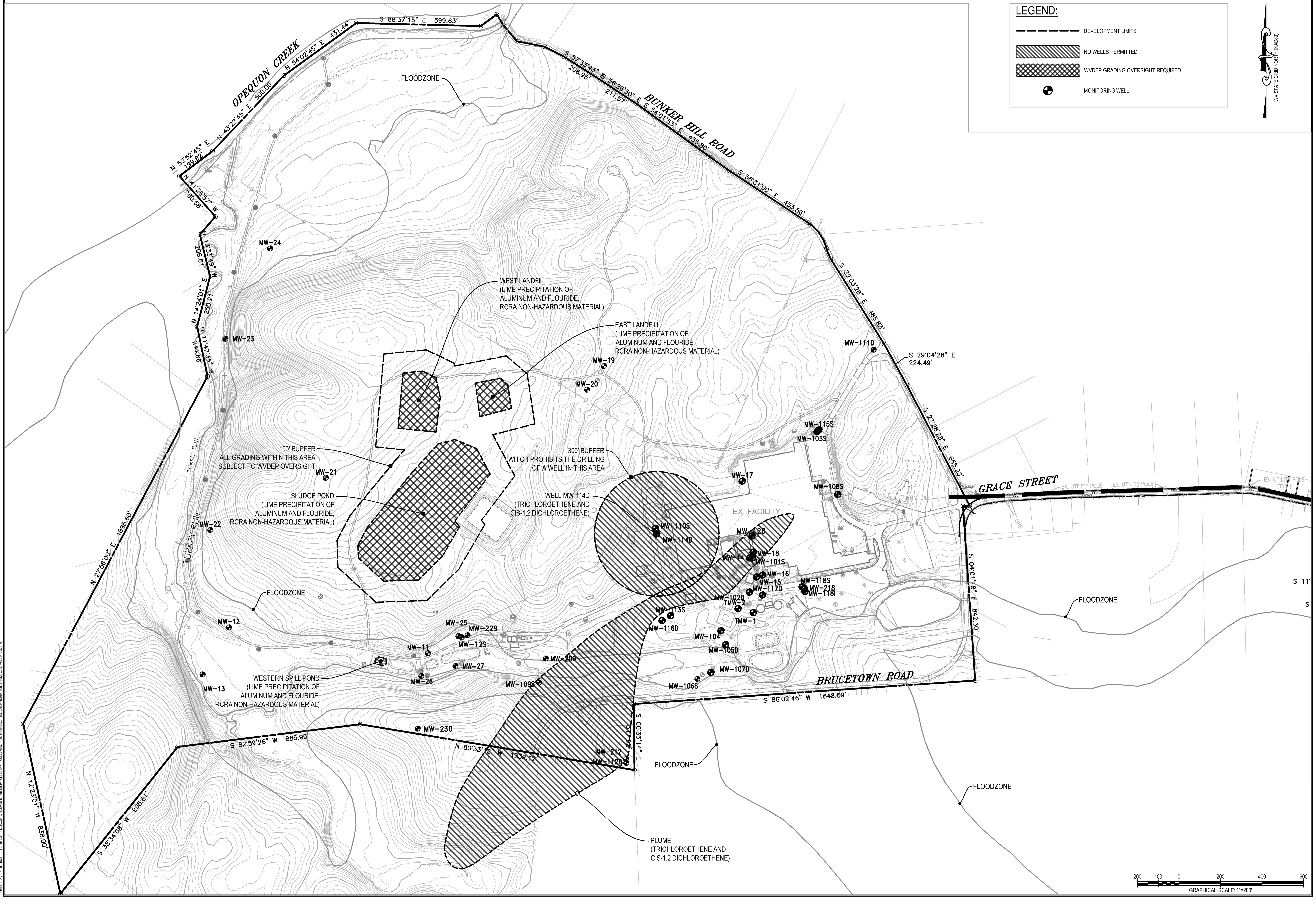
NCS: N/A
SHEET: 5 OF 6

VRP-15024 CERTIFICATE OF COMPLETION ISSUED JUNE 15, 2018



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Ms. Brockman,

The following summary is in response to the question posed by staff;

> *Please provide a narrative/cover/letter that describes the whole project and how this plan is more complete than the previous submittal that the PC deemed as incomplete.*

At the concept review meeting on November 12, 2024, the Planning Commission made the finding that the plan was incomplete because it did not include the parcel with the existing/permitted supply well. There were no other findings related to the concept plan that were included in the motion by the planning commission.

To address the Planning Commission findings, the following parcels have been added to the concept plan:

1. Parcel 34 – this parcel is the location of the supply well. The parcel is owned by the applicant.
2. Parcel 33.9 – this parcel is used to access the well as well as a future water supply line that will be a portion of the water system proposed to convey water to the bottling plant. Wells A and C are located on this parcel. The parcel is owned by the applicant.

In addition the applicant has provided the following:

1. A plan showing the location of the water line from the supply well to the bottling plant.
2. A plan showing the location of the plume, groundwater monitoring well locations and the areas with non-hazardous material that required WVDEP oversight during grading. The ground watering wells will be the locations
3. Revised conditions have been added to the concept plan to address community concerns related to well monitoring, traffic, water withdrawal rate and ground water sampling.
4. Narratives related to the well testing and plume.

In addition to the above information the following is being provided in this letter.

1. Updated Project Narrative
2. Well Summary
3. Plume Summary

Project Narrative

Mountain Pure, LLC (Mountain Pure) aims to develop a 13-acre bottling facility in Middleway, WV. Mountain Pure shall work closely with an end user, a third-party distributor of packaged water and other beverages, to provide reliable, clean spring water. The project is projected to create construction and long-term local jobs, generate tax revenue, and enhance economic prosperity for local business in and around Jefferson County, WV, and the Appalachian region. Mountain Pure is seeking approval for construction of this modern, state-of-the-art water

packaging facility. As such, the plant is proposed to include packaging lines, and a large capacity water storage tank and other water storage facilities.

The project was created for the purpose of packaging clean and reliable water.

Mountain Pure shall invest heavily in the Jefferson County community and West Virginia as a good corporate citizen, commercial taxpayer, and neighbor. Jefferson County stands to generate millions in tax revenues to support county services for citizens. The proposed project will be among the highest annual tax-paying companies in Jefferson County.

PROTECT OUR LOCAL ENVIRONMENT - Water utilized shall be tested regularly for to maintain standards and compliance with both state and federal requirements for bottled water. This is a top priority.

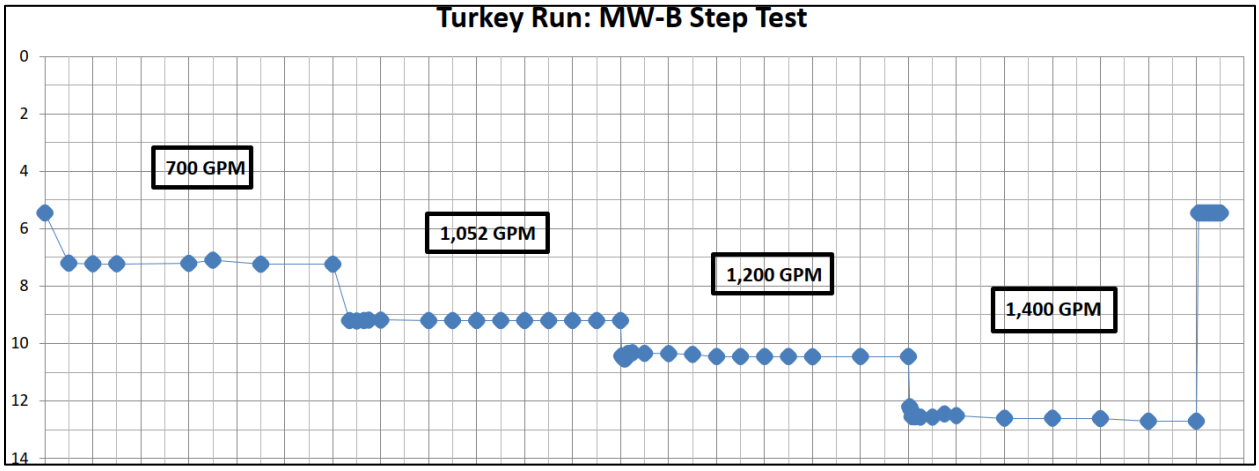
UTILIZE STATE-OF-THE-ART TECHNOLOGY, FOCUSING ON SUSTAINABILITY, CUSTOMIZATION, AND EFFICIENCY - The company shall deploy advanced technologies to measure, manage, distribute, and maintain water supply while reducing emissions and protecting against any local water depletion.

PROVIDE GOOD JOBS AND LOCAL ECONOMIC IMPACT - Through the creation of hundreds of local well-paying jobs, Mountain Pure shall invest heavily in the Jefferson County community and West Virginia as a good corporate citizen, commercial taxpayer, and neighbor. Jefferson County stands to generate millions in tax revenues to support county services for citizens. The proposed project will be among the highest annual tax-paying companies in Jefferson County.

SITE HISTORY - The site was originally occupied in the 1980's by Berkeley Woolen Company and used for textile manufacturing before it was acquired by The 3M Company. 3M converted it into a photographic equipment and supply facility. After the change of ownership in 1996 and 2004, the facility continued to be used for printing plate manufacturing until 2006. Since 2006 the facility has been vacant, but the ownership changed again in 2015 when Commercial Liabilities Partners WV, LLC purchased the site from Kodak and in 2019 when Shenandoah Extraction and Processing, LLC acquired the property. Finally in 2021, Sidewinder Enterprises, LLC purchased the site from Shenandoah Extraction and Processing, LLC, as the concept for Mountain Pure was born.

Well Summary

1. The three wells have been drilled.
   a. MW-A was used as a monitoring well during the pump test.
   b. MW-B is the supply well for the bottling plant.
   c. MW-C was drilled after the pumping test and is intended to be used as a backup well to MW-B.
   d. All wells were drilled to approximately 225'.
2. Well permitting was completed through the Jefferson County Health Department and the WV Office of Environmental Health Services.
3. Well MW-B is the supply well and is permitted for use by the West Virginia Office of Environmental Health Services.
   a. Well is permitted for 1,000gpm.
   b. The pump elevation is 70' below ground level. This is 10' higher than the pump elevation during the pumping test.
4. The water level for well MW-B was 5.49' below the surface.
5. The uppermost major water bearing zone was found at 87'. Two additional major water bearing zones are located at 118' and 176'
6. For the pumping test, the pump was placed at 80' below the surface.
7. A stepped draw down test was conducted at 700, 1052, 1200, 1400 gallons per minute, with each step being pumped for 2 hours. Each step resulted in an initial change in the water level, the water level then stabilized. The water level dropped 7'+/- during the 1,400gpm step test to an elevation of 12.5' below the ground level. The number on the left indicates the depth of the water below the surface. The water level recovered fully upon completion of the test.



8. Based on the results of the step test the decision was made to pump water at 1,200gpm for the constant rate pumping test. The test ran for 124.5 hours or almost 5 days. The following table summarizes the pumping test data.

Table 1: Summary of Well and Pumping Test Data

Well ID	Well Type	Approximate Latitude**	Approximate Longitude**	Total Well Depth (ft bgs)	Casing Depth (ft bgs)	Static Depth to Water (ft bgs)*	Depth to Potential Water-Bearing Fractures (ft bgs)	Approximate Distance from Pumping Well MW-B (ft)	Pumping Test Rate (gpm)	Max. Change in Water Level During Aquifer Test (ft) MW-B (124.5-hr)
MW-B	Pumping (Proposed Production)	39.300675°	-77.968529°	225	78	5.49	87-88, 118-119, and 173-187	0	1,200	5.35
MW-A	Observation	39.300922°	-77.968996°	255	121	5.75	141-150, 155-156, 163-165, and 167-169	160' West	N/A	0.57
PW-1	Observation	39.304666°	-77.966652°	Unknown	Unknown	18.8	Unknown	1,550' Northeast	N/A	2.06<
Spring	Observation	39.300120°	-77.969513°	Unknown	N/A	4.2	N/A	350 Southwest	N/A	0.11>

9. The hydrological study modeled the impact to groundwater levels at 1 year, 6 years, 12 years and 30 years.

	Pumping Test April, 2022	1 year	6 year	12 year	30 year
Surface Elevation	518.00	518.00	518.00	518.00	518.00
Existing Groundwater Elevation	512.51	512.51	512.51	512.51	512.51
Pump Elevation (70' below surface)	448.00	448.00	448.00	448.00	448.00
Change in Water Level (at well)	-5.35	-11.1	-11.25	-11.3	-11.35
Depth to Groundwater (at well)	10.84	16.59	16.74	16.79	16.84
Groundwater Elevation with Pumping	507.16				
Estimated Groundwater Elevation with Pumping		501.41	501.26	501.21	501.16

10. The ground water level (with pumping) remains high at the supply well when compared to the surface elevations within Middleway. The chart shows elevations documented during the pump test and projected elevations. After 30 years of pumping the water elevation at the supply well remains above the ground elevation of Middleway.

			Water Level at supply well in feet above or below the surface elevation				
Location	Surface Elevation (ft)	**Distance (ft)**	April, 2022	1 year	6 year	12 year	30 year
Queen Street/Old Middleway Road	501	4,200	6.16	0.41	0.26	0.21	0.16
Queen Street/Grace Street	498	4,100	9.16	3.41	3.26	3.21	3.16
Route 51/Leetown Road	501	4,900	6.16	0.41	0.26	0.21	0.16
Middleway Pike/Old Middleway Road	565	1,700	-57.84	-63.6	-63.7	-63.79	-63.84

11. The hydrological study included the monitoring of Turkey Run at Queen Street in Middleway. The monitoring was conducted to ensure that recycling of water from Lake Louise to Well B was not occurring. The flow in Turkey Run increased by 1,156 GPM, indicating that the water from the pumping test was not being recycled.

12. The hydrological study included assessment of offsite impacts, 5,000' from well MW-B
   a. After 1 year of pumping during drought conditions the estimated change in the water level is 4'+/-.
   b. After 30 years of pumping (1,200gpm) the estimated change in the water level is 3'+/-.

13. Per the County-Wide Groundwater Assessment commissioned by the Jefferson County Commission in 2012 the average well depth in the Western Unit (including Middleway) was 281'.

3M Plant Plume

The 3M Plant participated in a Voluntary Remediation Program, overseen by the WV Department of Environmental Protection. A certificate of completion was issued on June15th, 2018. The certificate of completion imposed specific conditions on the development of the site, including the following:

1. No wells are to be drilled within the limits of the plume or within 300' of well MW114D.
2. Grading within the limits of the plume or within 300' of well MW114D would require engineering control overseen by the WVDEP.

The chemicals which constitute the plume are dichloroethene and trichloroethene. As part of the VRP program 26 monitoring locations were set up to test water. The water monitoring exhibit is attached, the following is a summary.

Dichloroethene

- In 2015 there were 6 locations where dichloroethene was found above the reporting limit, 1 of these locations was over the WVDEP de minimis limits.
- In 2018 there were 5 locations where dichloroethene was found above the reporting limit, 4 of these locations were over the WVDEP de minimis limits.
- In 2018 there was 1 testing location where dichloroethene was not present above the reporting limits where it had previously been above the limits.
- The 1 location where dichloroethene was found above the de minimis levels tested 63% lower over the 3 year period. The data gathered from the well monitoring program indicated that the dichloroethene within the plume is breaking down.

Trichloroethene

- In 2015 there were 13 locations where Trichloroethene was found above the reporting limit, 10 of these locations were over the WVDEP de minimis limits.
- In 2018 there were 10 locations where trichloroethene was found above the reporting limit, 7 of these locations were over the WVDEP de minimis limits.
- In 2018 there were 3 testing locations where Trichloroethene was not present above the reporting limits where it had previously been above the limits.
- All locations where trichloroethene was found above the de minimis levels tested at least 32% lower over the 3 year period. The data gathered from the well monitoring program indicated that the trichloroethene within the plume is breaking down.

June 12, 2023

Mr. Sean Masterson
Sidewinder Enterprises, LLC
4340 Von Karmen Ave
Newport Beach, CA 92660

Re: Wetland/Waterway Presence/Absence Determination
Sidewinder Enterprises LLC Property (p/o Parcel 07 22000900000000)
Brucetown Road, Kearneysville, WV 25430
Triad Project No. 03-23-0484

Dear Mr. Masterson:

Triad Engineering, Inc. (Triad) performed an evaluation to determine the presence or absence of suspect jurisdictional waters of the U.S. and/or waters of the state for the proposed warehouse at the above-referenced site. The study limit for this evaluation is shown on the attached exhibit. The following is a summary of this evaluation and the findings.

Methodology - This evaluation was performed in general accordance with the U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (Y-87-1), dated January 1987 and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (ERDC/EL TR-12-9), dated April 2012.

Office Analysis - Triad reviewed the applicable U.S. Geological Survey Topographic Map, Web Soil Survey, U.S. Fish & Wildlife Service National Wetlands Inventory Wetlands Mapper, Google Earth Pro aerial photographs, and the Federal Emergency Management Agency National Flood Hazard Layer. The only surface water features identified at the site are industrial wastewater lagoons/settling ponds, the mapped soils are predominantly non-hydric, except for the northern and southern fringes of the study area, and the study area is in an area of minimal flood hazard (Zone X).

Site Reconnaissance – Patrick Upham and Tim Kellerman of Triad conducted a reconnaissance at the site on June 6, 2023, which was during a period of severe drought.

Findings - The office analysis and site reconnaissance confirmed the absence of suspect jurisdictional waters of the U.S. and waters of the State. Several wastewater lagoons/settling ponds and several upland gullies were evaluated at the site via ground truthing as were other areas of the site. None of these features or any other areas at the site should be considered jurisdictional waters of the U.S. or waters of the State.

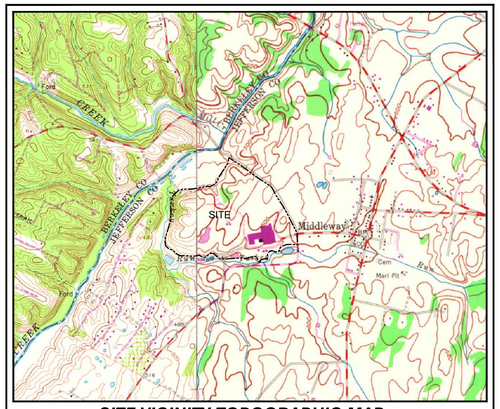
We appreciate the opportunity to provide our services on this project. Should you have any questions concerning our findings, please contact the undersigned at 301-797-6400.

Prepared by:

TRIAD ENGINEERING, INC.

Timothy J. Kellerman
Senior Environmental Scientist

Attachment: Study Area Exhibit



SITE VICINITY TOPOGRAPHIC MAP
SCALE: 1" = 2000'

NOTES:

1. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON ARE PROVIDED FOX & ASSOCIATES, INC.

GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)
1 inch = 150 ft.

OPEQUON CREEK

BUNKER HILL ROAD

APPROXIMATE LOCATION- FLOODWAY

APPROXIMATE LOCATION OF 100 YEAR FLOOD HAZARD AREA

TYPICAL WETLAND DELINEATION STUDY LIMITS

UPLAND GULLY

UPLAND GULLY

TYPICAL WETLAND DELINEATION STUDY LIMITS

TYPICAL WETLAND DELINEATION STUDY LIMITS

UPLAND GULLY

UPLAND GULLY

TURKEY RUN

APPROXIMATE LOCATION OF 100 YEAR FLOOD HAZARD AREA

SLUDGE POND

WASTEWATER LAGOON

TYPICAL WETLAND DELINEATION STUDY LIMITS

APPROXIMATE LOCATION OF 100 YEAR FLOOD HAZARD AREA

ASPHALT SURFACE

TREATMENT FACILITY

WASTEWATER LAGOON

TYPICAL WETLAND DELINEATION STUDY LIMITS

WASTEWATER LAGOON

APPROXIMATE LOCATION FLOODWAY

ABOVEGROUND DUCTILE IRON PIPE

BRIDGE

TURKEY RUN

BRUCETOWN ROAD

GRACE TREET

BUILDING

BUILDING

450 475 500 525

TRIAD ENGINEERING, INC.
1075-D SHERMAN AVENUE
HAGERSTOWN, MD 21740
PH: 301.797.6400 FAX: 301.797.2424
OFFICE LOCATIONS
MARYLAND ○ PENNSYLVANIA ○ VIRGINIA ○ WEST VIRGINIA

REV #	DATE	DESCRIPTION	BY

CADD FILE: 03-23-0484-WetStudy.dwg
DRAWN BY: P.M.U.
CHECKED BY: T.J.K.
DATE: 6-7-2023
SCALE: 1" = 150'

STUDY LIMIT EXHIBIT

P/O SIDEWINDER ENTERPRISES LLC PROPERTY
BRUCETOWN ROAD
KEARNEYSVILLE, WEST VIRGINIA 25430

TRIAD ENGINEERING, INC.
www.triadeng.com

SHEET NUMBER:
SLE

JOB NO.: 03-23-0484

3M Site Redevelopment Traffic Impact Study
Middleway, Jefferson County, WV

AMT Project File 22-0284.001 | May 1, 2023

PREPARED FOR:
Sidewinder Enterprises, LLC
1 Grace Street
Kearneysville, WV 25430

A. MORTON THOMAS AND ASSOCIATES, INC.

PREPARED BY:
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A. Morton Thomas and Associates, Inc.
417 Grand Park Drive, Suite 104
Parkersburg, WV 26105
(304) 400-4952

CALEB GLASER REGISTERED 25104 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Signature: Date: 05/01/2023

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EXECUTIVE SUMMARY

This report summarizes existing and future traffic analyses conducted in support of the 3M Redevelopment Industrial Development. The proposed development is to be located west of CR 1 at the end of Grace Street in Middleway, Jefferson County. The proposed site plan includes one light industrial facility comprising 1,000,000 square feet (sf) and is expected to be built-out by 2024.

The proposed development is anticipated to be served by one existing site driveway connecting with Grace Street. Site Drive #1 is to be located approximately 2,000 feet west of CR 1 connecting with Grace Street from the west and will operate as full movement approach with two-way stop-control (TWSC). This is an existing approach at the intersection that was used by the previous tenant.

Traffic analysis will consider future conditions at the anticipated build-out year of 2024. This report summarizes the analyses of 2022 Existing conditions, 2024 No-Build conditions (without the proposed development in place), 2024 Build conditions (with the proposed development in place), and 2024 Build Improved conditions (with the proposed development and improvements in place) during the weekday AM and PM peak hours. The annual growth rate of 1.41% was obtained from WVDOH Performance Management Division near the development in Jefferson County.

AMT (A. Morton Thomas and Associates, Inc.) was retained to determine the projected traffic impacts of the proposed development in accordance with the guidelines set forth by the WVDOH (Division of Highways) in Traffic Engineering Directive (TED) 106-2. The intent of the study is to fully examine the impacts of the traffic generated by the development on the existing transportation system and identify potential mitigation measures. This report presents trip generation, trip distribution, intersection capacity analysis, queuing analysis, signal warrant analysis, and recommendations for transportation improvements necessary to meet anticipated traffic demands.

Based upon review of the site plan and adjacent transportation network and following scope of work coordination with the WVDOH, the following three existing intersections are included within the scope of the Traffic Impact Study (TIS) for the proposed 3M Redevelopment Industrial development:

1) CR 1 (Leetown Road) with WV 51 (Middleway Pike) *(TWSC Plus type intersection)*
2) CR 1 (Queen Street) with Charles Street/Old Middleway Road (CR 1/7) *(TWSC Plus type intersection)*
3) CR 1 (Queen Street) with Grace Street *(TWSC Plus type intersection)*

Traffic Volume

Peak hour turning movement counts were collected at the existing intersections on Friday May 13, 2022 between the hours of 7-9 AM and 3-6 PM. On this date, Jefferson County Schools were fully operational with in classroom instruction for all students. A full 13-hour turning movement count was collected at the intersection of WV 51 with CR 1 on Friday July 8, 2022 between the hours of 6 AM-7 PM in order to analyze signal warrants under existing conditions.

The proposed development is expected to be complete in 2024. The 2024 No-Build traffic volumes include the existing 2022 traffic volumes and the anticipated annual traffic growth prior to 2024. The growth rate of 1.41% was applied to the existing peak hour traffic counts in order to analyze the study intersection operations in 2024 without the site development in place.

The 2024 Build Conditions include the existing 2022 traffic volume, the anticipated annual traffic growth prior to 2024, and the traffic generated by build-out of the 3M Redevelopment Industrial development. Site generated traffic was distributed into the transportation network based upon existing traffic patterns and anticipated origin and destination of the new site trips.

Site Trip Generation and Distribution

The proposed site will be a redevelopment of 300-acre industrial property comprising 1,000,000 sf with an expected number of 200 employees. Additionally, the site is expected to generate approximately 160 trucks/day arriving at various times during the day. The anticipated truck volume is a conservative estimate based upon information provided by Sidewinder Enterprises, LLC. Trip generation "Peak Hour of Generator" rates from ITE Trip Generation Manual, 10th Edition, were utilized for General Light Industrial (LUC 110). Trip generation analysis indicates that a total of 610 new daily employee trips will be generated including, 134 AM peak hour trips, and 136 PM peak hour trips. A conservative estimate of 15% of truck trips occurring in the AM peak hour and 15% occurring in the PM peak hour was applied. Resulting in 24 truck trips being induced during the AM peak hour and 24 truck trips being induced during the PM peak hour. The truck trips are expected to enter and exit the development within the same peak hour.

The AM and PM peak hour trips to/from the proposed site were distributed based upon interpolation from current traffic patterns with all trips entering the development via Grace Street. Distribution of the new external trips are as follows:

New External Trips:

- 10% to/from the south on CR 1
- 90% to/from the north on CR 1
    - 35% to/from the west on WV 51
    - 25% to/from the east on WV 51
    - 10% to/from east on CR 1/7 via WV 51
    - 20% to/from the north on CR 1

2022 Existing Conditions Analysis

The results of the 2022 existing conditions capacity analyses indicate that one traffic movement currently operates worse than LOS D, which is considered the minimum tolerable level. Traffic movements that currently operate worse than LOS D include the following (movements shown in bold type indicate they first appear in the milestone analysis being discussed):

- ***CR 1 northbound approach to WV 51 LOS F during PM peak hour***

2024 No-Build Conditions Analysis

The results of the 2024 No-Build Conditions capacity analyses indicate that traffic movements that operate worse than LOS D during the 2022 Existing Conditions are anticipated to continue. No additional turning movements are expected to operate worse than LOS D. Traffic movements that are anticipated to operate worse than LOS D include the following:

- *CR 1 northbound approach to WV 51 LOS F during PM peak hour*

2024 Build Conditions Analysis

The results of the 2024 Build Conditions capacity analyses indicate that traffic movements that operate worse than LOS D during the 2024 No-Build Conditions are anticipated to continue. Traffic movements that are anticipated to operate worse than LOS D include the following:

- *CR 1 northbound approach to WV 51 LOS F during PM peak hour*

2024 Build Improved Conditions

Improvements included in the 2024 Build Improved Conditions consist of installing a traffic signal at the WV 51 with CR 1 intersection and construction of exclusive left-turn lanes on both WV 51 approaches to CR 1. These improvements increase capacity and eliminate capacity issues at the intersection.

The results of the 2024 Build Improved Conditions capacity analyses indicate that traffic movement that operate worse than LOS D during the 2024 Build Conditions are anticipated to be mitigated following implementation of proposed improvements. No traffic movements are anticipated to operate worse than LOS D.

Signal Warrant Analysis

A full 13-hour turning movement count was collected for the intersection Friday July 8, 2022 between the hours of 6 AM and 7 PM. The 13-hour count was collected to analyze MUTCD Warrant 1, 2, and 7 for existing conditions. *Pagones Theorem* was utilized to reduce the number of right turns included in the minor street approach volume.

After applying the warrant criteria for 2022 Existing Conditions, five of the eight hours meet the combined criteria set for Warrant 1A, three hour meets the criteria for Warrant 1B, and seven hours meet the criteria for combination of Warrant 1A & 1B of the Major and Minor street volumes set in the "70%" conditions. Warrant 1 is **NOT MET**.

After applying the warrant criteria for 2022 Existing Conditions four of the 13 hours counted meet the combined criteria for Warrant 2. Warrant 2 is **MET**.

Based upon an evaluation of the intersection crash data, there were seven reported crashes that occurred at the intersection within the 12-month period of January 16, 2019 – January 15, 2020 that are potentially correctable by the installation of a traffic signal. All seven of these crashes were right angle crashes that are typically correctable by installation of a traffic signal. Warrant 7 is **MET**.

Conclusions/Recommendations

Based on the findings of this study, the following capacity infrastructure improvements are recommended to mitigate existing transportation issues unrelated to the 3M Redevelopment Industrial development:

WV 51 with CR 1

- Install a traffic signal at the intersection of WV 51 with CR 1. This measure increases capacity and improves LOS for the CR 1 northbound and southbound approaches. Analysis indicates that the MUTCD Warrant 2 (Four-Hour Volume) and MUTCD Warrant 7 (Crash Experience) criteria are met

during Existing Conditions. The traffic signal is proposed to include permitted left-turn phasing on both WV 51 approaches and split phasing on the CR 1 approaches due to the skewed alignment to WV 51. WVDOH is already in the early planning stages to install a traffic signal at the intersection but nothing is finalized yet.

- Construct an exclusive left-turn lane on the WV 51 eastbound approach to CR 1. The anticipated queuing from the left-turn movement is estimated to be approximately 80 feet during the 2024 Build Improved Conditions PM peak hour. The WV 51 eastbound exclusive left-turn lane should be constructed to provide 150 feet of full-width storage with appropriate taper.

- Construct an exclusive left-turn lane on the WV 51 westbound approach to CR 1. The anticipated queuing from the left-turn movement is estimated to be approximately 62 feet during the 2024 Build Improved Conditions AM peak hour. The WV 51 westbound exclusive left-turn lane should be constructed to provide 150 feet of full-width storage with appropriate taper.

INTRODUCTION

This report summarizes existing and future traffic analyses conducted in support of the 3M Redevelopment Industrial Development. The proposed development is to be located west of CR 1 at the end of Grace Street in Middleway, Jefferson County. The proposed site plan includes one light industrial facility comprising 1,000,000 sf and is expected to be built-out by 2024.

The proposed development is anticipated to be served by one existing site driveway connecting with Grace Street. Site Drive #1 is to be located approximately 2,000 feet west of CR 1 connecting with Grace Street from the west and will operate as full movement approach with TWSC. This is an existing approach at the intersection that was used by the previous tenant.

Traffic analysis will consider future conditions at the anticipated build-out year of 2024. This report summarizes the analyses of 2022 Existing conditions, 2024 No-Build conditions (without the proposed development in place), 2024 Build conditions (with the proposed development in place), and 2024 Build Improved conditions (with the proposed development and improvements in place) during the weekday AM and PM peak hours. The annual growth rate of 1.41% was obtained from WVDOH Performance Management Division near the development in Jefferson County.

AMT was retained to determine the projected traffic impacts of the proposed development in accordance with the guidelines set forth by the WVDOH in TED 106-2. The intent of the study is to fully examine the impacts of the traffic generated by the development on the existing transportation system and identify potential mitigation measures. This report presents trip generation, trip distribution, intersection capacity analysis, queuing analysis, signal warrant analysis, and recommendations for transportation improvements necessary to meet anticipated traffic demands.

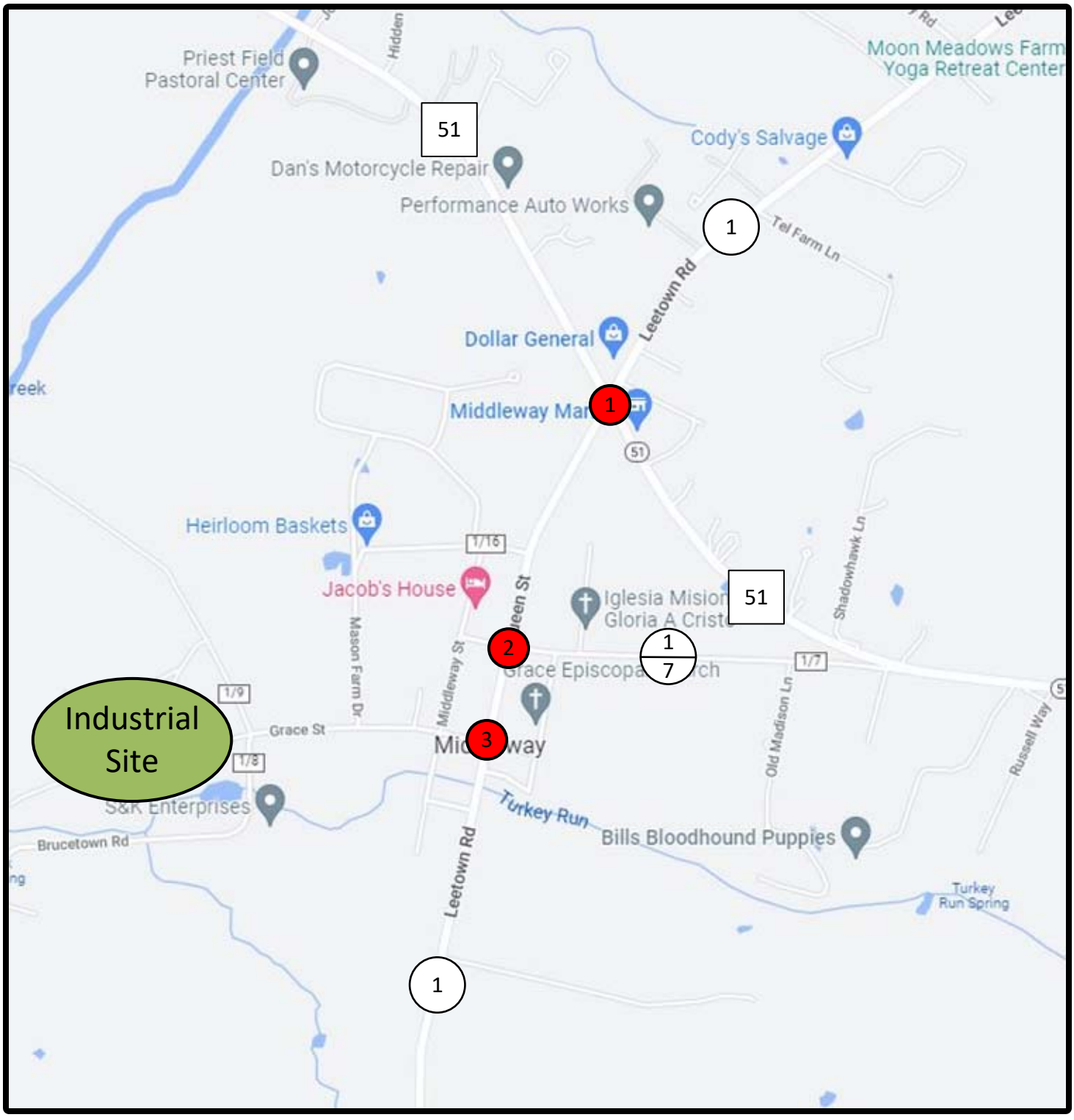
AMT coordinated with WVDOH to determine the intersections to be studied within the scope of work, preliminary trip generation, distribution, and study methodology for this TIS. A copy of the approved SOW document is included in **Appendix F**.

STUDY AREA DESCRIPTION

Based upon review of the site plan and adjacent transportation network and following scope of work coordination with the WVDOH, the following three existing intersections are included within the scope of the TIS for the proposed 3M Redevelopment Industrial development:

1) CR 1 (Leetown Road) with WV 51 (Middleway Pike) *(TWSC Plus type intersection)*
2) CR 1 (Queen Street) with Charles Street/Old Middleway Road (CR 1/7) *(TWSC Plus type intersection)*
3) CR 1 (Queen Street) with Grace Street *(TWSC Plus type intersection)*

The study area and key intersections are shown on **Figure 1** and the proposed site plan is shown on **Figure 2**.



LEGEND

= Development

= Existing Intersection

N

NOT TO SCALE

3M Redevelopment TIS

Site Location Map

DATE: May 2023

FIGURE 1

200 100 0 200 400 600

GRAPHICAL SCALE: 1" = 200'

WV COORD. SYSTEM 1983, NORTH ZONE

OPEQUON CREEK

BUNKER HILL ROAD

1,000,000sf BUILDING
500' x 2,000'

Site Driveway with Grace Street

PROPOSED DRIVE AISLE TO BUILDING TO UTILIZE EXISTING GRACE STREET ENTRANCE

GRACE STREET

BRUCETOWN ROAD

TURKEY RUN

LEGEND
- SITE BOUNDARY
- ADJACENT PROPERTY LINE
- 5' CONTOUR (USGS)
- 500 EDGE OF WATER
- 100 YEAR FLOODPLAIN
- EX. BUILDING / STRUCTURE
- PR. BUILDING / STRUCTURE
- PR. DRIVE AISLE

NOTES:
1. BOUNDARY INFORMATION OBTAINED FROM ACSM/ALTA LAND TITLE SURVEY PREPARED BY GEORGE E. NAGEL & ASSOCIATES INC. DATED 05/13/2015.
2. 100 YEAR FLOODPLAIN OBTAINED FROM FEMA INFORMATION AND IS APPROXIMATE.
3. 5' CONTOUR DATA INTERPOLATED FROM USGS QUADRANGLE INFORMATION AND IS APPROXIMATE.

3M Redevelopment TIS

Site Plan

DATE: May 2023

FIGURE 2

N

NOT TO SCALE

EXISTING ROADWAY CONDITIONS

Below is a detailed description of the existing study area roadway network. AADT (Annual Average Daily Traffic) volume information was obtained from the WVDOH GIS website.

WV 51 (Middleway Pike) is an east-west two-lane two-way feeder roadway in the project area. Land use along WV 51 is primarily residential with mixed commercial development. WV 51 provides access to US 11 and I-81 to the west in Inwood and WV 9/US 340 to the east in Charles Town. The posted speed limit on WV 51 is 45 mph (miles per hour) and the AADT is 8,362 vpd (vehicles per day).

Leetown Road/Queen Street (CR 1) is a north-south two-lane two-way essential arterial roadway in the project area. CR 1 is primarily labeled as Leetown Road to the north except between the intersections with CR 1/16 (Cherry Hill Farm Drive) and South Street (Middleway Historic District) where it is labeled as Queen Street. Land use along CR 1 is primarily residential with minimal commercial properties. CR 1 will be the main point of access to the proposed site. The posted speed limit on CR 1 is 30 mph and the AADT is 2,410 vpd.

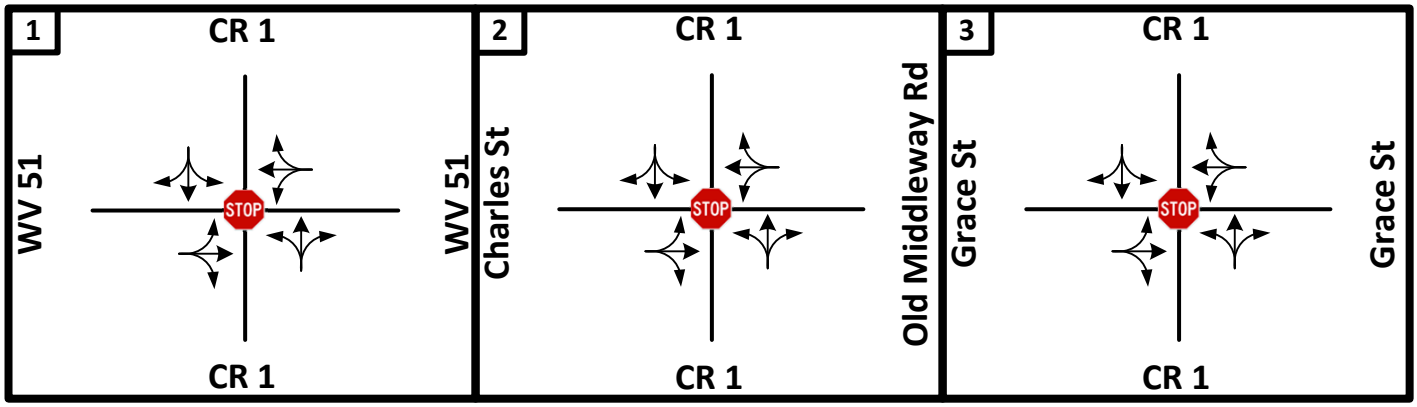
Old Middleway Pike (CR 1/7) is an east-west two-lane two-way collector roadway within the project area. CR 1/7 provides access to CR 1 to the west and WV 51 to the east. CR 1/7 intersects with CR 1 approximately 2,175 feet south of WV 51. Land use along Old Middleway Pike consists of residential properties. CR 1/7 provides as a cut-through between WV 51 and CR 1. The posted speed limit on CR 1/7 is 25 mph and the AADT is 880 vpd.

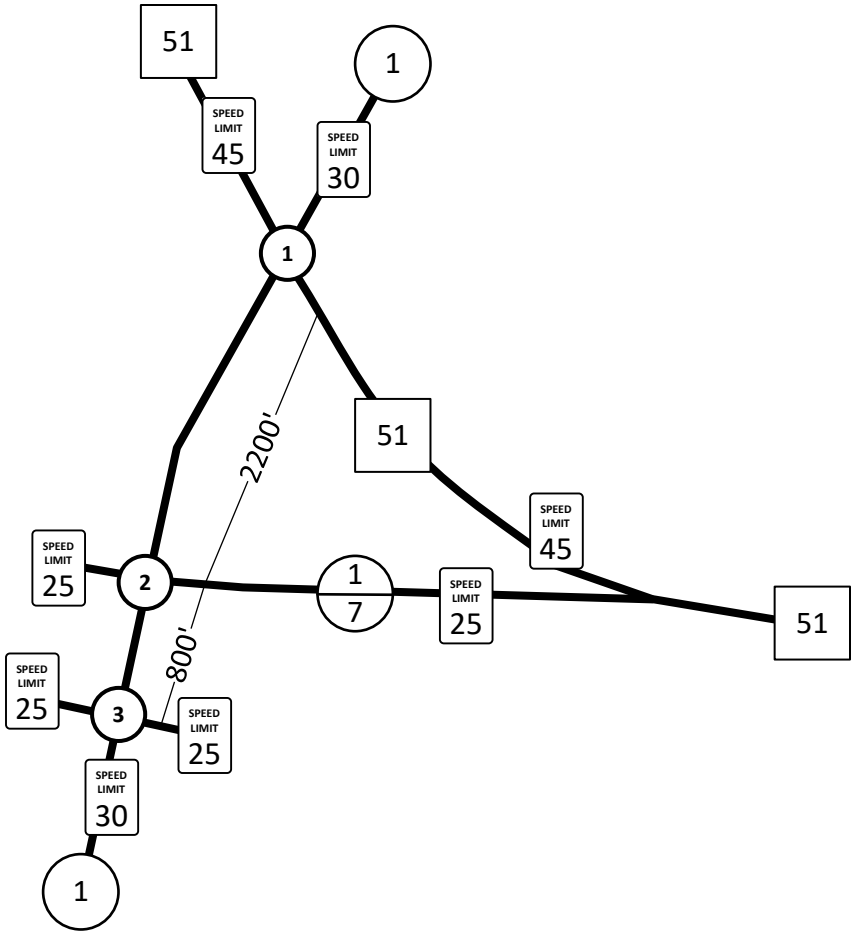
Grace Street is an east-west two-lane two-way collector roadway within the project area. Grace Street intersects with CR 1 approximately 3,000 feet south of WV 51 and will provide direct access to the proposed industrial development. The posted speed limit on Grace Street is 25 mph and the AADT is 947 vpd.

Table 1 below provides a detailed description of the existing study area roadway network. In addition, *Estimated* Build Year AADT is included in the table which contains Existing volume, the 3M Redevelopment Industrial trips, and traffic inflation to 2024. The 2022 existing intersection lane configurations and intersection control are shown on **Figure 3**.

Table 1: Roadway Facility Summary

Name	Code	State Functional Classification	Area	Direction	Speed Limit	Typical Roadway Paved Width (ft)	AADT (Year)	**Estimated Build AADT (2024)**	Description
Middleway Pike	WV 51	Feeder	Jefferson County	E-W	45	26	8,362 (2021)	9,183	E-W Feeder that runs throughout the county and provides access to Charles Town while intersecting with CR 1 at the northern end of the study area
Leetown Road/Queen Street	CR 1	Essential Arterial	Jefferson County	N-S	30	22	2,410 (2021)	3,283	N-S Essential Arterial that provides access to Middleway while running throughout the county
Old Middleway Pike	CR 1/7	Collector	Jefferson County	E-W	25	20	880 (2022)	982	E-W Collector that intersects with CR 1 to the west and WV 51 to the east
Grace Street	N/A	Collector	Jefferson County	E-W	25	20	947 (2017)	1,815	E-W Collector that intersects with CR 1/8 to the west and CR 1 to the east while being the main access road to the development





LEGEND

- STOP — Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- XXX' Storage Bay Length
- SPEED LIMIT XX — Existing Posted Speed

N

NOT TO SCALE

3M Redevelopment TIS

2022 Existing Lane Configuration

DATE: May 2023

FIGURE 3

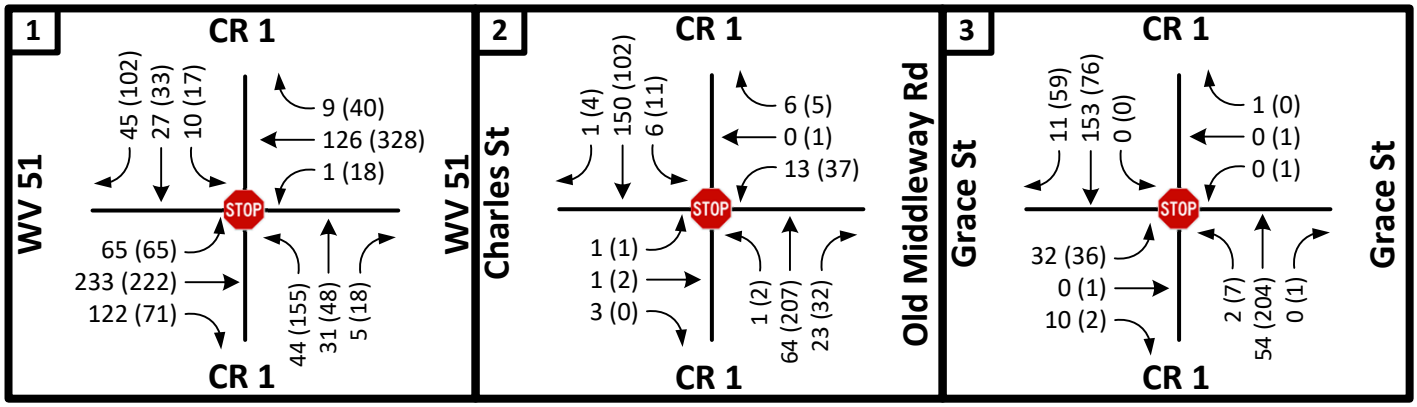
EXISTING & NO-BUILD PROJECT TRAFFIC VOLUMES

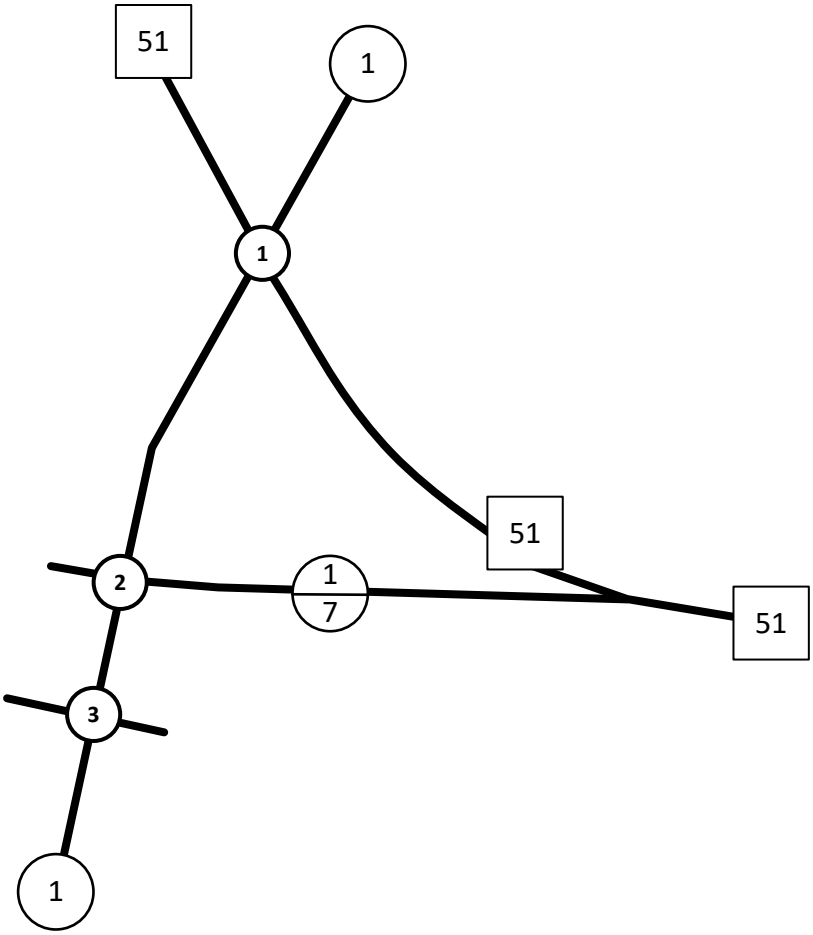
2022 Existing Conditions

Peak hour turning movement counts were collected at the existing intersections on Friday May 13, 2022 between the hours of 7-9 AM and 3-6 PM. On this date, Jefferson County Schools were fully operational with in classroom instruction for all students. A full 13-hour turning movement count was collected at the intersection of WV 51 with CR 1 on Friday July 8, 2022 between the hours of 6 AM-7 PM in order to analyze signal warrants under existing conditions. Traffic volume data is located in **Appendix B** and the 2022 Existing Traffic Volumes for the weekday AM and PM peak hour volumes are shown on **Figure 4**.

2024 No-Build Conditions

The proposed development is expected to be complete in 2024. The 2024 No-Build traffic volumes include the existing 2022 traffic volumes and the anticipated annual traffic growth prior to 2024. The growth rate of 1.41% was applied to the existing peak hour traffic counts in order to analyze the study intersection operations in 2024 without the site development in place. The 2024 No-Build Traffic Volumes for the weekday AM and PM peak hour volumes are shown on **Figure 5**.





LEGEND

- STOP — Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- XX — AM Peak Hour Volume
- (XX) — PM Peak Hour Volume

N

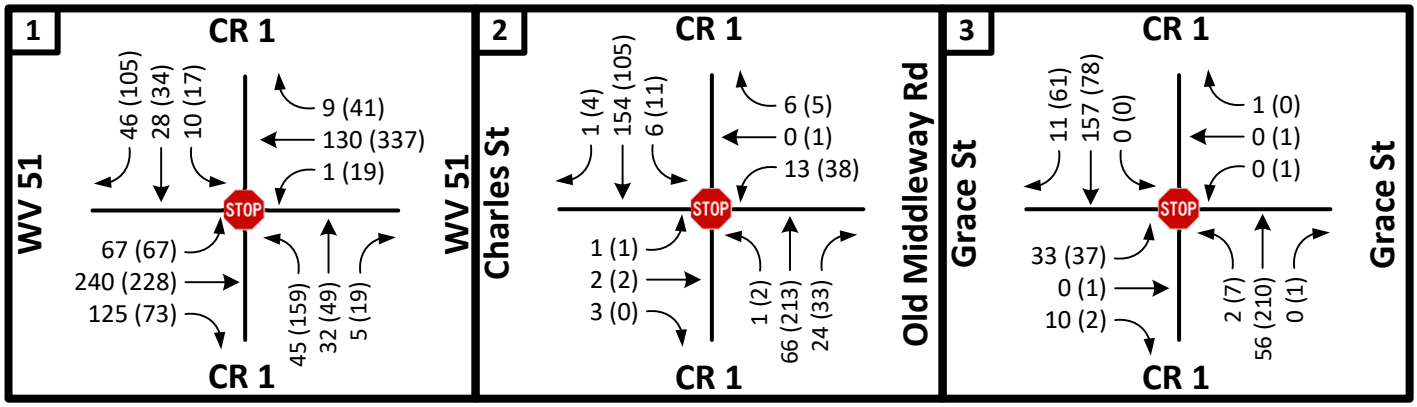
NOT TO SCALE

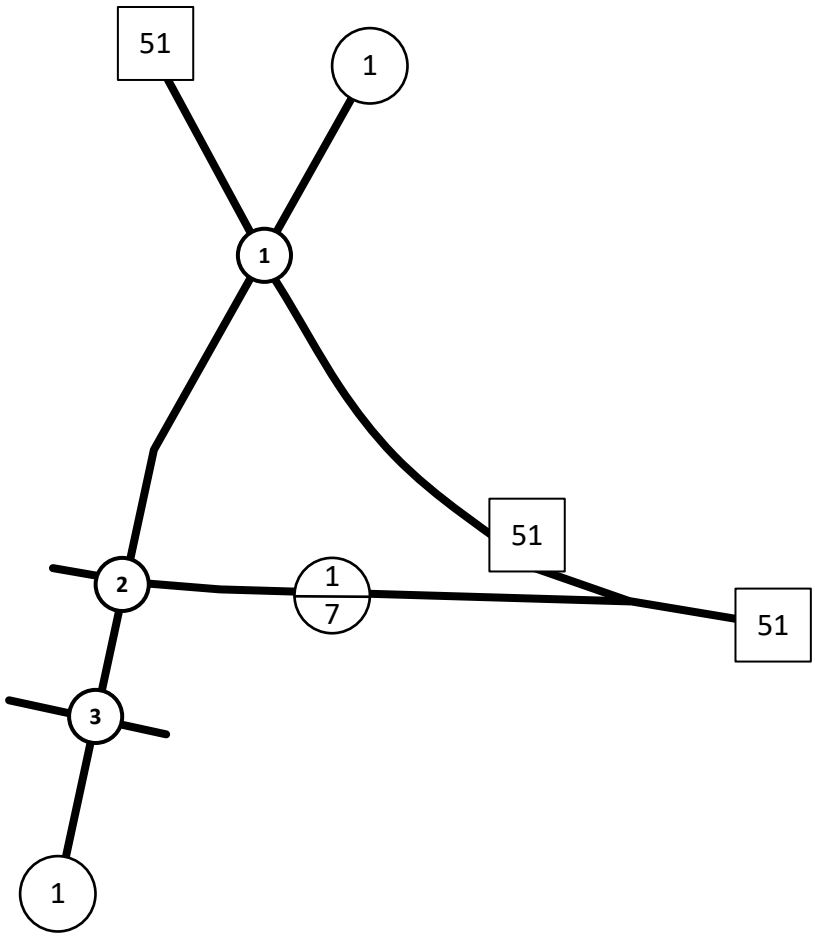
3M Redevelopment TIS

2022 Existing Traffic Volumes

DATE: May 2023

FIGURE 4





LEGEND

- STOP — Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- XX — AM Peak Hour Volume
- (XX) — PM Peak Hour Volume

N

NOT TO SCALE

3M Redevelopment TIS

2024 No-Build Traffic Volumes

DATE: May 2023

FIGURE 5

TRIP GENERATION

The proposed site will be a redevelopment of 300-acre industrial property comprising 1,000,000 sf with an expected number of 200 employees. Additionally, the site is expected to generate approximately 160 trucks/day arriving at various times during the day. The anticipated truck volume is a conservative estimate based upon information provided by Sidewinder Enterprises, LLC. Trip generation "Peak Hour of Generator" rates from ITE Trip Generation Manual, 10th Edition, were utilized for General Light Industrial (LUC 110).

As shown in **Table 2** below, the proposed development will generate a total of 610 new daily employee trips including, 134 AM peak hour trips, and 136 PM peak hour trips. A conservative estimate of 15% of truck trips occurring in the AM peak hour and 15% occurring in the PM peak hour was applied. Resulting in 24 truck trips being induced during the AM peak hour and 24 truck trips being induced during the PM peak hour. The truck trips are expected to enter and exit the development within the same peak hour.

Table 2: Trip Generation Summary

Description	LUC	Density	Daily Trips	AM Peak			PM Peak		
				Enter	Exit	Total	Enter	Exit	Total
Light Industrial	110	200 Employees	610	114	20	134	41	95	136
		160 Trucks	160	24	24	48	24	24	48
Total New External Trips			**770**	**138**	**44**	**182**	**65**	**119**	**184**

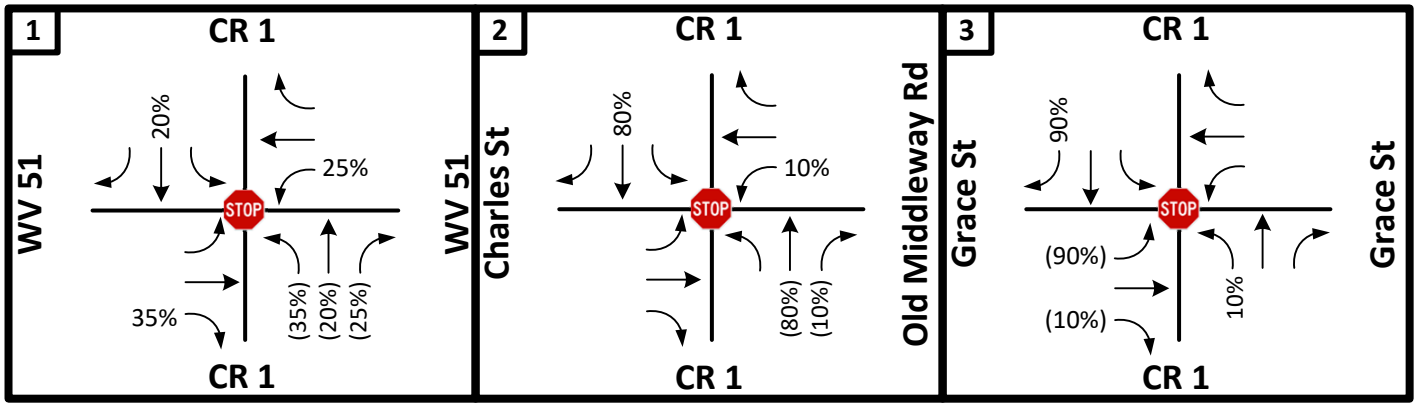
TRIP DISTRIBUTION

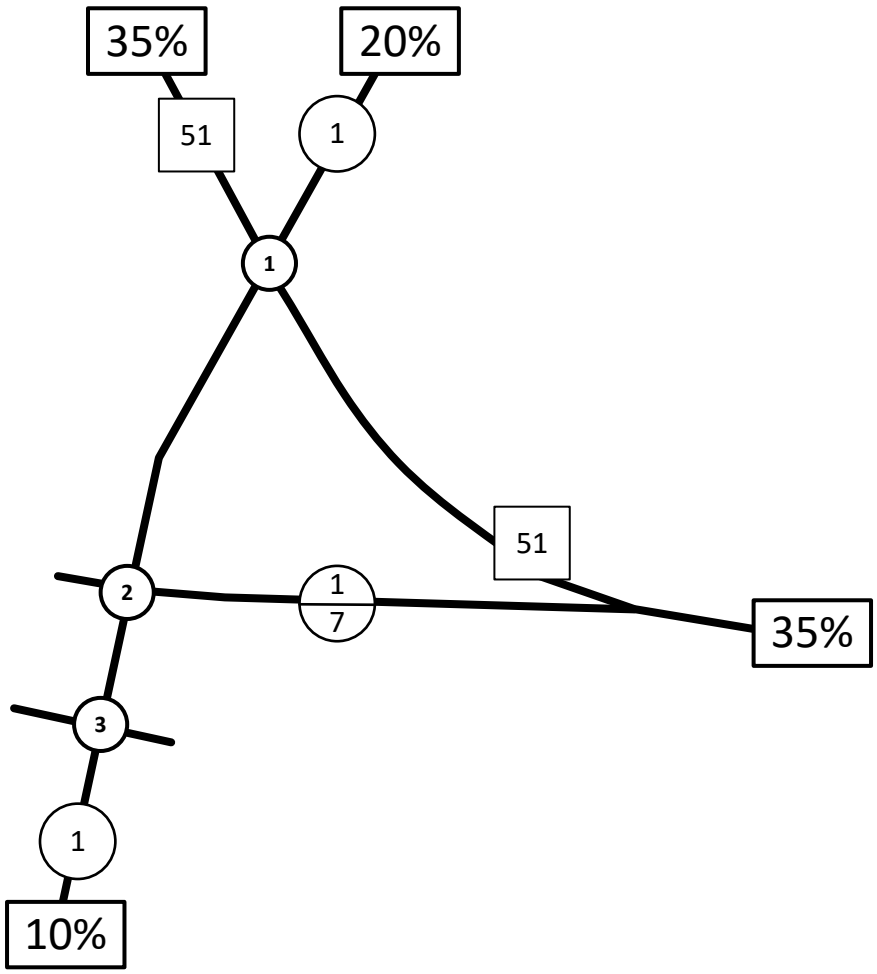
The AM and PM peak hour trips to/from the proposed site were distributed based upon interpolation from current traffic patterns with all trips entering the development via Grace Street. Distribution of the new external trips are as follows:

New External Trips:

- 10% to/from the south on CR 1
- 90% to/from the north on CR 1
    - 35% to/from the west on WV 51
    - 25% to/from the east on WV 51
    - 10% to/from east on CR 1/7 via WV 51
    - 20% to/from the north on CR 1

The external trip distribution percentages are shown in **Figure 6** and the AM and PM peak hour new site trip assignments are shown on **Figure 7**.





LEGEND

- STOP Proposed Traffic Control
- Existing Roadway
- Proposed Roadway
- Existing Lane Configuration
- Proposed Lane Configuration
- XX% Entering Trip Percentage
- (XX%) Exiting Trip Percentage

N

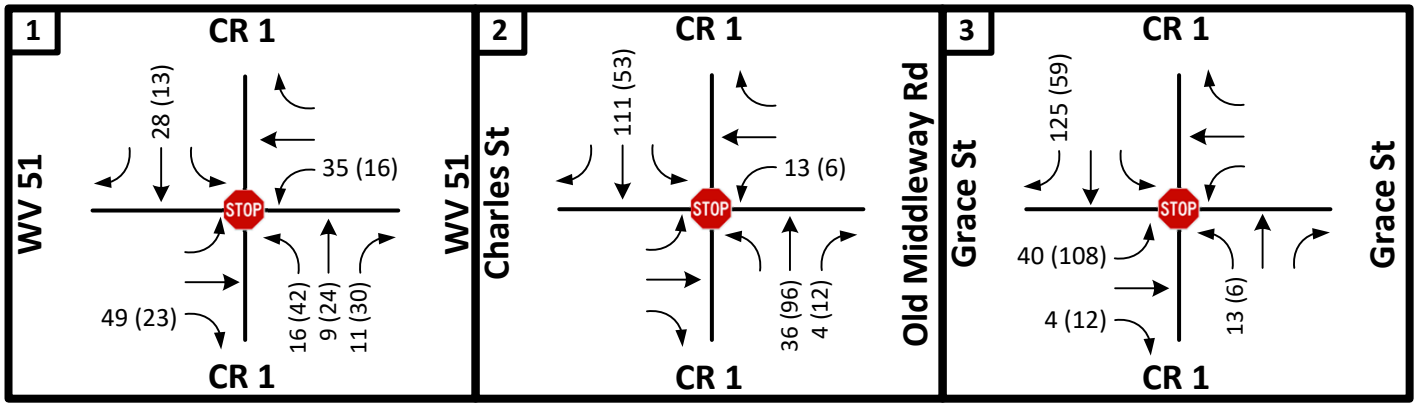
NOT TO SCALE

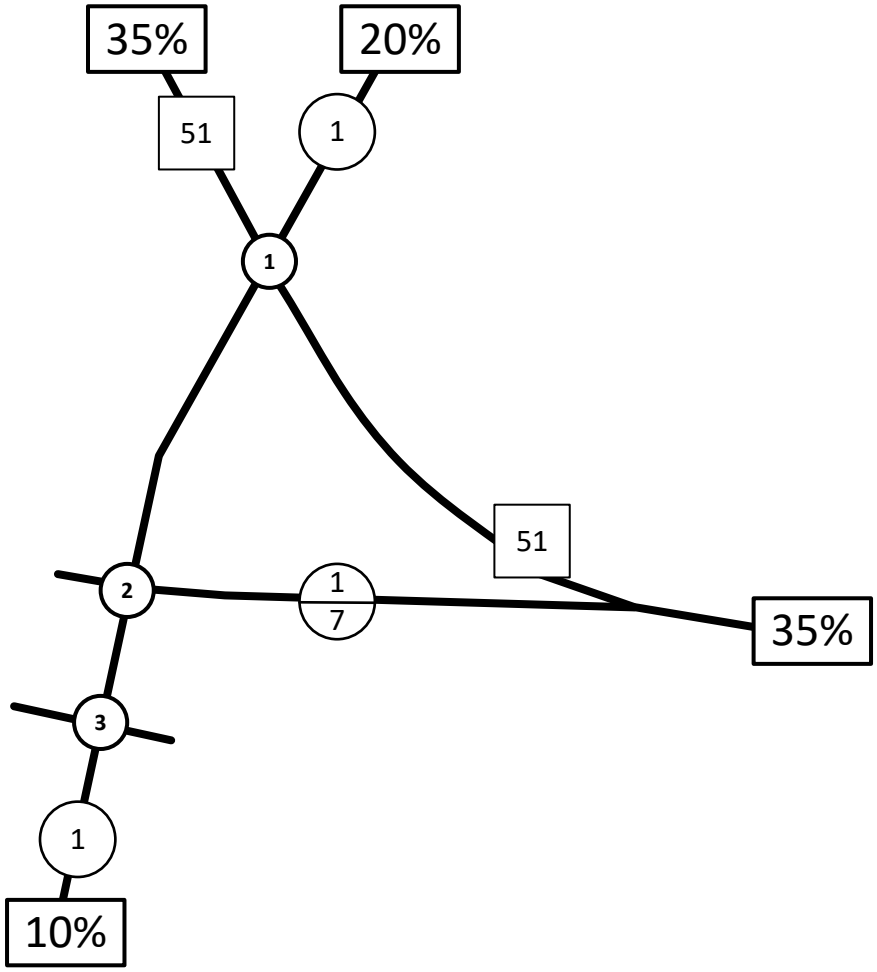
3M Redevelopment TIS

New Trip Distribution

DATE: May 2023

FIGURE 6





LEGEND

- STOP — Proposed Traffic Control
- Existing Roadway
- Proposed Roadway
- Existing Lane Configuration
- Proposed Lane Configuration
- XX — AM Peak Hour Trips
- (XX) — PM Peak Hour Trips

N

NOT TO SCALE

3M Redevelopment TIS

New Site Trip Assignments

DATE: May 2023

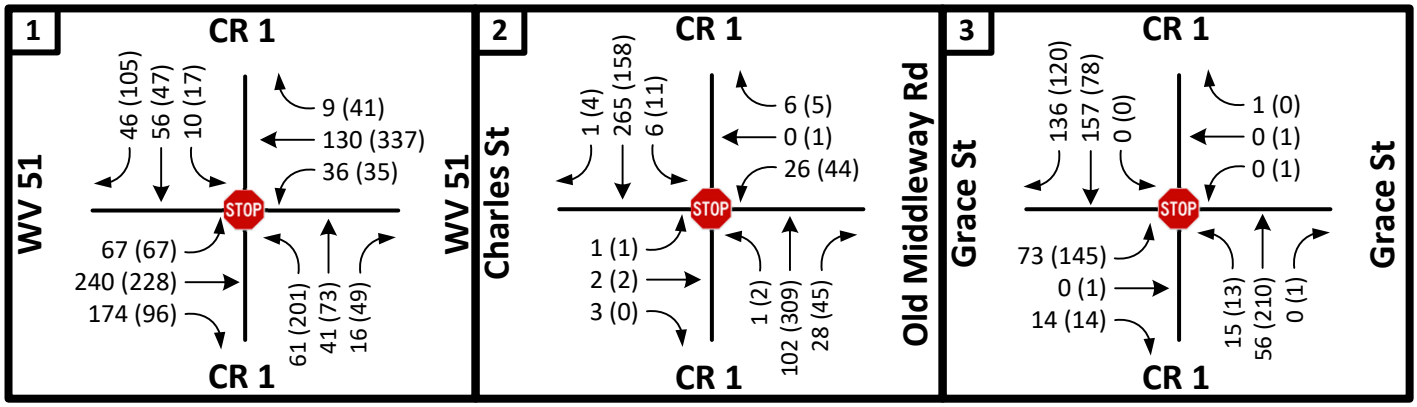
FIGURE 7

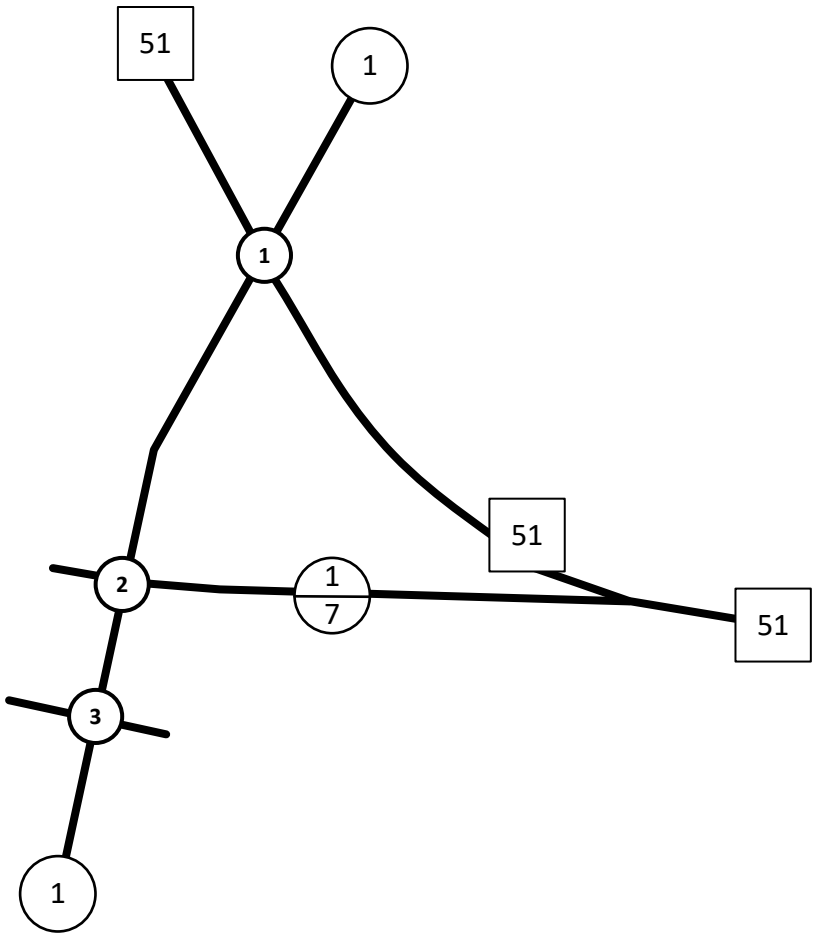
BUILD PROJECT TRAFFIC VOLUMES

2024 Build Conditions

The 2024 Build Conditions include the existing 2022 traffic volume, the anticipated annual traffic growth prior to 2024, and the traffic generated by build-out of the 3M Redevelopment Industrial development. Site generated traffic was distributed into the transportation network based upon existing traffic patterns and anticipated origin and destination of the new site trips (see **Figure 6** and **Figure 7**). The 2024 Build Traffic Volumes for the weekday AM and PM peak hours are shown on **Figure 8**.

The peak hour traffic forecast calculations are provided in **Appendix B**.





LEGEND

- STOP Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- XX AM Peak Hour Volume
- (XX) PM Peak Hour Volume

N

NOT TO SCALE

3M Redevelopment TIS

2024 Build Traffic Volumes

DATE: May 2023

FIGURE 8

CAPACITY ANALYSIS

The Highway Capacity Manual defines capacity as the maximum suitable flow rate at which vehicles reasonably can be expected to traverse a point during a specified time period. Capacity uses the measure of efficiency, Level-of-Service (LOS), to describe the traffic performance at intersections. LOS is defined for the overall intersection delay for signalized intersections. An acceptable LOS for a signalized intersection is considered to be LOS D or better (i.e. A, B, C or D).

At unsignalized intersections, the LOS is defined by the control delay for the movement that must yield right-of-way. It may be typical for stop-controlled minor streets to experience long delays during peak periods, while the majority of the traffic flows through the intersection on the major street travel unimpeded.

The procedures outlined in the Highway Capacity Manual; 6th Edition were used as guidelines for the analysis of the study area intersections. This manual provides procedures for the analysis of both signalized and unsignalized intersections. LOS categories range from LOS "A" (best) to "F" (worst) as shown in **Table 3**.

Table 3: Level of Service Criteria

Level of Service	SIGNALIZED Intersection Control Delay (sec/veh)	UNSIGNALIZED Intersection Control Delay (sec/veh)	Intersection LOS Description
A	≤ 10.0	≤ 10.0	Free flow, insignificant delays.
B	10.1-20.0	10.1-15.0	Stable operation, minimal delays.
C	20.1-35.0	15.1-25.0	Stable operation, acceptable delays.
D	35.1-55.0	25.1-35.0	Restricted flow, common delays.
E	55.1-80.0	35.1-50.0	Maximum capacity, extended delays. Volumes at or near capacity. Long queues form upstream from intersection.
F	> 80.0	> 50.0	Forced flow, excessive delays. Represents jammed conditions. Intersection operates below capacity with low volumes. Queues may block upstream intersections.

LOS analysis was completed through the use of Synchro, version 11.1. The software package categorizes the LOS based on HCM methodology and criteria. According to industry standards, any signalized intersection or any approach of an unsignalized intersection is considered acceptable if the average delay is at LOS D or better with LOS A representing little or no delay. Any signalized intersection or approach with a LOS of E or F is considered substandard and may need solutions to improve the operational performance. Copies of the Synchro analyses outputs for each analysis year/scenario are shown in **Appendix C**.

2022 Existing Conditions Analysis

WV 51 with CR 1

Capacity analysis indicates the WV 51 eastbound left-turn movement to CR 1 currently operates at LOS A during both the AM and PM peak hours. The WV 51 westbound left-turn movement to CR 1 currently operates at LOS A during both the AM and PM peak hours. The CR 1 northbound approach to WV 51 currently operates at LOS C during the AM peak hour and LOS F during the PM peak hour under stop control. The CR 1 southbound approach to WV 51 currently operates at LOS B during the AM peak hour and LOS C during the PM peak hour under stop control.

CR 1 with Charles Street/Old Middleway Pike (CR 1/7)

Analysis indicates the Charles Street eastbound approach to CR 1 currently operates at LOS B during both the AM and PM peak hours under stop control. The Old Middleway Pike westbound approach to CR 1 currently operates at LOS B during both the AM and PM peak hours under stop control. The CR 1 northbound left-turn movement to Charles Street currently operates at LOS A during both the AM and PM peak hours. The CR 1 southbound left-turn movement to Old Middleway Pike currently operates at LOS A during both the AM and PM peak hours.

CR 1 with Grace Street

Analysis indicates the Grace Street eastbound approach to CR 1 currently operates at LOS B during both the AM and PM peak hours under stop control. The Grace Street westbound approach to CR 1 currently operates at LOS A during the AM peak hour and LOS B during the PM peak hour under stop control. The CR 1 northbound left-turn movement to Grace Street currently operates at LOS A during both the AM and PM peak hours. The CR 1 southbound left-turn movement to Grace Street currently does not generate left-turning traffic during either peak hour and operates as free-flow traveling unimpeded through the intersection.

Figure 9 shows the LOS during the weekday AM and PM peak hours for the 2022 Existing Conditions for each lane group movement at each study intersection.

2024 No-Build Conditions Analysis

The proposed development is expected to be complete in 2024. The 2024 No-Build traffic volumes include the existing 2022 traffic volumes and the anticipated annual traffic growth prior to 2024.

WV 51 with CR 1

Capacity analysis indicates the WV 51 eastbound left-turn movement to CR 1 will continue to operate at LOS A during both the AM and PM peak hours. The WV 51 westbound left-turn movement to CR 1 will continue to operate at LOS A during both the AM and PM peak hours. The CR 1 northbound approach to WV 51 will continue to operate at LOS C during the AM peak hour and LOS F during the PM peak hour under stop control. The CR 1 southbound approach to WV 51 will continue to operate at LOS B during the AM peak hour and LOS C during the PM peak hour under stop control.

CR 1 with Charles Street/Old Middleway Pike (CR 1/7)

Analysis indicates the Charles Street eastbound approach to CR 1 will continue to operate at LOS B during both the AM and PM peak hours under stop control. The Old Middleway Pike westbound approach to CR 1 will continue to operate at LOS B during both the AM and PM peak hours under stop control. The CR 1 northbound left-turn movement to Charles Street will continue to operate at LOS A during both the AM and PM peak hours. The CR 1 southbound left-turn movement to Old Middleway Pike will continue to operate at LOS A during both the AM and PM peak hours.

CR 1 with Grace Street

Analysis indicates the Grace Street eastbound approach to CR 1 will continue to operate at LOS B during both the AM and PM peak hours under stop control. The Grace Street westbound approach to CR 1 will continue to operate at LOS A during the AM peak hour and LOS B during the PM peak hour under stop control. The CR 1 northbound left-turn movement to Grace Street will continue to operate at LOS A during both the AM and PM peak hours. The CR 1 southbound left-turn movement to Grace Street is not expected to generate left-turning traffic during either peak hour and operates as free-flow traveling unimpeded through the intersection.

Figure 10 shows the LOS during the weekday AM and PM peak hours for the 2024 No-Build Conditions for each lane group movement at each study intersection.

2024 Build Conditions Analysis

The 2024 Build Conditions include the existing 2022 traffic volume, the anticipated annual traffic growth prior to 2024, and the traffic generated by build-out of the 3M Redevelopment Industrial development.

WV 51 with CR 1

Capacity analysis indicates the WV 51 eastbound left-turn movement to CR 1 will continue to operate at LOS A during both the AM and PM peak hours. The WV 51 westbound left-turn movement to CR 1 will continue to operate at LOS A during both the AM and PM peak hours. The CR 1 northbound approach to WV 51 is expected to operate at LOS D during the AM peak hour and LOS F during the PM peak hour under stop control. The CR 1 southbound approach to WV 51 is expected to operate at LOS C during the AM peak hour and LOS D during the PM peak hour under stop control.

CR 1 with Charles Street/Old Middleway Pike (CR 1/7)

Analysis indicates the Charles Street eastbound approach to CR 1 is expected to operate at LOS B during both the AM and PM peak hours under stop control. The Old Middleway Pike westbound approach to CR 1 is expected to operate at LOS B during both the AM and PM peak hours under stop control. The CR 1 northbound left-turn movement to Charles Street will continue to operate at LOS A during both the AM and PM peak hours. The CR 1 southbound left-turn movement to Old Middleway Pike will continue to operate at LOS A during both the AM and PM peak hours.

CR 1 with Grace Street

Analysis indicates the Grace Street eastbound approach to CR 1 is expected to operate at LOS B during the AM peak hour and LOS C during the PM peak hour under stop control. The Grace Street westbound approach to CR 1 will continue to operate at LOS A during the AM peak hour and LOS B during the PM peak hour under stop control. The CR 1 northbound left-turn movement to Grace Street will continue to operate at LOS A during both the AM and PM peak hours. The CR 1 southbound left-turn movement to Grace Street is not expected to generate left-turning traffic during either peak hour and operates as free-flow traveling unimpeded through the intersection.

Figure 11 shows the LOS during the weekday AM and PM peak hours for the 2024 Build Conditions for each lane group movement at each study intersection.

2024 Build Improved Conditions Analysis

The 2024 Build Improved Conditions include the existing 2022 traffic volume, the anticipated annual traffic growth prior to 2024, and the traffic generated by build-out of the 3M Redevelopment Industrial development.

Improvements included in the 2024 Build Improved Conditions consist of installing a traffic signal at the WV 51 with CR 1 intersection and construction of exclusive left-turn lanes on both WV 51 approaches to CR 1. These improvements improve capacity and eliminate queuing issues at the intersection.

Additional analysis is provided for the WV 51 with CR 1 intersection with proposed improvements implemented. Remaining intersections will operate as described in 2024 Build Conditions and do not necessitate physical improvements.

WV 51 with CR 1

Following installation of a traffic signal and exclusive left-turn lanes, capacity analysis indicates the WV 51 eastbound approach to CR 1 is expected to operate at LOS A during the AM peak hour and LOS C during the PM peak hour under signal control. The WV 51 westbound approach to CR 1 is expected to operate at LOS A during the AM peak hour and LOS C during the PM peak hour. The CR 1 northbound approach to WV 51 is expected to operate at LOS D during both the AM and PM peak hours. The CR 1 southbound approach to WV 51 is expected to operate at LOS D during both the AM and PM peak hours. The overall signalized intersection is expected to operate at LOS B during the AM peak hour and LOS C during the PM peak hour.

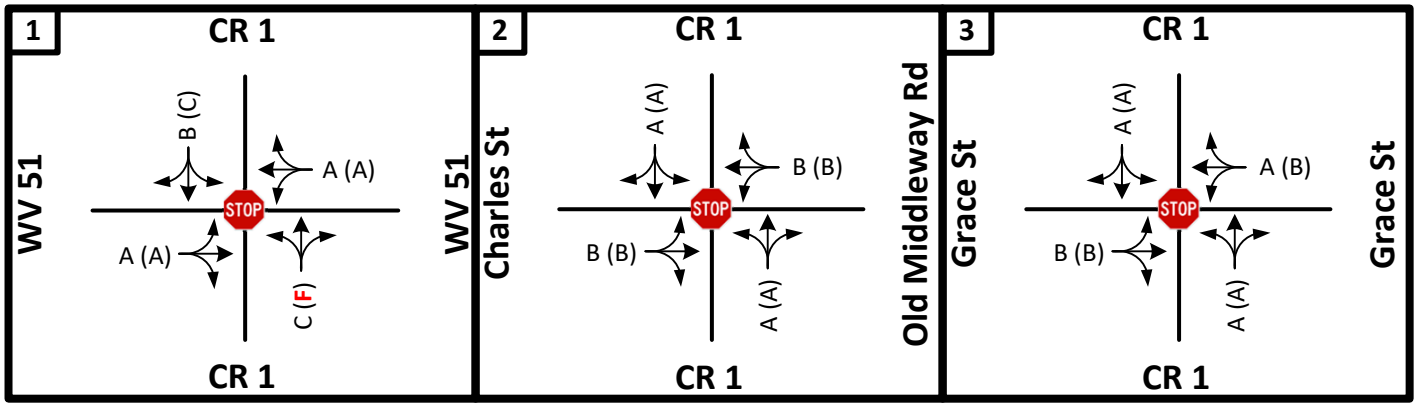
Figure 12 shows the LOS during the weekday AM and PM peak hours for the 2024 Build Improved Conditions.

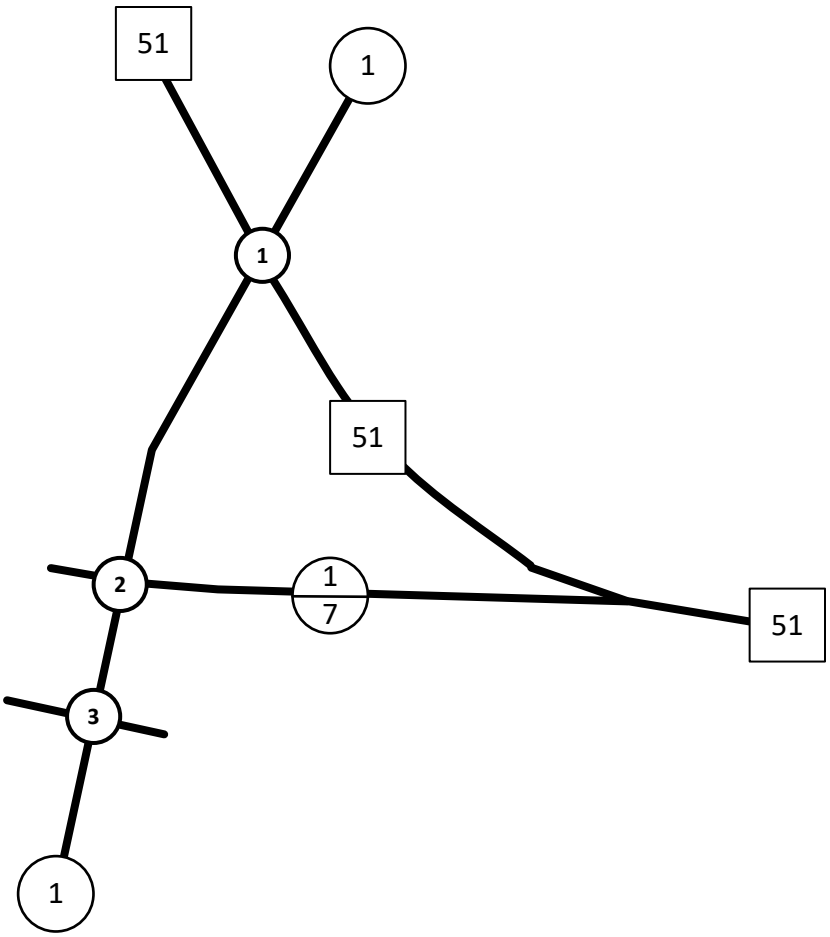
Table 4 shows the LOS results for the intersections within the study area during the weekday AM and PM peak hours for the 2022 Existing Conditions, 2024 No-Build Conditions, 2024 Build Conditions, and 2024 Build Improved Conditions.

Table 4: LOS Analysis Summary

Intersection	Movement	2022 Existing Conditions				2024 No-Build Conditions				2024 Build Conditions				2024 Build Improved Conditions			
		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Intersection 1 - Leetown Road (CR 1) with WV 51 (Middleway Pike)	EB Left-Turn	A	7.6	A	8.3	A	7.6	A	8.4	A	7.6	A	8.4	A	7.3	C	26.4
	EB Thru/Right	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	A	8.8	B	19.0
	EB Approach	N/A	1.2	N/A	1.5	N/A	1.2	N/A	1.5	N/A	1.1	N/A	1.4	A	8.6	C	20.2
	WB Left-Turn	A	8.0	A	8.0	A	8.1	A	8.0	A	8.6	A	8.3	B	11.2	C	23.1
	WB Thru/Right	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	A	6.4	C	20.1
	WB Approach	N/A	0.1	N/A	0.4	N/A	0.1	N/A	0.4	N/A	1.8	N/A	0.7	A	7.4	C	20.3
	NB Left/Thru/Right	C	17.5	F	196.8	C	18.2	F	**	D	28.4	F	**	D	47.4	D	52.3
	NB Approach	C	17.5	F	196.8	C	18.2	F	**	D	28.4	F	**	D	47.4	D	52.3
	SB Left/Thru/Right	B	12.9	C	19.7	B	13.2	C	20.8	C	18.2	D	29.4	D	52.4	D	53.3
Existing Four-Leg Unsignalized Intersection (TWSC)	SB Approach	B	12.9	C	19.7	B	13.2	C	20.8	C	18.2	D	29.4	D	52.4	D	53.3
Proposed Four-Leg Signalized Intersection	Overall	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	B	19.0	C	32.6
Intersection 2 - Queen Street (CR 1) with Charles Street/Old Middleway Pike (CR 1/7)	EB Left/Thru/Right	B	10.0	B	11.9	B	10.0	B	12.1	B	11.2	B	14.1	B	11.2	B	14.1
	EB Approach	B	10.0	B	11.9	B	10.0	B	12.1	B	11.2	B	14.1	B	11.2	B	14.1
	WB Left/Thru/Right	B	10.0	B	12.0	B	10.1	B	12.1	B	12.1	B	14.9	B	12.1	B	14.9
	WB Approach	B	10.0	B	12.0	B	10.1	B	12.1	B	12.1	B	14.9	B	12.1	B	14.9
	NB Left-Turn	A	7.6	A	7.5	A	7.6	A	7.5	A	7.9	A	7.6	A	7.9	A	7.6
	NB Approach	N/A	0.1	N/A	0.1	N/A	0.1	N/A	0.1	N/A	0.1	N/A	0.0	N/A	0.1	N/A	0.0
	SB Left-Turn	A	7.4	A	7.8	A	7.4	A	7.8	A	7.5	A	8.2	A	7.5	A	8.2
Existing Four-Leg Unsignalized Intersection (TWSC)	SB Approach	N/A	0.3	N/A	0.7	N/A	0.3	N/A	0.7	N/A	0.2	N/A	0.5	N/A	0.2	N/A	0.5
Intersection 3 - Queen Street (CR 1) with Grace Street	EB Left/Thru/Right	B	10.4	B	11.9	B	10.4	B	12.0	B	13.0	C	16.5	B	13.0	C	16.5
	EB Approach	B	10.4	B	11.9	B	10.4	B	12.0	B	13.0	C	16.5	B	13.0	C	16.5
	WB Left/Thru/Right	A	8.6	B	11.8	A	8.6	B	11.9	A	8.6	B	12.7	A	8.6	B	12.7
	WB Approach	A	8.6	B	11.8	A	8.6	B	11.9	A	8.6	B	12.7	A	8.6	B	12.7
	NB Left-Turn	A	7.6	A	7.6	A	7.6	A	7.6	A	8.2	A	7.9	A	8.2	A	7.9
	NB Approach	N/A	0.3	N/A	0.2	N/A	0.3	N/A	0.2	N/A	1.7	N/A	0.5	N/A	1.7	N/A	0.5
	SB Left-Turn	N/A	NO VOL	N/A	NO VOL	N/A	NO VOL	N/A	NO VOL	N/A	NO VOL	N/A	NO VOL	N/A	NO VOL	N/A	NO VOL
Existing Four-Leg Unsignalized Intersection (TWSC)	SB Approach	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A	0.0

** = Delay exceeding 200 sec/veh





LEGEND

- STOP — Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- A — AM Level of Service
- (A) — PM Level of Service

N

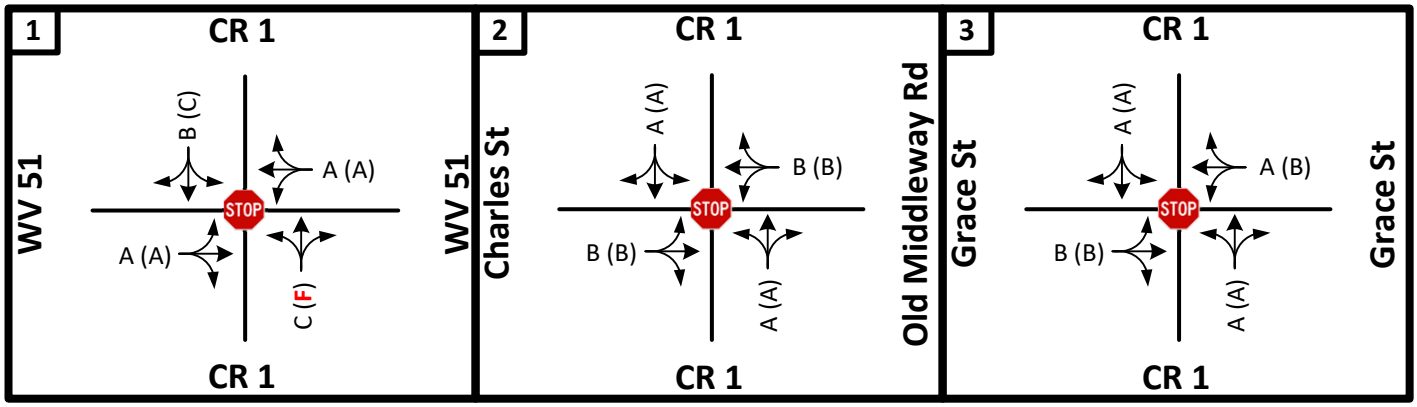
NOT TO SCALE

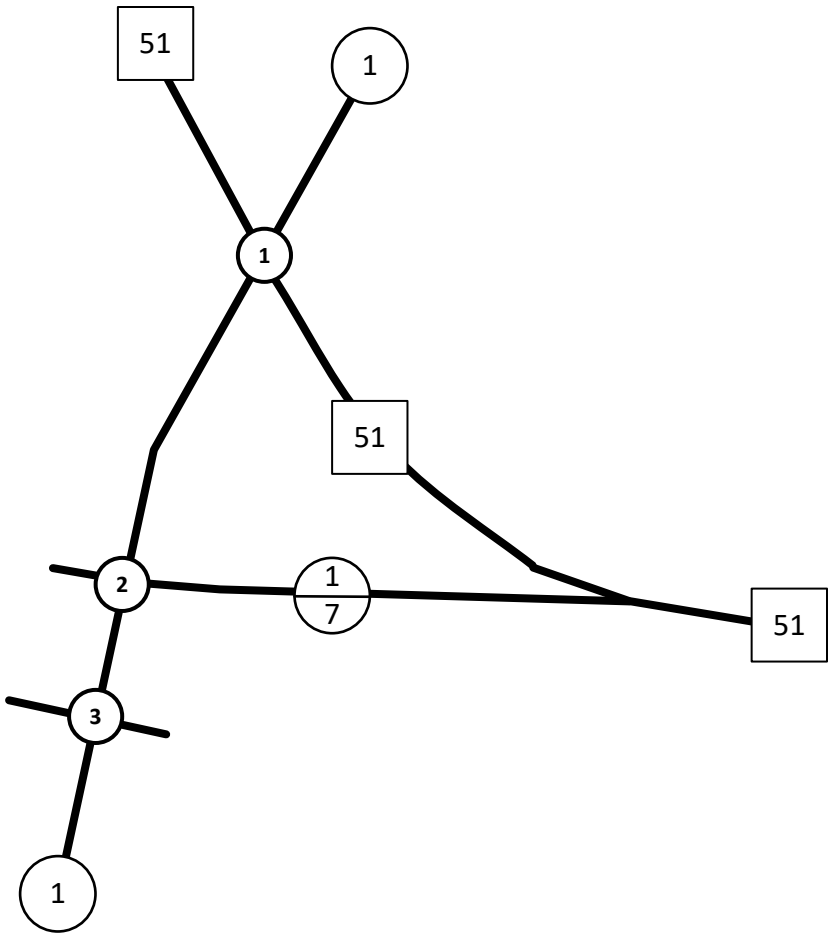
3M Redevelopment TIS

2022 Existing Level of Service

DATE: May 2023

FIGURE 9





LEGEND

- STOP Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- A AM Level of Service
- (A) PM Level of Service

N

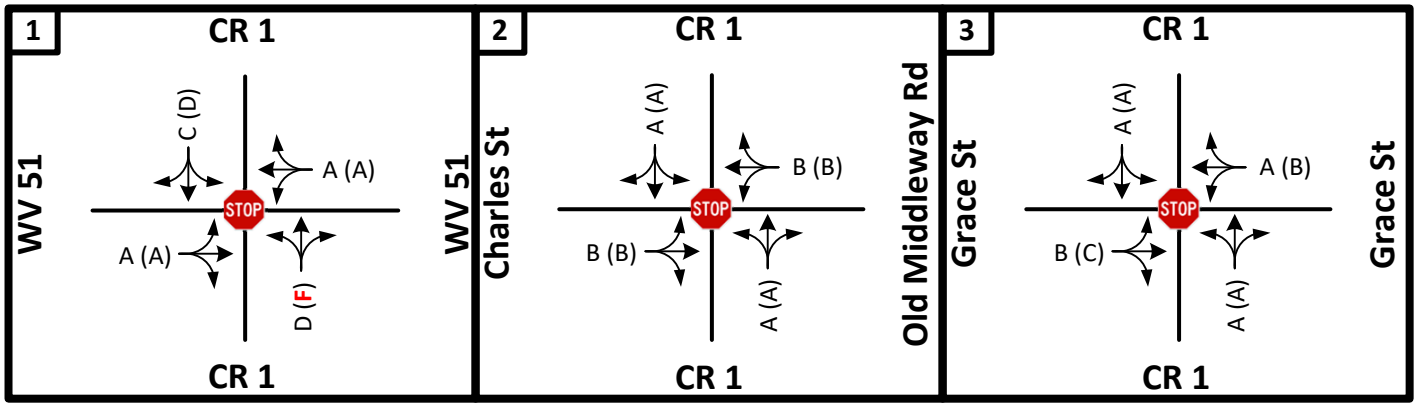
NOT TO SCALE

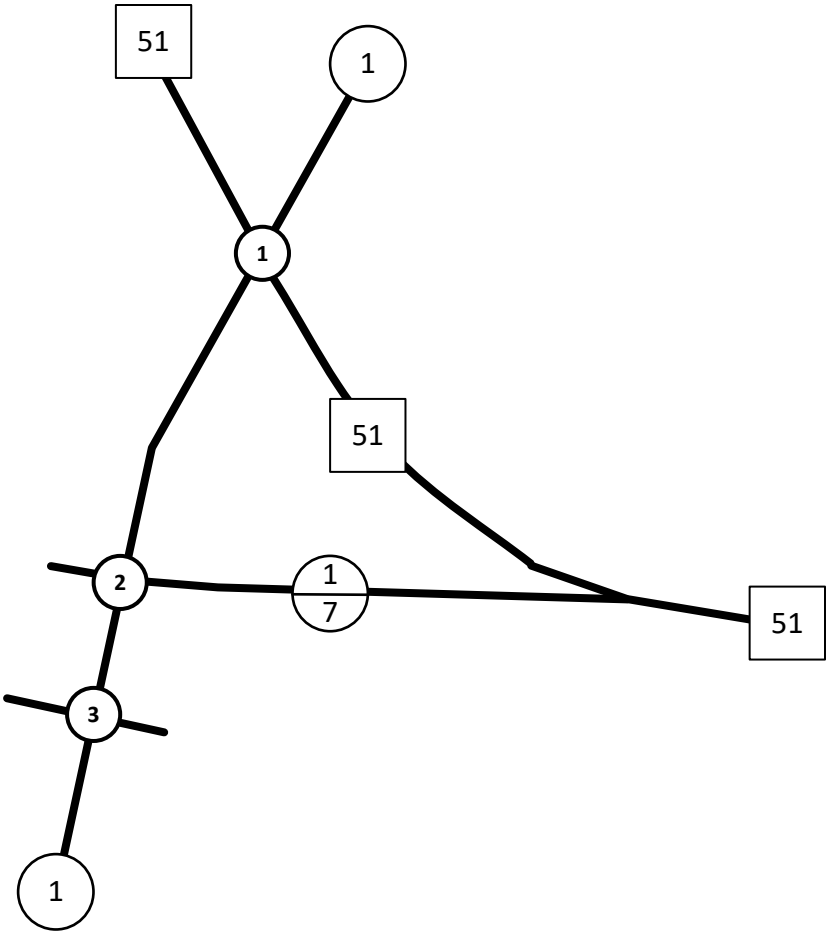
3M Redevelopment TIS

2024 No-Build Level of Service

DATE: May 2023

FIGURE 10





LEGEND

- STOP Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- A AM Level of Service
- (A) PM Level of Service

N

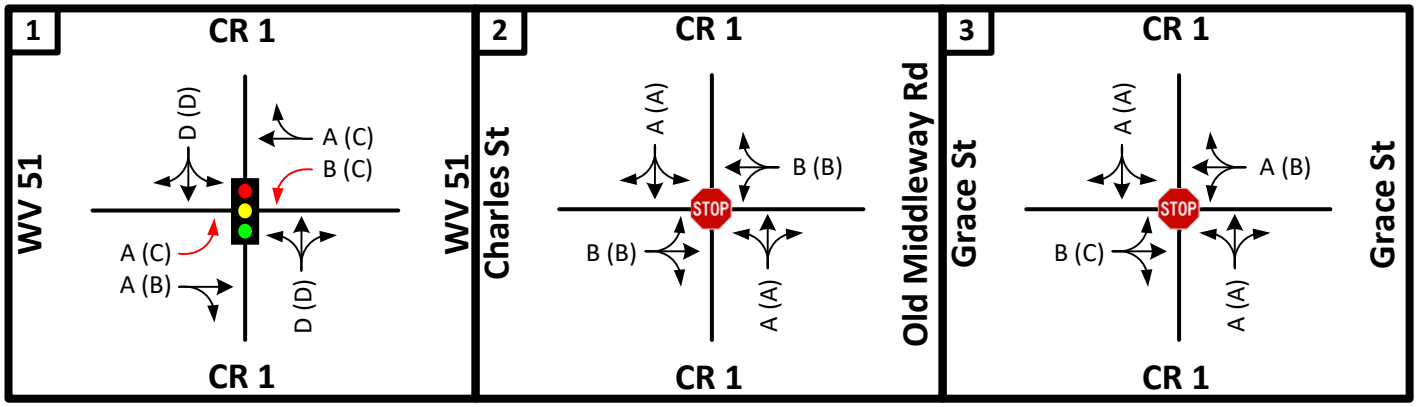
NOT TO SCALE

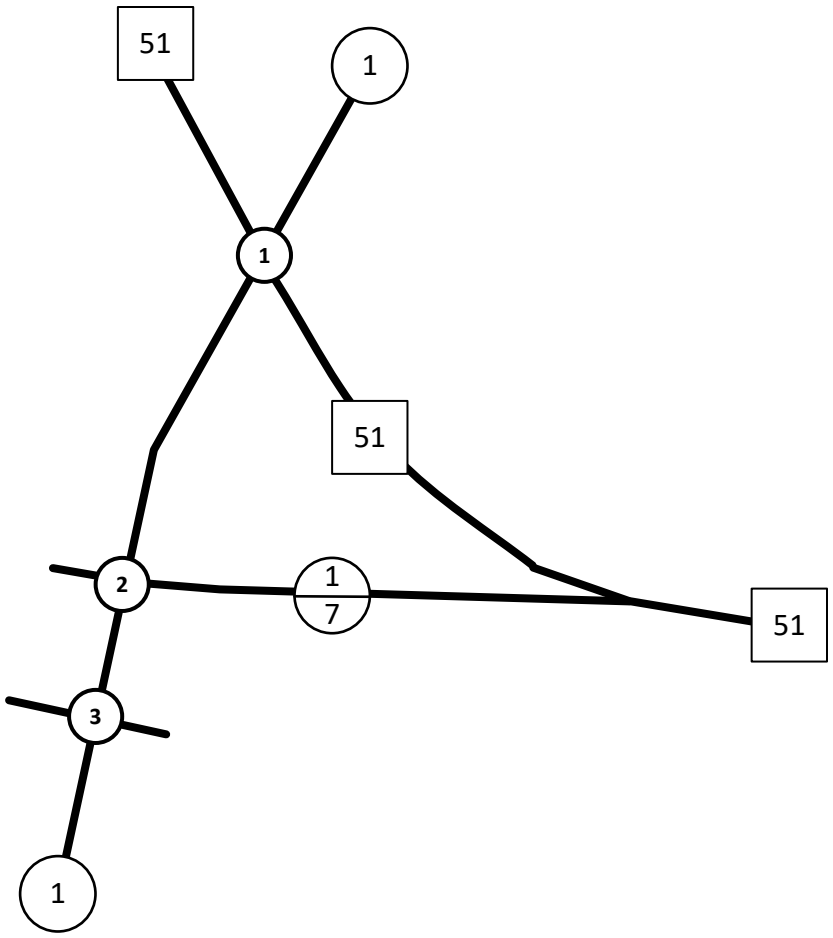
3M Redevelopment TIS

2024 Build Level of Service

DATE: May 2023

FIGURE 11





LEGEND

- Proposed Traffic Control
- Existing Roadway
- Proposed Roadway
- Existing Lane Configuration
- Proposed Lane Configuration
- A AM Level of Service
- (A) PM Level of Service

N

NOT TO SCALE

3M Redevelopment TIS

2024 Build Improved Level of Service

DATE: May 2023

FIGURE 12

QUEUING ANALYSIS

2022 Existing Conditions Analysis

Queuing analysis was performed for all study intersections during the weekday AM and PM peak hours using the SimTraffic micro-simulation model, which is a simulation complement to the Synchro traffic analysis models utilized for the capacity analysis. The queuing calculations produced by SimTraffic are acknowledged within the industry to be a realistic replication of actual conditions. Each simulation model was seeded for 10 minutes and recorded for 60 minutes. The simulation was run five times and then averaged to estimate the 95th percentile queuing for all scenarios.

The queuing analysis indicates that no existing turning movements currently have queuing issues during the peak hours analyzed.

2024 No-Build Conditions Analysis

Queuing analysis indicates that the conditions described in the 2022 Existing Conditions are expected to continue with similar queues following the increase in traffic due to regional growth in the study area. Analysis indicates that no additional movements are expected to have queuing issues.

2024 Build Conditions Analysis

Queuing analysis indicates that the conditions described in the 2024 No-Build Conditions are expected to continue with similar queueing following build-out of the 3M Redevelopment Industrial development. Analysis indicates that one turning movement is expected to have a queuing issue during the peak hours analyzed. The turning movements that is expected to have a queuing issue is as follows:

- ***CR 1 northbound approach to WV 51 during PM peak hour***

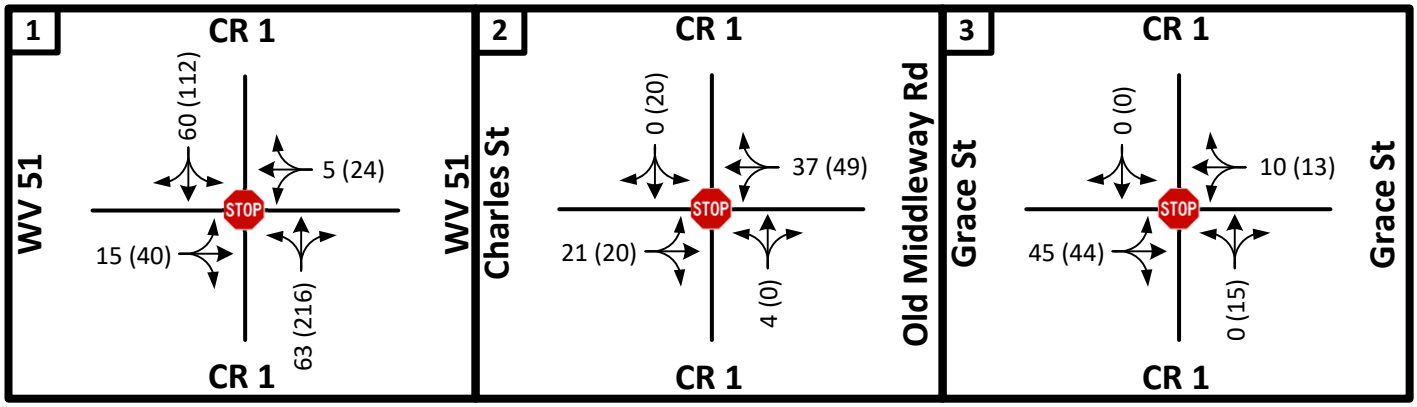
2024 Build Improved Conditions Analysis

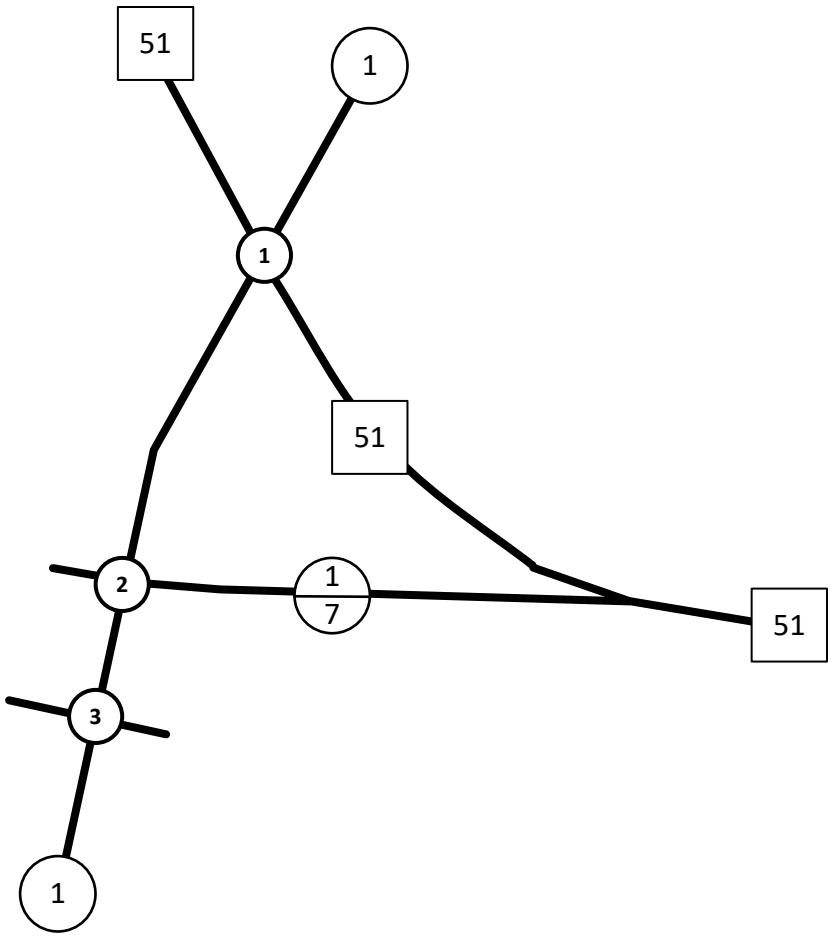
Queuing analysis indicates that all conditions described in the 2024 Build Conditions are expected to be resolved with the proposed improvements in place. Analysis indicates that no additional movements are expected to exceed storage length.

Table 5 presents the 95% queuing results for the intersections within the study during the weekday AM and PM peak hours for the 2022 Existing Conditions, 2024 No-Build Conditions, 2024 Build Conditions, and 2024 Build Improved Conditions. **Figure 13** shows the 2022 Existing Conditions Queuing Analysis for the weekday AM and PM peak hours; **Figure 14** shows the 2024 No-Build Queuing Analysis for the weekday AM and PM peak hours; **Figure 15** shows the 2024 Build Queuing Analysis for the weekday AM and PM peak hours; and **Figure 16** shows the 2024 Build Improved Queuing Analysis for the weekday AM and PM peak hours. Copies of the SimTraffic analyses outputs are included in **Appendix D**.

Table 5: Queuing Analysis Summary

Intersection	Movement	Existing Storage Length (ft)	2022 Existing		2024 No-Build		Proposed Storage Length (ft)	2024 Build		Proposed Storage Length (ft)	2024 Build Improved	
			AM	PM	AM	PM		AM	PM		AM	PM
Intersection 1 - Leetown Road (CR 1) with WV 51 (Middleway Pike)	EB Left/Thru/Right	--	15	40	21	43	--	37	55	N/A	N/A	N/A
	EB Left-Turn	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	150	52	80
	EB Thru/Right	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	--	160	174
	WB Left/Thru/Right	--	5	24	2	18	--	43	42	N/A	N/A	N/A
	WB Left-Turn	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	150	57	62
	WB Thru/Right	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	--	55	204
	NB Left/Thru/Right	--	63	216	63	242	--	119	1958	--	151	295
	SB Left/Thru/Right	--	60	112	58	128	--	99	231	--	136	156
Intersection 2 - Queen Street (CR 1) with Charles Street/Old Middleway Pike (CR 1/7)	EB Left/Thru/Right	--	21	20	23	19	--	21	20	--	21	20
	WB Left/Thru/Right	--	37	49	37	50	--	52	53	--	52	52
	NB Left/Thru/Right	--	4	0	0	0	--	7	284	--	9	7
	SB Left/Thru/Right	--	0	20	8	14	--	11	26	--	15	26
Intersection 3 - Queen Street (CR 1) with Grace Street	EB Left/Thru/Right	--	45	44	46	47	--	87	159	--	87	101
	WB Left/Thru/Right	--	10	13	11	12	--	12	13	--	12	13
	NB Left/Thru/Right	--	0	15	0	15	--	26	73	--	26	20
	SB Left/Thru/Right	--	0	0	0	0	--	0	0	--	0	6





LEGEND

- STOP Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- XX AM Queue (FT)
- (XX) PM Queue (FT)

N

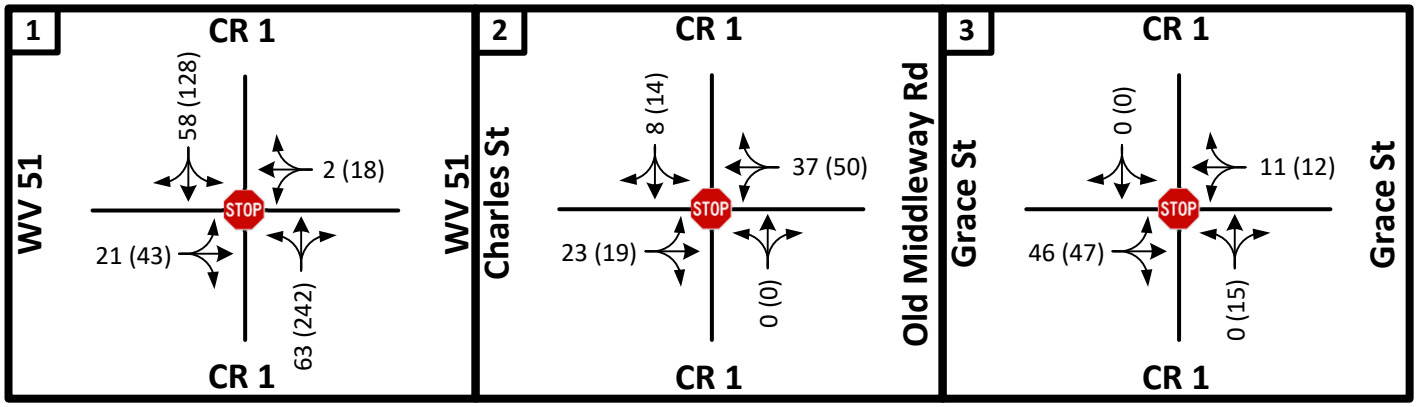
NOT TO SCALE

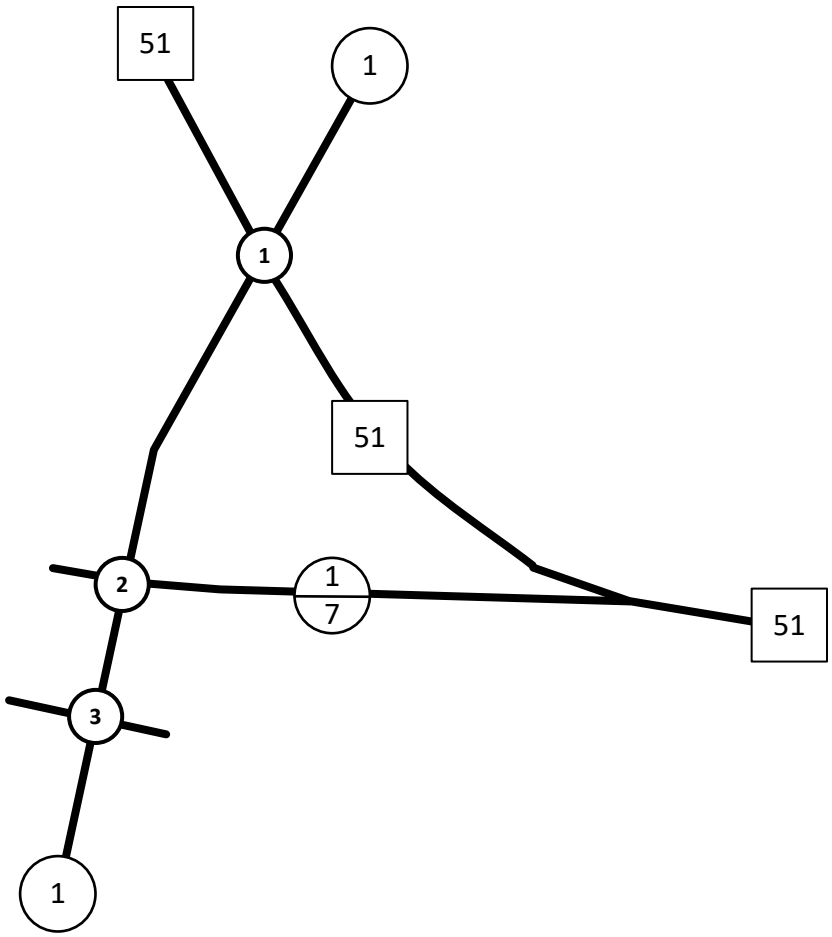
3M Redevelopment TIS

2022 Existing Queuing Analysis

DATE: May 2023

FIGURE 13





LEGEND

- STOP Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- XX AM Queue (FT)
- (XX) PM Queue (FT)

N

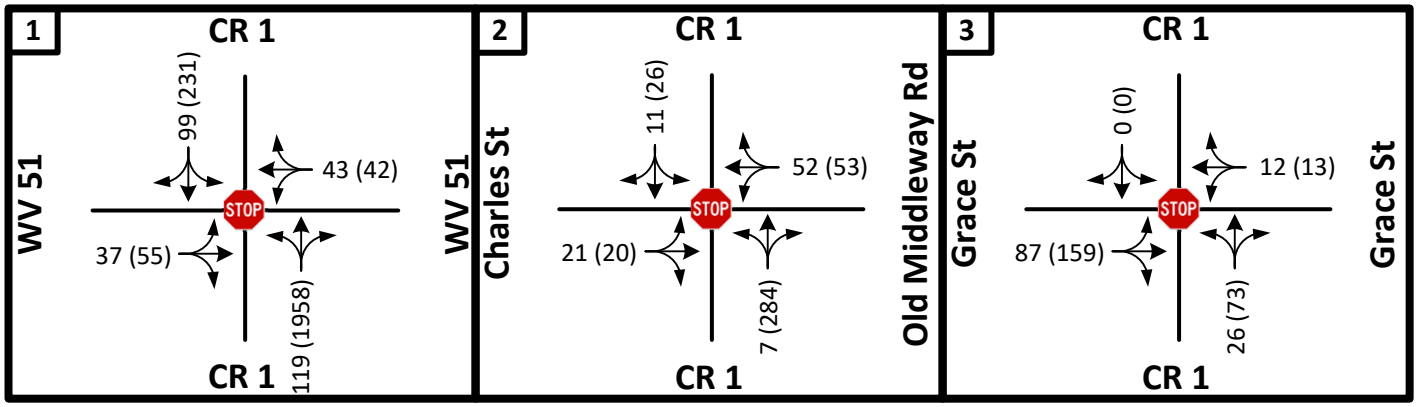
NOT TO SCALE

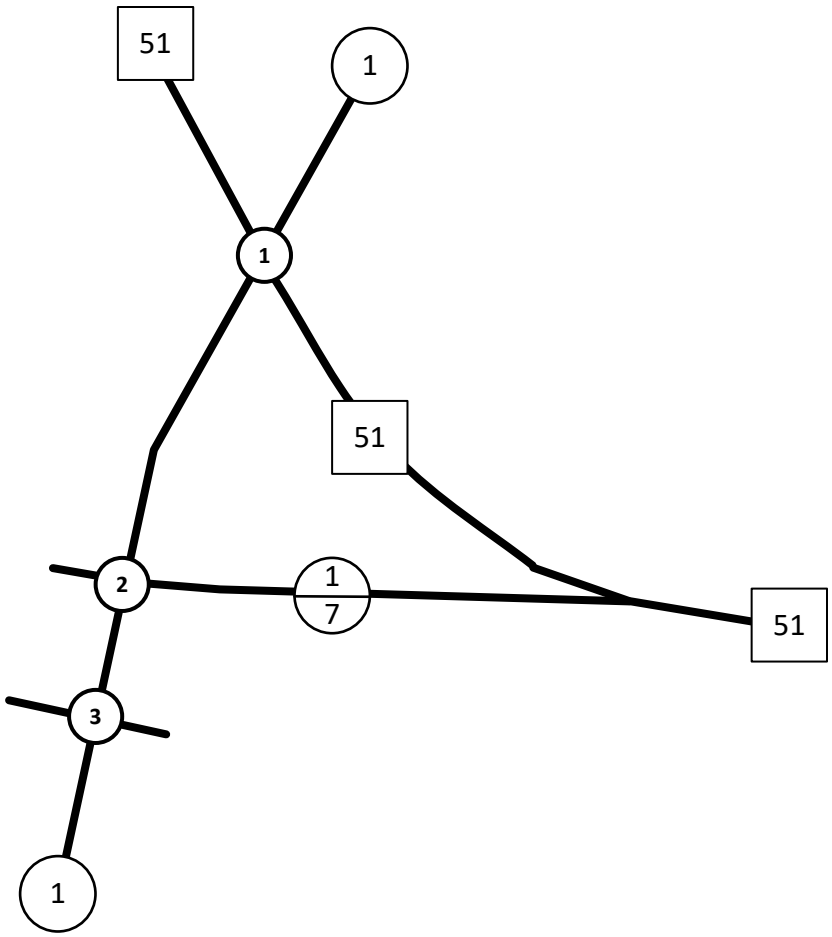
3M Redevelopment TIS

2024 No-Build Queuing Analysis

DATE: May 2023

FIGURE 14





LEGEND

- STOP — Existing Traffic Control
- Existing Roadway
- Existing Lane Configuration
- XX — AM Queue (FT)
- (XX) — PM Queue (FT)

N

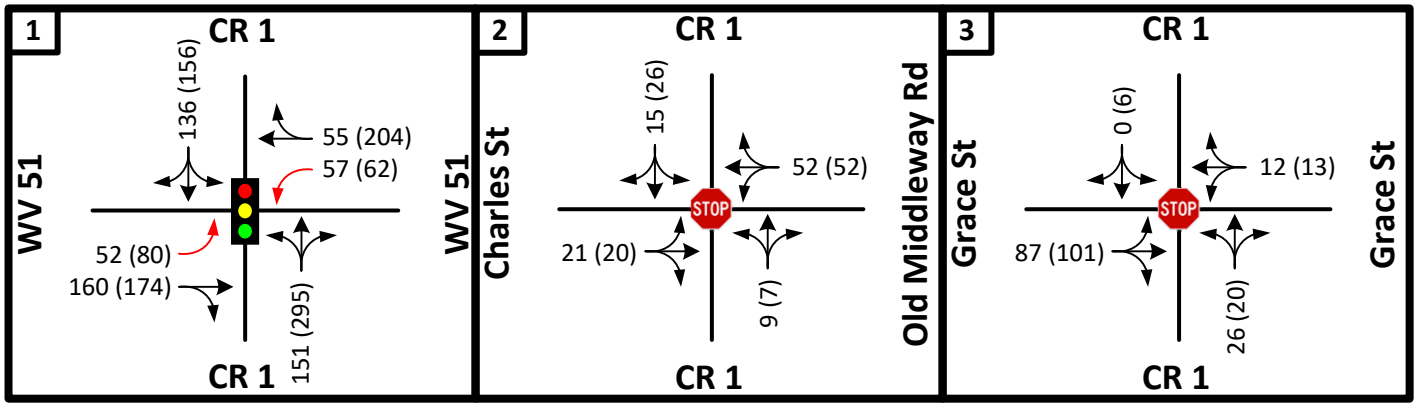
NOT TO SCALE

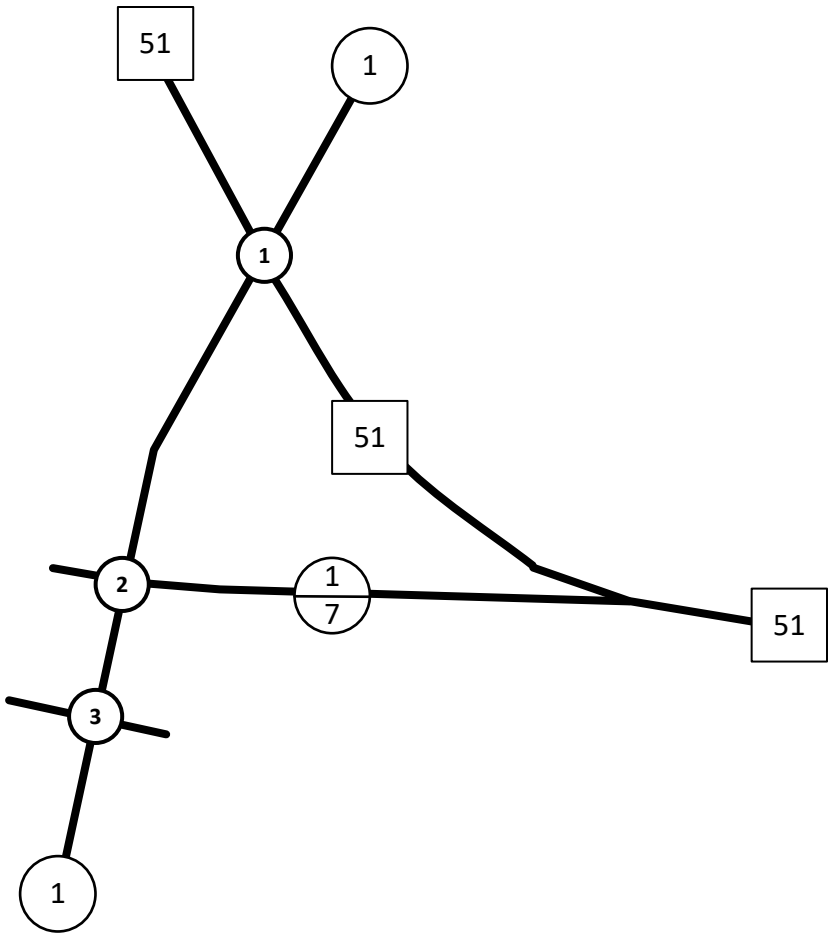
3M Redevelopment TIS

2024 Build Queuing Analysis

DATE: May 2023

FIGURE 15





LEGEND

- STOP Proposed Traffic Control
- Existing Roadway
- Proposed Roadway
- Existing Lane Configuration
- Proposed Lane Configuration
- XX AM Queue (FT)
- (XX) PM Queue (FT)

AMT

N

NOT TO SCALE

3M Redevelopment TIS

2024 Build Improved Queuing Analysis

DATE: May 2023

FIGURE 16

SIGNAL WARRANT ANALYSIS

The Manual on Uniform Traffic Control Devices (MUTCD) contains nine (9) warrants for investigating the need for a traffic signal at a particular intersection. The satisfaction of a signal warrant or warrants may indicate the need for the installation of a traffic signal. Three (3) of the warrants deal directly with traffic volumes; two (2) warrants focus on pedestrian issues; one (1) focuses on safety; one (1) on grade crossings; one (1) on traffic signal progression; and one (1) on a Planning level (non-data-based) analysis. For this instance, Warrants 1, 2, and 7 were considered at the intersection of WV 51 with CR 1. Copies of the signal warrant analysis are contained in **Appendix E**.

WV 51 with CR 1

Data Collection

A full 13-hour turning movement count was collected for the intersection Friday July 8, 2022 between the hours of 6 AM and 7 PM. The 13-hour count was collected to analyze MUTCD Signal Warrants for existing conditions. The traffic count data is located in **Appendix B.**

MUTCD Warrant Evaluation

In accordance with MUTCD procedures, the impact of right turning traffic from the side street approaches was assessed to determine appropriate consideration as a component of the signal warrant analysis. Left turning motorists or those crossing the intersection are those most benefiting from a traffic signal, as right turning maneuvers typically can be made easily without a signal. Therefore, *Pagones Theorem* was utilized to reduce the number of right turns included in the minor street approach volume. Right-turns along CR 1 northbound approach were reduced by 20% and right-turns along CR 1 southbound were reduced by 40% per the Pagones Theorem. A detailed report containing the hourly volumes at the intersection is located in **Appendix E**.

Warrant 1 – Eight-Hour Vehicular Volume

This warrant is intended for application at locations where there is a large volume of intersecting traffic. To meet Warrant 1, the major street traffic (total of both approaches) must meet or exceed 350 vehicles per hour while the minor street traffic (one direction only) must meet or exceed 105 vehicles per hour for any eight hours of the day (Condition A – Minimum Vehicular Volume), or the major street traffic (total of both approaches) must meet or exceed 525 vehicles per hour while the minor street traffic (one direction only) must meet or exceed 53 vehicles per hour for any 8 hours of the day (Condition B – Interruption of Continuous Traffic). Adjustment of side street right turn volume was made using Pagones Theorem.

The minimum thresholds and conditions for this warrant as listed in the MUTCD are located on **Table 6.**

It is intended that warrant 1 be treated as a single warrant. If condition A is satisfied, then the criteria for warrant 1 is satisfied and condition B and the combination of condition A and B are not needed. Also, if condition B is satisfied, then the criteria for Warrant 1 is satisfied and the combination of conditions A and B is not needed. Warrant 1 is considered the primary warrant for the installation of a signal and is often considered as singular standalone criteria.

Table 6: MUTCD Table 4C-1, Warrant 1 Eight-Hour Volume

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

[a] Basic minimum hourly volume
[b] Used for combination of Conditions A and B after adequate trial of other remedial measures
[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000
[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

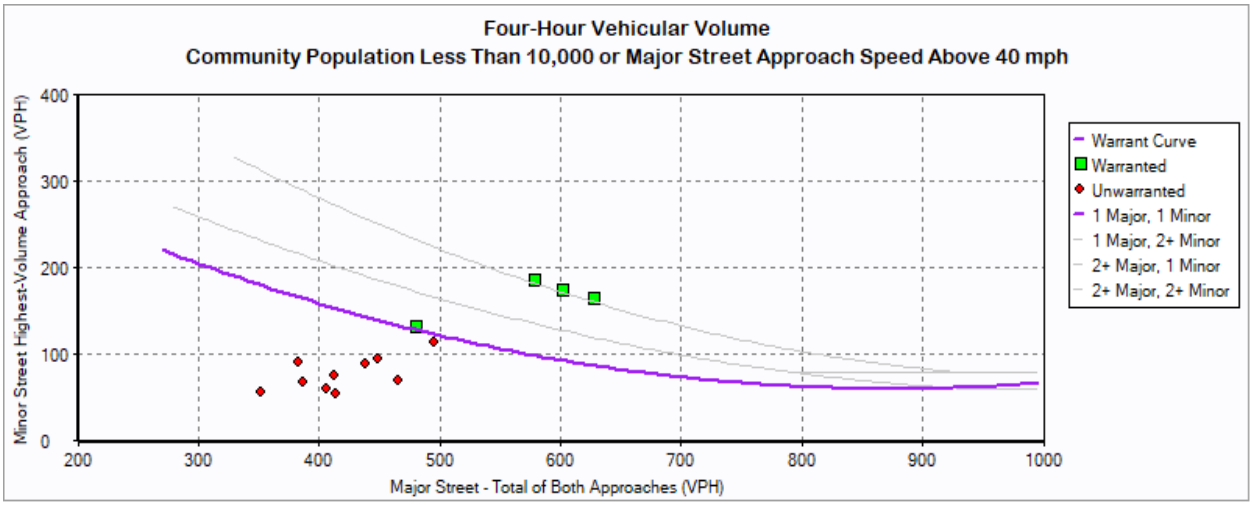
After applying the warrant criteria for 2022 Existing Conditions, five of the eight hours meet the combined criteria set for Warrant 1A, three hour meets the criteria for Warrant 1B, and seven hours meet the criteria for combination of Warrant 1A & 1B of the Major and Minor street volumes set in the "70%" conditions.

Warrant 1 is **NOT MET**.

Warrant 2 – Four Hour Vehicular Volumes

This warrant is intended for locations where, for a brief period of the day, minor road traffic experiences excessive delays in attempting to enter or cross the major street. Warrant 2 requires that the combination of the major street traffic (total of both approaches) and minor street traffic (one direction only) reaches a designated minimum volume during any four hours of any average day. **Figure 17** illustrates the threshold values and results for Warrant 2.

Figure 17: Warrant 2 - Four-Hour Vehicular Volumes – Analysis Results



After applying the warrant criteria for 2022 Existing Conditions four of the 13 hours counted meet the combined criteria for Warrant 2. Based on the data collected, Warrant 2 meets based on the 2022 Existing Conditions.

Warrant 2 is **MET.**

Warrant 7 – Crash Experience

This warrant is intended for application where the severity and frequency of crashes are the principle reasons to consider installing a traffic control signal. Warrant 7 is applicable where five or more crashes that are potentially preventable by the installation of a traffic signal have occurred within a 12-month period and the intersection traffic volume meets the 56% column from MUTCD Table 4C-1.

Based upon an evaluation of the intersection crash data, there were seven reported crashes that occurred at the intersection within the 12-month period of January 16, 2019 – January 15, 2020 that are potentially correctable by the installation of a traffic signal. All seven of these crashes were right angle crashes that are typically correctable by installation of a traffic signal. A detailed list of crash data for the 5-year period from January 1, 2017 – December 31, 2021 is located in **Appendix E**.

Warrant 7 is **MET**.

CONCLUSIONS/RECOMMENDATIONS

This report summarizes existing and future traffic analyses conducted in support of the 3M Redevelopment Industrial Development. The proposed development is to be located west of CR 1 at the end of Grace Street in Middleway, Jefferson County. The proposed site plan includes one light industrial facility comprising 1,000,000 sf and is expected to be built-out by 2024.

The proposed development is anticipated to be served by one existing site driveway connecting with Grace Street. Site Drive #1 is to be located approximately 2,000 feet west of CR 1 connecting with Grace Street from the west and will operate as full movement approach with TWSC. This is an existing approach at the intersection that was used by the previous tenant.

Based on the findings of this study, the following capacity infrastructure improvements are recommended to mitigate existing transportation issues unrelated to the 3M Redevelopment Industrial development:

WV 51 with CR 1

- Install a traffic signal at the intersection of WV 51 with CR 1. This measure increases capacity and improves LOS for the CR 1 northbound and southbound approaches. Analysis indicates that the MUTCD Warrant 2 (Four-Hour Volume) and MUTCD Warrant 7 (Crash Experience) criteria are met during Existing Conditions. The traffic signal is proposed to include permitted left-turn phasing on both WV 51 approaches and split phasing on the CR 1 approaches due to the skewed alignment to WV 51. WVDOH is already in the early planning stages to install a traffic signal at the intersection but nothing is finalized yet.

- Construct an exclusive left-turn lane on the WV 51 eastbound approach to CR 1. The anticipated queuing from the left-turn movement is estimated to be approximately 80 feet during the 2024 Build Improved Conditions PM peak hour. The WV 51 eastbound exclusive left-turn lane should be constructed to provide 150 feet of full-width storage with appropriate taper.

- Construct an exclusive left-turn lane on the WV 51 westbound approach to CR 1. The anticipated queuing from the left-turn movement is estimated to be approximately 62 feet during the 2024 Build Improved Conditions AM peak hour. The WV 51 westbound exclusive left-turn lane should be constructed to provide 150 feet of full-width storage with appropriate taper.

APPENDIX A: STUDY AREA PHOTOS

WV 51 Eastbound Approach to CR 1

WV 51 Westbound Approach to CR 1

CR 1 Northbound Approach to WV 51

CR 1 Southbound Approach to WV 51

Charles Street Eastbound Approach to CR 1

CR 1/7 Westbound Approach to CR 1

CR 1 Northbound Approach to Charles Street/CR 1/7

CR 1 Southbound Approach to Charles Street/CR 1/7

Grace Street Eastbound Approach to CR 1

Grace Street Westbound Approach to CR 1

CR 1 Northbound Approach to Grace Street

CR 1 Southbound Approach to Grace Street

APPENDIX B: TRAFFIC VOLUMES & CALCULATIONS

APPENDIX B-1: VOLUME CALCULATIONS

22-0284.001 - 3M Redevelopment TIS - Traffic Volume Calculations

	Balanced Existing Volumes (2022)		Historical Growth (2022-2024)		No-Build Volumes (2024)		Site Trip Distribution		Employee Site Trip Assignment		Truck Site Trip Assignment		Total Site Trip Assignment		Build Volumes (2024)		Site Impact	
	AM	PM	AM	PM	AM	PM	Enter	Exit	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Intersection 1 - Leetown Road (CR 1) with WV 51 (Middleway Pike)																		
EBL	65	65	2	2	67	67			0	0	0	0	0	0	67	67		
EBT	233	222	7	6	240	228			0	0	0	0	0	0	240	228	10.2%	5.9%
EBR	122	71	3	2	125	73	35%		40	14	9	9	49	23	174	96		
WBL	1	18	0	1	1	19	25%		29	10	6	6	35	16	36	35		
WBT	126	328	4	9	130	337			0	0	0	0	0	0	130	337	20.0%	3.9%
WBR	9	40	0	1	9	41			0	0	0	0	0	0	9	41		
NBL	44	155	1	4	45	159		35%	7	33	9	9	16	42	61	201		
NBT	31	48	1	1	32	49		20%	4	19	5	5	9	24	41	73	30.5%	29.7%
NBR	5	18	0	1	5	19		25%	5	24	6	6	11	30	16	49		
SBL	10	17	0	0	10	17			0	0	0	0	0	0	10	17		
SBT	27	33	1	1	28	34	20%		23	8	5	5	28	13	56	47	25.0%	7.7%
SBR	45	102	1	3	46	105			0	0	0	0	0	0	46	105		
Intersection 2 - Queen Street (CR 1) with Charles Street/Old Middleway Pike (CR 1/7																		
EBL	1	1	0	0	1	1			0	0	0	0	0	0	1	1		
EBT	2	2	0	0	2	2			0	0	0	0	0	0	2	2	0.0%	0.0%
EBR	3	0	0	0	3	0			0	0	0	0	0	0	3	0		
WBL	13	37	0	1	13	38	10%		11	4	2	2	13	6	26	44		
WBT	0	1	0	0	0	1			0	0	0	0	0	0	0	1	40.6%	12.0%
WBR	6	5	0	0	6	5			0	0	0	0	0	0	6	5		
NBL	1	2	0	0	1	2			0	0	0	0	0	0	1	2		
NBT	64	207	2	6	66	213		80%	16	76	20	20	36	96	102	309	30.5%	30.3%
NBR	23	32	1	1	24	33		10%	2	10	2	2	4	12	28	45		
SBL	6	11	0	0	6	11			0	0	0	0	0	0	6	11		
SBT	150	102	4	3	154	105	80%		91	33	20	20	111	53	265	158	40.8%	30.6%
SBR	1	4	0	0	1	4			0	0	0	0	0	0	1	4		
Intersection 3 - Queen Street (CR 1) with Grace Street																		
EBL	32	36	1	1	33	37		90%	18	86	22	22	40	108	73	145		
EBT	0	1	0	0	0	1			0	0	0	0	0	0	0	1	50.6%	75.0%
EBR	10	2	0	0	10	2		10%	2	10	2	2	4	12	14	14		
WBL	0	1	0	0	0	1			0	0	0	0	0	0	0	1		
WBT	0	1	0	0	0	1			0	0	0	0	0	0	0	1	0.0%	0.0%
WBR	1	0	0	0	1	0			0	0	0	0	0	0	1	0		
NBL	2	7	0	0	2	7	10%		11	4	2	2	13	6	15	13		
NBT	54	204	2	6	56	210			0	0	0	0	0	0	56	210	18.3%	2.7%
NBR	0	1	0	0	0	1			0	0	0	0	0	0	0	1		
SBL	0	0	0	0	0	0			0	0	0	0	0	0	0	0		
SBT	153	76	4	2	157	78			0	0	0	0	0	0	157	78	42.7%	29.8%
SBR	11	59	0	2	11	61	90%		103	37	22	22	125	59	136	120		

Annual Growth Rate 1.41%

Existing Year 2022

Build Year 2024

	AM		PM	
	Enter	Exit	Enter	Exit
Employee Trips	114	20	41	95
Truck Trips	24	24	24	24

APPENDIX B-2: TURNING MOVEMENT COUNTS

VEHICLE AND PEDESTRIAN VOLUME SUMMARY

COUNT LOCATION	
CITY	Middleway
STATE	WV
DATE	5/13/2022
INTERSECTION	Int 1: Leetown Road (CR 1) @ WV 51 (Middleway Pike)
COUNT BY	AMT

Friday

STREET	CR 1				CR 1				WV 51				WV 51				Total			PEAK HR
	From North				From South				From East				From West							
TIME	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL	
0700 - 0715	**3**	**7**	**11**	**21**	**9**	**8**	**2**	**19**	**1**	**24**	**1**	**26**	**16**	**67**	**41**	**124**	**40**	**150**	**190**	329
0715 - 0730	**4**	**5**	**12**	**21**	**13**	**7**	**2**	**22**	**0**	**39**	**2**	**41**	**20**	**56**	**29**	**105**	**43**	**146**	**189**	478
0730 - 0745	**1**	**10**	**7**	**18**	**11**	**12**	**0**	**23**	**0**	**28**	**3**	**31**	**15**	**57**	**30**	**102**	**41**	**133**	**174**	612
0745 - 0800	**2**	**5**	**15**	**22**	**11**	**4**	**1**	**16**	**0**	**35**	**3**	**38**	**14**	**53**	**22**	**89**	**38**	**127**	**165**	***718***
0800 - 0815	2	6	9	17	14	7	1	22	0	22	2	24	12	41	25	78	39	102	141	669
0815 - 0830	2	4	14	20	9	5	1	15	0	33	3	36	15	51	13	79	35	115	150	630
0830 - 0845	1	8	12	21	8	7	0	15	0	30	4	34	16	59	16	91	36	125	161	617
0845 - 0900	6	5	18	29	15	6	3	24	2	25	1	28	14	40	6	60	53	88	141	593
1500 - 1515	1	11	10	22	28	8	2	38	3	64	4	71	12	56	14	82	60	153	213	213
1515 - 1530	2	7	20	29	32	15	3	50	4	55	6	65	13	49	11	73	79	138	217	430
1530 - 1545	4	10	23	37	25	18	0	43	0	56	7	63	5	47	15	67	80	130	210	640
1545 - 1600	9	21	20	50	43	13	1	57	0	54	6	60	16	47	12	75	107	135	242	882
1600 - 1615	0	12	28	40	34	13	3	50	3	67	2	72	19	46	25	90	90	162	252	921
1615 - 1630	**6**	**11**	**30**	**47**	**42**	**12**	**5**	**59**	**5**	**87**	**15**	**107**	**23**	**52**	**21**	**96**	**106**	**203**	**309**	1013
1630 - 1645	**4**	**5**	**27**	**36**	**37**	**12**	**6**	**55**	**6**	**97**	**9**	**112**	**14**	**57**	**15**	**86**	**91**	**198**	**289**	1092
1645 - 1700	**3**	**8**	**24**	**35**	**41**	**16**	**5**	**62**	**5**	**51**	**9**	**65**	**14**	**49**	**17**	**80**	**97**	**145**	**242**	1092
1700 - 1715	**4**	**9**	**21**	**34**	**35**	**8**	**2**	**45**	**2**	**93**	**7**	**102**	**14**	**64**	**18**	**96**	**79**	**198**	**277**	***1117***
1715 - 1730	5	9	21	35	31	14	3	48	1	86	14	101	13	42	16	71	83	172	255	1063
1730 - 1745	3	7	14	24	34	12	0	46	0	58	8	66	10	51	20	81	70	147	217	991
1745 - 1800	3	12	19	34	22	10	1	33	3	66	7	76	7	55	15	77	67	153	220	969
Peak HR AM																				
0700 - 0800	***10***	***27***	***45***	***82***	***44***	***31***	***5***	***80***	***1***	***126***	***9***	***136***	***65***	***233***	***122***	***420***	***162***	***556***	***718***	
Peak HR PM																				
1615 - 1715	***17***	***33***	***102***	***152***	***155***	***48***	***18***	***221***	***18***	***328***	***40***	***386***	***65***	***222***	***71***	***358***	***373***	***744***	***1117***	

AM PHF	**0.932**	**0.870**	**0.829**	**0.847**	**0.945**
PM PHF	**0.809**	**0.891**	**0.862**	**0.932**	**0.904**

VEHICLE AND PEDESTRIAN VOLUME SUMMARY

COUNT LOCATION	
CITY	**Middleway**
STATE	**WV**
DATE	**7/8/2022**
INTERSECTION	**Int 1: Leetown Road (CR 1) @ WV 51 (Middleway Pike)**
COUNT BY	**AMT**

Friday

STREET	**CR 1**				**CR 1**				**WV 51**				**WV 51**				**Total**			**PEAK HR**
	From North				**From South**				**From East**				**From West**							
TIME	**L**	**T**	**R**	**TOT**	**L**	**T**	**R**	**TOT**	**L**	**T**	**R**	**TOT**	**L**	**T**	**R**	**TOT**	**N-S**	**E-W**	**ALL**	
0600 - 0615	1	6	5	12	9	3	0	12	0	11	1	12	9	31	20	60	24	72	96	96
0615 - 0630	2	6	5	13	6	3	0	9	0	19	0	19	19	36	38	93	22	112	134	230
0630 - 0645	0	11	7	18	11	8	1	20	0	22	2	24	18	41	41	100	38	124	162	392
0645 - 0700	4	3	9	16	10	3	1	14	2	21	1	24	19	38	25	82	30	106	136	528
0700 - 0715	**1**	**4**	**5**	**10**	**8**	**3**	**0**	**11**	**0**	**27**	**2**	**29**	**11**	**41**	**33**	**85**	**21**	**114**	**135**	567
0715 - 0730	**0**	**6**	**6**	**12**	**6**	**6**	**2**	**14**	**0**	**27**	**0**	**27**	**18**	**47**	**25**	**90**	**26**	**117**	**143**	576
0730 - 0745	**1**	**1**	**8**	**10**	**13**	**9**	**0**	**22**	**0**	**27**	**2**	**29**	**17**	**50**	**23**	**90**	**32**	**119**	**151**	565
0745 - 0800	**4**	**6**	**9**	**19**	**15**	**9**	**0**	**24**	**1**	**29**	**3**	**33**	**21**	**43**	**18**	**82**	**43**	**115**	**158**	***587***
0800 - 0815	1	7	9	17	9	6	0	15	0	19	1	20	15	48	17	80	32	100	132	584
0815 - 0830	2	8	9	19	6	5	0	11	0	27	4	31	10	32	16	58	30	89	119	560
0830 - 0845	4	4	11	19	11	1	0	12	1	35	3	39	15	54	9	78	31	117	148	557
0845 - 0900	4	8	7	19	11	9	2	22	0	30	5	35	10	40	15	65	41	100	141	540
0900 - 0915	3	6	8	17	9	3	2	14	1	30	4	35	8	30	22	60	31	95	126	534
0915 - 0930	6	3	13	22	8	3	0	11	0	22	8	30	9	42	11	62	33	92	125	540
0930 - 0945	5	3	7	15	12	5	3	20	0	30	2	32	10	27	9	46	35	78	113	505
0945 - 1000	3	4	6	13	10	3	0	13	0	28	3	31	9	36	11	56	26	87	113	477
1000 - 1015	5	4	10	19	9	6	2	17	2	21	6	29	11	27	9	47	36	76	112	463
1015 - 1030	5	9	4	18	10	7	1	18	0	31	4	35	16	37	10	63	36	98	134	472
1030 - 1045	2	3	13	18	8	4	0	12	0	35	5	40	11	42	18	71	30	111	141	500
1045 - 1100	3	4	11	18	12	7	2	21	2	32	0	34	8	49	11	68	39	102	141	528
1100 - 1115	5	5	10	20	12	4	1	17	0	38	1	39	12	33	14	59	37	98	135	551
1115 - 1130	5	5	11	21	10	1	3	14	2	29	7	38	13	36	13	62	35	100	135	552
1130 - 1145	9	5	19	33	12	1	2	15	4	39	8	51	12	40	7	59	48	110	158	569
1145 - 1200	9	3	10	22	11	8	6	25	1	28	11	40	12	45	7	64	47	104	151	579
1200 - 1215	4	5	15	24	17	3	4	24	4	32	5	41	5	34	14	53	48	94	142	586
1215 - 1230	0	6	11	17	16	11	1	28	3	57	3	63	13	36	18	67	45	130	175	626
1230 - 1245	4	5	18	27	14	4	0	18	5	38	4	47	8	43	15	66	45	113	158	626
1245 - 1300	3	6	10	19	13	8	0	21	5	31	4	40	15	38	9	62	40	102	142	617
1300 - 1315	7	6	17	30	15	11	2	28	3	41	11	55	11	47	8	66	58	121	179	654
1315 - 1330	7	5	14	26	19	2	2	23	1	46	5	52	11	34	15	60	49	112	161	640
1330 - 1345	7	2	17	26	10	6	1	17	3	40	3	46	8	36	13	57	43	103	146	628
1345 - 1400	3	4	16	23	16	9	4	29	1	42	6	49	10	39	15	64	52	113	165	651
1400 - 1415	5	8	13	26	14	9	4	27	4	49	6	59	9	43	13	65	53	124	177	649
1415 - 1430	4	6	17	27	14	15	1	30	1	45	9	55	8	41	16	65	57	120	177	665
1430 - 1445	6	10	18	34	18	8	1	27	1	42	0	43	11	53	12	76	61	119	180	699
1445 - 1500	2	12	14	28	22	8	2	32	3	61	6	70	10	38	14	62	60	132	192	726
1500 - 1515	7	6	21	34	32	11	0	43	2	51	3	56	10	32	12	54	77	110	187	736
1515 - 1530	1	9	17	27	36	10	6	52	1	78	3	82	22	48	10	80	79	162	241	800
1530 - 1545	5	9	23	37	36	10	3	49	1	61	5	67	12	43	18	73	86	140	226	846
1545 - 1600	2	13	14	29	33	9	2	44	1	63	7	71	14	37	14	65	73	136	209	863
1600 - 1615	5	12	20	37	26	16	1	43	1	67	3	71	9	49	12	70	80	141	221	897
1615 - 1630	**4**	**10**	**22**	**36**	**23**	**12**	**1**	**36**	**1**	**70**	**4**	**75**	**12**	**61**	**11**	**84**	**72**	**159**	**231**	887
1630 - 1645	**0**	**4**	**17**	**21**	**40**	**8**	**1**	**49**	**1**	**68**	**4**	**73**	**11**	**56**	**17**	**84**	**70**	**157**	**227**	888
1645 - 1700	**6**	**7**	**25**	**38**	**40**	**6**	**3**	**49**	**0**	**62**	**7**	**69**	**16**	**50**	**21**	**87**	**87**	**156**	**243**	922
1700 - 1715	**4**	**6**	**17**	**27**	**28**	**11**	**2**	**41**	**1**	**52**	**4**	**57**	**14**	**48**	**11**	**73**	**68**	**130**	**198**	***899***
1715 - 1730	3	5	19	27	27	15	4	46	3	89	8	100	18	58	19	95	73	195	268	936
1730 - 1745	4	9	14	27	27	18	7	52	2	64	4	70	11	51	15	77	79	147	226	935
1745 - 1800	1	7	14	22	23	10	1	34	1	68	6	75	12	48	16	76	56	151	207	899
1800 - 1815	3	5	17	25	26	7	3	36	1	59	6	66	10	47	13	70	61	136	197	898
1815 - 1830	2	7	19	28	25	10	2	37	3	61	7	71	9	59	10	78	65	149	214	844
1830 - 1845	9	4	12	25	14	10	5	29	4	42	8	54	10	44	14	68	54	122	176	794
1845 - 1900	3	8	7	18	16	9	1	26	2	43	4	49	13	43	7	63	44	112	156	743
Peak HR AM																				
0700 - 0800	***6***	***17***	***28***	***51***	***42***	***27***	***2***	***71***	***1***	***110***	***7***	***118***	***67***	***181***	***99***	***347***	***122***	***465***	***587***	
Peak HR PM																				
1615 - 1715	***14***	***27***	***81***	***122***	***131***	***37***	***7***	***175***	***3***	***252***	***19***	***274***	***53***	***215***	***60***	***328***	***297***	***602***	***899***	
AM PHF	**0.671**				**0.740**				**0.894**				**0.964**				**0.929**			
PM PHF	**0.803**				**0.893**				**0.913**				**0.943**				**0.925**			

VEHICLE AND PEDESTRIAN VOLUME SUMMARY

COUNT LOCATION	
CITY	Middleway
STATE	WV
DATE	5/13/2022
INTERSECTION	Int 2: Queen Street (CR 1) @ Charles Street/Old Middleway Pike (CR 1/7)
COUNT BY	AMT

Friday

STREET	CR 1				CR 1				CR 1/7				Charles St				Total			PEAK HR
	From North				From South				From East				From West							
TIME	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL	
0700 - 0715	**0**	**53**	**1**	**54**	**1**	**13**	**7**	**21**	**0**	**0**	**1**	**1**	**1**	**0**	**1**	**2**	**75**	**3**	**78**	217
0715 - 0730	**1**	**28**	**0**	**29**	**0**	**17**	**3**	**20**	**3**	**0**	**3**	**6**	**0**	**1**	**2**	**3**	**49**	**9**	**58**	235
0730 - 0745	**1**	**45**	**0**	**46**	**0**	**19**	**7**	**26**	**5**	**0**	**0**	**5**	**0**	**1**	**0**	**1**	**72**	**6**	**78**	273
0745 - 0800	**4**	**24**	**0**	**28**	**0**	**15**	**6**	**21**	**5**	**0**	**2**	**7**	**0**	**0**	**0**	**0**	**49**	**7**	**56**	***270***
0800 - 0815	1	32	0	33	0	23	3	26	6	0	0	6	0	1	0	1	59	7	66	258
0815 - 0830	0	14	0	14	1	10	6	17	3	0	1	4	0	0	0	0	31	4	35	235
0830 - 0845	1	21	0	22	0	12	5	17	4	0	1	5	1	0	0	1	39	6	45	202
0845 - 0900	0	14	0	14	0	22	5	27	2	0	0	2	0	0	0	0	41	2	43	189
1500 - 1515	2	25	0	27	1	27	3	31	9	0	3	12	0	0	0	0	58	12	70	70
1515 - 1530	5	15	0	20	1	48	6	55	10	1	1	12	0	1	0	1	75	13	88	158
1530 - 1545	2	21	0	23	0	43	6	49	10	0	0	10	0	1	0	1	72	11	83	241
1545 - 1600	2	35	0	37	0	53	11	64	7	0	4	11	0	0	0	0	101	11	112	353
1600 - 1615	3	31	1	35	0	47	2	49	5	0	3	8	0	0	1	1	84	9	93	376
1615 - 1630	**3**	**32**	**0**	**35**	**0**	**65**	**6**	**71**	**8**	**1**	**1**	**10**	**0**	**0**	**0**	**0**	**106**	**10**	**116**	404
1630 - 1645	**3**	**20**	**1**	**24**	**0**	**46**	**12**	**58**	**9**	**0**	**1**	**10**	**0**	**0**	**0**	**0**	**82**	**10**	**92**	413
1645 - 1700	**4**	**26**	**3**	**33**	**1**	**63**	**5**	**69**	**6**	**0**	**1**	**7**	**0**	**1**	**0**	**1**	**102**	**8**	**110**	411
1700 - 1715	**1**	**24**	**0**	**25**	**1**	**33**	**9**	**43**	**14**	**0**	**2**	**16**	**1**	**1**	**0**	**2**	**68**	**18**	**86**	***404***
1715 - 1730	1	27	0	28	0	48	5	53	8	0	1	9	1	1	0	2	81	11	92	380
1730 - 1745	2	21	0	23	0	37	2	39	12	1	0	13	1	0	0	1	62	14	76	364
1745 - 1800	0	28	0	28	1	31	5	37	6	2	1	9	0	0	0	0	65	9	74	328
Peak HR AM																				
0700 - 0800	***6***	***150***	***1***	***157***	***1***	***64***	***23***	***88***	***13***	***0***	***6***	***19***	***1***	***2***	***3***	***6***	***245***	***25***	***270***	
Peak HR PM																				
1615 - 1715	***11***	***102***	***4***	***117***	***2***	***207***	***32***	***241***	***37***	***1***	***5***	***43***	***1***	***2***	***0***	***3***	***358***	***46***	***404***	
AM PHF	**0.727**				**0.846**				**0.679**				**0.500**				**0.865**			
PM PHF	**0.836**				**0.849**				**0.672**				**0.375**				**0.871**			

VEHICLE AND PEDESTRIAN VOLUME SUMMARY

COUNT LOCATION	
CITY	Middleway
STATE	WV
DATE	5/13/2022
INTERSECTION	Int 3: Queen Street (CR 1) @ Grace Street
COUNT BY	AMT

Friday

STREET	CR 1				CR 1				Grace St				Grace St				Total			PEAK HR
	From North				From South				From East				From West							
TIME	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL	
0700 - 0715	**0**	**49**	**5**	**54**	**0**	**12**	**0**	**12**	**0**	**0**	**0**	**0**	**9**	**0**	**4**	**13**	**66**	**13**	**79**	247
0715 - 0730	**0**	**31**	**2**	**33**	**2**	**12**	**0**	**14**	**0**	**0**	**1**	**1**	**7**	**0**	**1**	**8**	**47**	**9**	**56**	266
0730 - 0745	**0**	**47**	**2**	**49**	**0**	**19**	**0**	**19**	**0**	**0**	**0**	**0**	**8**	**0**	**2**	**10**	**68**	**10**	**78**	291
0745 - 0800	**0**	**26**	**2**	**28**	**0**	**11**	**0**	**11**	**0**	**0**	**0**	**0**	**8**	**0**	**3**	**11**	**39**	**11**	**50**	***263***
0800 - 0815	0	35	2	37	0	21	0	21	0	0	0	0	5	0	0	5	58	5	63	247
0815 - 0830	0	19	0	19	0	11	0	11	0	0	0	0	6	0	2	8	30	8	38	229
0830 - 0845	1	21	3	25	1	14	0	15	0	1	0	1	3	0	0	3	40	4	44	195
0845 - 0900	0	10	5	15	1	17	1	19	0	0	0	0	10	0	2	12	34	12	46	191
1500 - 1515	0	24	10	34	1	25	0	26	0	0	1	1	6	0	2	8	60	9	69	69
1515 - 1530	0	15	11	26	2	50	1	53	1	0	0	1	7	0	0	7	79	8	87	156
1530 - 1545	0	22	9	31	0	47	0	47	0	0	1	1	8	0	2	10	78	11	89	245
1545 - 1600	0	27	15	42	1	43	1	45	0	0	0	0	12	0	0	12	87	12	99	344
1600 - 1615	1	26	9	36	0	39	0	39	0	0	0	0	11	1	1	13	75	13	88	363
1615 - 1630	**0**	**26**	**14**	**40**	**0**	**67**	**1**	**68**	**0**	**1**	**0**	**1**	**9**	**0**	**0**	**9**	**108**	**10**	**118**	394
1630 - 1645	**0**	**14**	**14**	**28**	**4**	**44**	**0**	**48**	**0**	**0**	**0**	**0**	**10**	**0**	**1**	**11**	**76**	**11**	**87**	392
1645 - 1700	**0**	**17**	**13**	**30**	**1**	**55**	**0**	**56**	**1**	**0**	**0**	**1**	**10**	**1**	**1**	**12**	**86**	**13**	**99**	392
1700 - 1715	**0**	**19**	**18**	**37**	**2**	**38**	**0**	**40**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**7**	**77**	**7**	**84**	***388***
1715 - 1730	0	21	13	34	2	41	0	43	0	0	0	0	11	0	0	11	77	11	88	358
1730 - 1745	0	18	13	31	0	33	0	33	0	0	0	0	2	1	1	4	64	4	68	339
1745 - 1800	0	22	13	35	1	32	0	33	0	0	0	0	6	0	1	7	68	7	75	315
Peak HR AM																				
0700 - 0800	***0***	***153***	***11***	***164***	***2***	***54***	***0***	***56***	***0***	***0***	***1***	***1***	***32***	***0***	***10***	***42***	***220***	***43***	***263***	
Peak HR PM																				
1615 - 1715	***0***	***76***	***59***	***135***	***7***	***204***	***1***	***212***	***1***	***1***	***0***	***2***	***36***	***1***	***2***	***39***	***347***	***41***	***388***	

AM PHF	**0.759**	**0.737**	**0.250**	**0.808**	**0.832**
PM PHF	**0.844**	**0.779**	**0.500**	**0.813**	**0.822**

APPENDIX C: SYNCHRO OUTPUTS

APPENDIX C-1: 2022 EXISTING CONDITIONS AM PEAK HOUR

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	65	233	122	1	126	9	44	31	5	10	27	45
Future Vol, veh/h	65	233	122	1	126	9	44	31	5	10	27	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	8	2	2	8	2	2	2	2	2	2	2
Mvmt Flow	68	245	128	1	133	9	46	33	5	11	28	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	142	0	0	373	0	0	622	589	309	604	649	138
Stage 1	-	-	-	-	-	-	445	445	-	140	140	-
Stage 2	-	-	-	-	-	-	177	144	-	464	509	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1441	-	-	1185	-	-	399	421	731	410	389	910
Stage 1	-	-	-	-	-	-	592	575	-	863	781	-
Stage 2	-	-	-	-	-	-	825	778	-	578	538	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1441	-	-	1185	-	-	339	395	731	364	365	910
Mov Cap-2 Maneuver	-	-	-	-	-	-	339	395	-	364	365	-
Stage 1	-	-	-	-	-	-	556	540	-	810	780	-
Stage 2	-	-	-	-	-	-	753	777	-	506	505	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.1	17.5	12.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	372	1441	-	-	1185	-	-	543
HCM Lane V/C Ratio	0.226	0.047	-	-	0.001	-	-	0.159
HCM Control Delay (s)	17.5	7.6	0	-	8	0	-	12.9
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	2	3	13	0	6	1	64	23	6	150	1
Future Vol, veh/h	1	2	3	13	0	6	1	64	23	6	150	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	2	3	15	0	7	1	74	26	7	172	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	280	289	173	278	276	87	173	0	0	100	0	0
Stage 1	187	187	-	89	89	-	-	-	-	-	-	-
Stage 2	93	102	-	189	187	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	672	621	871	674	632	971	1404	-	-	1493	-	-
Stage 1	815	745	-	918	821	-	-	-	-	-	-	-
Stage 2	914	811	-	813	745	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	664	617	871	667	628	971	1404	-	-	1493	-	-
Mov Cap-2 Maneuver	664	617	-	667	628	-	-	-	-	-	-	-
Stage 1	814	741	-	917	820	-	-	-	-	-	-	-
Stage 2	907	810	-	803	741	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	10	0.1	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1404	-	-	732	740	1493	-	-
HCM Lane V/C Ratio	0.001	-	-	0.009	0.03	0.005	-	-
HCM Control Delay (s)	7.6	0	-	10	10	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	32	0	10	0	0	1	2	54	0	0	153	11
Future Vol, veh/h	32	0	10	0	0	1	2	54	0	0	153	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	0	12	0	0	1	2	65	0	0	184	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	261	260	191	266	266	65	197	0	0	65	0	0
Stage 1	191	191	-	69	69	-	-	-	-	-	-	-
Stage 2	70	69	-	197	197	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	692	645	851	687	640	999	1376	-	-	1537	-	-
Stage 1	811	742	-	941	837	-	-	-	-	-	-	-
Stage 2	940	837	-	805	738	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	690	644	851	676	639	999	1376	-	-	1537	-	-
Mov Cap-2 Maneuver	690	644	-	676	639	-	-	-	-	-	-	-
Stage 1	809	742	-	939	835	-	-	-	-	-	-	-
Stage 2	937	835	-	794	738	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	8.6	0.3	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1376	-	-	723	999	1537	-	-
HCM Lane V/C Ratio	0.002	-	-	0.07	0.001	-	-	-
HCM Control Delay (s)	7.6	0	-	10.4	8.6	0	-	-
HCM Lane LOS	A	A	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

APPENDIX C-2: 2022 EXISTING CONDITIONS PM PEAK HOUR

Intersection	
Int Delay, s/veh	42.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	65	222	71	18	328	40	155	48	18	17	33	102
Future Vol, veh/h	65	222	71	18	328	40	155	48	18	17	33	102
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	8	2	2	8	2	2	2	2	2	2	2
Mvmt Flow	72	247	79	20	364	44	172	53	20	19	37	113

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	408	0	0	326	0	0	932	879	287	893	896	386
Stage 1	-	-	-	-	-	-	431	431	-	426	426	-
Stage 2	-	-	-	-	-	-	501	448	-	467	470	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1151	-	-	1234	-	-	247	286	752	262	280	662
Stage 1	-	-	-	-	-	-	603	583	-	606	586	-
Stage 2	-	-	-	-	-	-	552	573	-	576	560	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1151	-	-	1234	-	-	~ 169	259	752	199	253	662
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 169	259	-	199	253	-
Stage 1	-	-	-	-	-	-	557	538	-	559	574	-
Stage 2	-	-	-	-	-	-	419	561	-	466	517	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.4	196.8	19.7
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	196	1151	-	-	1234	-	-	411
HCM Lane V/C Ratio	1.253	0.063	-	-	0.016	-	-	0.411
HCM Control Delay (s)	196.8	8.3	0	-	8	0	-	19.7
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	13.2	0.2	-	-	0	-	-	2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	2	0	37	1	5	2	207	32	11	102	4
Future Vol, veh/h	1	2	0	37	1	5	2	207	32	11	102	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	2	0	43	1	6	2	238	37	13	117	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	410	425	120	408	409	257	122	0	0	275	0	0
Stage 1	146	146	-	261	261	-	-	-	-	-	-	-
Stage 2	264	279	-	147	148	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	552	521	931	554	532	782	1465	-	-	1288	-	-
Stage 1	857	776	-	744	692	-	-	-	-	-	-	-
Stage 2	741	680	-	856	775	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	542	514	931	547	525	782	1465	-	-	1288	-	-
Mov Cap-2 Maneuver	542	514	-	547	525	-	-	-	-	-	-	-
Stage 1	855	767	-	743	691	-	-	-	-	-	-	-
Stage 2	733	679	-	844	766	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.9	12	0.1	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1465	-	-	523	566	1288	-	-
HCM Lane V/C Ratio	0.002	-	-	0.007	0.087	0.01	-	-
HCM Control Delay (s)	7.5	0	-	11.9	12	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	36	1	2	1	1	0	7	204	1	0	76	59
Future Vol, veh/h	36	1	2	1	1	0	7	204	1	0	76	59
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	1	2	1	1	0	9	249	1	0	93	72

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	397	397	129	399	433	250	165	0	0	250	0	0
Stage 1	129	129	-	268	268	-	-	-	-	-	-	-
Stage 2	268	268	-	131	165	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	563	540	921	561	516	789	1413	-	-	1316	-	-
Stage 1	875	789	-	738	687	-	-	-	-	-	-	-
Stage 2	738	687	-	873	762	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	559	536	921	555	512	789	1413	-	-	1316	-	-
Mov Cap-2 Maneuver	559	536	-	555	512	-	-	-	-	-	-	-
Stage 1	869	789	-	733	682	-	-	-	-	-	-	-
Stage 2	732	682	-	869	762	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.9	11.8	0.2	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1413	-	-	570	533	1316	-	-
HCM Lane V/C Ratio	0.006	-	-	0.083	0.005	-	-	-
HCM Control Delay (s)	7.6	0	-	11.9	11.8	0	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0	0	-	-

APPENDIX C-3: 2024 NO-BUILD AM PEAK HOUR

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	67	240	125	1	130	9	45	32	5	10	28	46
Future Vol, veh/h	67	240	125	1	130	9	45	32	5	10	28	46
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	8	2	2	8	2	2	2	2	2	2	2
Mvmt Flow	71	253	132	1	137	9	47	34	5	11	29	48

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	146	0	0	385	0	0	643	609	319	625	671	142
Stage 1	-	-	-	-	-	-	461	461	-	144	144	-
Stage 2	-	-	-	-	-	-	182	148	-	481	527	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1436	-	-	1173	-	-	386	410	722	397	378	906
Stage 1	-	-	-	-	-	-	581	565	-	859	778	-
Stage 2	-	-	-	-	-	-	820	775	-	566	528	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1436	-	-	1173	-	-	325	383	722	350	353	906
Mov Cap-2 Maneuver	-	-	-	-	-	-	325	383	-	350	353	-
Stage 1	-	-	-	-	-	-	544	529	-	804	777	-
Stage 2	-	-	-	-	-	-	746	774	-	492	494	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.1	18.2	13.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	358	1436	-	-	1173	-	-	529
HCM Lane V/C Ratio	0.241	0.049	-	-	0.001	-	-	0.167
HCM Control Delay (s)	18.2	7.6	0	-	8.1	0	-	13.2
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.9	0.2	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	2	3	13	0	6	1	66	24	6	154	1
Future Vol, veh/h	1	2	3	13	0	6	1	66	24	6	154	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	2	3	15	0	7	1	76	28	7	177	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	288	298	178	286	284	90	178	0	0	104	0	0
Stage 1	192	192	-	92	92	-	-	-	-	-	-	-
Stage 2	96	106	-	194	192	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	664	614	865	666	625	968	1398	-	-	1488	-	-
Stage 1	810	742	-	915	819	-	-	-	-	-	-	-
Stage 2	911	807	-	808	742	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	656	610	865	659	621	968	1398	-	-	1488	-	-
Mov Cap-2 Maneuver	656	610	-	659	621	-	-	-	-	-	-	-
Stage 1	809	738	-	914	818	-	-	-	-	-	-	-
Stage 2	904	806	-	798	738	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	10.1	0.1	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1398	-	-	725	733	1488	-	-
HCM Lane V/C Ratio	0.001	-	-	0.01	0.03	0.005	-	-
HCM Control Delay (s)	7.6	0	-	10	10.1	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	33	0	10	0	0	1	2	56	0	0	157	11
Future Vol, veh/h	33	0	10	0	0	1	2	56	0	0	157	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	0	12	0	0	1	2	67	0	0	189	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	268	267	196	273	273	67	202	0	0	67	0	0
Stage 1	196	196	-	71	71	-	-	-	-	-	-	-
Stage 2	72	71	-	202	202	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	685	639	845	679	634	997	1370	-	-	1535	-	-
Stage 1	806	739	-	939	836	-	-	-	-	-	-	-
Stage 2	938	836	-	800	734	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	683	638	845	668	633	997	1370	-	-	1535	-	-
Mov Cap-2 Maneuver	683	638	-	668	633	-	-	-	-	-	-	-
Stage 1	804	739	-	937	834	-	-	-	-	-	-	-
Stage 2	935	834	-	789	734	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	8.6	0.3	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1370	-	-	715	997	1535	-	-
HCM Lane V/C Ratio	0.002	-	-	0.072	0.001	-	-	-
HCM Control Delay (s)	7.6	0	-	10.4	8.6	0	-	-
HCM Lane LOS	A	A	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

APPENDIX C-4: 2024 NO-BUILD PM PEAK HOUR

Intersection	
Int Delay, s/veh	51.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	67	228	73	19	337	41	159	49	19	17	34	105
Future Vol, veh/h	67	228	73	19	337	41	159	49	19	17	34	105
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	8	2	2	8	2	2	2	2	2	2	2
Mvmt Flow	74	253	81	21	374	46	177	54	21	19	38	117

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	420	0	0	334	0	0	959	904	294	918	921	397
Stage 1	-	-	-	-	-	-	442	442	-	439	439	-
Stage 2	-	-	-	-	-	-	517	462	-	479	482	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1139	-	-	1225	-	-	237	277	745	252	270	652
Stage 1	-	-	-	-	-	-	594	576	-	597	578	-
Stage 2	-	-	-	-	-	-	541	565	-	568	553	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1139	-	-	1225	-	-	~ 158	249	745	188	242	652
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 158	249	-	188	242	-
Stage 1	-	-	-	-	-	-	546	529	-	549	565	-
Stage 2	-	-	-	-	-	-	405	552	-	455	508	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.4	242.7	20.8
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	185	1139	-	-	1225	-	-	398
HCM Lane V/C Ratio	1.363	0.065	-	-	0.017	-	-	0.436
HCM Control Delay (s)	242.7	8.4	0	-	8	0	-	20.8
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	14.8	0.2	-	-	0.1	-	-	2.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	2	0	38	1	5	2	213	33	11	105	4
Future Vol, veh/h	1	2	0	38	1	5	2	213	33	11	105	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	2	0	44	1	6	2	245	38	13	121	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	422	437	124	419	420	264	126	0	0	283	0	0
Stage 1	150	150	-	268	268	-	-	-	-	-	-	-
Stage 2	272	287	-	151	152	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	542	513	927	544	525	775	1460	-	-	1279	-	-
Stage 1	853	773	-	738	687	-	-	-	-	-	-	-
Stage 2	734	674	-	851	772	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	532	506	927	537	518	775	1460	-	-	1279	-	-
Mov Cap-2 Maneuver	532	506	-	537	518	-	-	-	-	-	-	-
Stage 1	851	764	-	737	686	-	-	-	-	-	-	-
Stage 2	726	673	-	839	764	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.1	12.1	0.1	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1460	-	-	514	556	1279	-	-
HCM Lane V/C Ratio	0.002	-	-	0.007	0.091	0.01	-	-
HCM Control Delay (s)	7.5	0	-	12.1	12.1	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	37	1	2	1	1	0	7	210	1	0	78	61
Future Vol, veh/h	37	1	2	1	1	0	7	210	1	0	78	61
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	45	1	2	1	1	0	9	256	1	0	95	74

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	407	407	132	409	444	257	169	0	0	257	0	0
Stage 1	132	132	-	275	275	-	-	-	-	-	-	-
Stage 2	275	275	-	134	169	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	555	533	917	553	508	782	1409	-	-	1308	-	-
Stage 1	871	787	-	731	683	-	-	-	-	-	-	-
Stage 2	731	683	-	869	759	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	551	529	917	547	504	782	1409	-	-	1308	-	-
Mov Cap-2 Maneuver	551	529	-	547	504	-	-	-	-	-	-	-
Stage 1	865	787	-	726	678	-	-	-	-	-	-	-
Stage 2	725	678	-	865	759	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12	11.9	0.2	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1409	-	-	562	525	1308	-	-
HCM Lane V/C Ratio	0.006	-	-	0.087	0.005	-	-	-
HCM Control Delay (s)	7.6	0	-	12	11.9	0	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0	0	-	-

APPENDIX C-5: 2024 BUILD AM PEAK HOUR

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	67	240	174	36	130	9	61	41	16	10	56	46
Future Vol, veh/h	67	240	174	36	130	9	61	41	16	10	56	46
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	8	5	17	8	2	15	12	38	2	9	2
Mvmt Flow	71	253	183	38	137	9	64	43	17	11	59	48

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	146	0	0	436	0	0	758	709	345	735	796	142
Stage 1	-	-	-	-	-	-	487	487	-	218	218	-
Stage 2	-	-	-	-	-	-	271	222	-	517	578	-
Critical Hdwy	4.12	-	-	4.27	-	-	7.25	6.62	6.58	7.12	6.59	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.25	5.62	-	6.12	5.59	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.25	5.62	-	6.12	5.59	-
Follow-up Hdwy	2.218	-	-	2.353	-	-	3.635	4.108	3.642	3.518	4.081	3.318
Pot Cap-1 Maneuver	1436	-	-	1048	-	-	308	347	623	335	312	906
Stage 1	-	-	-	-	-	-	538	534	-	784	710	-
Stage 2	-	-	-	-	-	-	707	701	-	541	490	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1436	-	-	1048	-	-	225	311	623	269	280	906
Mov Cap-2 Maneuver	-	-	-	-	-	-	225	311	-	269	280	-
Stage 1	-	-	-	-	-	-	502	498	-	731	682	-
Stage 2	-	-	-	-	-	-	587	673	-	449	457	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	1.8	28.4	18.2
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	275	1436	-	-	1048	-	-	389
HCM Lane V/C Ratio	0.452	0.049	-	-	0.036	-	-	0.303
HCM Control Delay (s)	28.4	7.6	0	-	8.6	0	-	18.2
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2.2	0.2	-	-	0.1	-	-	1.3

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	2	3	26	0	6	1	102	28	6	265	1
Future Vol, veh/h	1	2	3	26	0	6	1	102	28	6	265	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	8	2	2	2	20	7	2	8	2
Mvmt Flow	1	2	3	30	0	7	1	117	32	7	305	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	459	471	306	457	455	133	306	0	0	149	0	0
Stage 1	320	320	-	135	135	-	-	-	-	-	-	-
Stage 2	139	151	-	322	320	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.18	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.18	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.18	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.572	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	512	491	734	504	501	916	1255	-	-	1432	-	-
Stage 1	692	652	-	854	785	-	-	-	-	-	-	-
Stage 2	864	772	-	677	652	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	505	488	734	497	497	916	1255	-	-	1432	-	-
Mov Cap-2 Maneuver	505	488	-	497	497	-	-	-	-	-	-	-
Stage 1	691	648	-	853	784	-	-	-	-	-	-	-
Stage 2	857	771	-	667	648	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	12.1	0.1	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1255	-	-	590	544	1432	-	-
HCM Lane V/C Ratio	0.001	-	-	0.012	0.068	0.005	-	-
HCM Control Delay (s)	7.9	0	-	11.2	12.1	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	73	0	14	0	0	1	15	56	0	0	157	136
Future Vol, veh/h	73	0	14	0	0	1	15	56	0	0	157	136
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	30	2	14	2	2	2	13	2	2	2	2	16
Mvmt Flow	88	0	17	0	0	1	18	67	0	0	189	164

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	375	374	271	383	456	67	353	0	0	67	0	0
Stage 1	271	271	-	103	103	-	-	-	-	-	-	-
Stage 2	104	103	-	280	353	-	-	-	-	-	-	-
Critical Hdwy	7.4	6.52	6.34	7.12	6.52	6.22	4.23	-	-	4.12	-	-
Critical Hdwy Stg 1	6.4	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.4	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.77	4.018	3.426	3.518	4.018	3.318	2.317	-	-	2.218	-	-
Pot Cap-1 Maneuver	534	557	740	575	501	997	1147	-	-	1535	-	-
Stage 1	677	685	-	903	810	-	-	-	-	-	-	-
Stage 2	838	810	-	727	631	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	527	548	740	555	493	997	1147	-	-	1535	-	-
Mov Cap-2 Maneuver	527	548	-	555	493	-	-	-	-	-	-	-
Stage 1	666	685	-	889	797	-	-	-	-	-	-	-
Stage 2	824	797	-	710	631	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13	8.6	1.7	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1147	-	-	553	997	1535	-	-
HCM Lane V/C Ratio	0.016	-	-	0.19	0.001	-	-	-
HCM Control Delay (s)	8.2	0	-	13	8.6	0	-	-
HCM Lane LOS	A	A	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0	0	-	-

APPENDIX C-6: 2024 BUILD PM PEAK HOUR

Intersection	
Int Delay, s/veh	152.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	67	228	96	35	337	41	201	73	49	17	47	105
Future Vol, veh/h	67	228	96	35	337	41	201	73	49	17	47	105
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	8	10	17	8	2	5	7	12	2	11	2
Mvmt Flow	74	253	107	39	374	46	223	81	54	19	52	117

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	420	0	0	360	0	0	1015	953	307	997	983	397
Stage 1	-	-	-	-	-	-	455	455	-	475	475	-
Stage 2	-	-	-	-	-	-	560	498	-	522	508	-
Critical Hdwy	4.12	-	-	4.27	-	-	7.15	6.57	6.32	7.12	6.61	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.57	-	6.12	5.61	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.57	-	6.12	5.61	-
Follow-up Hdwy	2.218	-	-	2.353	-	-	3.545	4.063	3.408	3.518	4.099	3.318
Pot Cap-1 Maneuver	1139	-	-	1120	-	-	~ 214	254	710	223	240	652
Stage 1	-	-	-	-	-	-	579	560	-	570	542	-
Stage 2	-	-	-	-	-	-	508	536	-	538	524	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1139	-	-	1120	-	-	~ 129	223	710	134	210	652
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 129	223	-	134	210	-
Stage 1	-	-	-	-	-	-	532	514	-	523	517	-
Stage 2	-	-	-	-	-	-	358	511	-	384	481	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	0.7	$ 593.3	29.4
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	165	1139	-	-	1120	-	-	330
HCM Lane V/C Ratio	2.175	0.065	-	-	0.035	-	-	0.569
HCM Control Delay (s)	$ 593.3	8.4	0	-	8.3	0	-	29.4
HCM Lane LOS	F	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	28.9	0.2	-	-	0.1	-	-	3.3

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	2	0	44	1	5	2	309	45	11	158	4
Future Vol, veh/h	1	2	0	44	1	5	2	309	45	11	158	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	5	2	2	2	7	4	2	13	2
Mvmt Flow	1	2	0	51	1	6	2	355	52	13	182	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	600	622	185	597	598	381	187	0	0	407	0	0
Stage 1	211	211	-	385	385	-	-	-	-	-	-	-
Stage 2	389	411	-	212	213	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.15	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.15	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.15	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.545	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	413	403	857	410	416	666	1387	-	-	1152	-	-
Stage 1	791	728	-	632	611	-	-	-	-	-	-	-
Stage 2	635	595	-	783	726	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	404	397	857	403	410	666	1387	-	-	1152	-	-
Mov Cap-2 Maneuver	404	397	-	403	410	-	-	-	-	-	-	-
Stage 1	789	719	-	631	610	-	-	-	-	-	-	-
Stage 2	627	594	-	770	717	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.1	14.9	0	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1387	-	-	399	420	1152	-	-
HCM Lane V/C Ratio	0.002	-	-	0.009	0.137	0.011	-	-
HCM Control Delay (s)	7.6	0	-	14.1	14.9	8.2	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0	-	-

Intersection	
Int Delay, s/veh	4.8

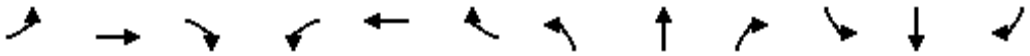
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	145	1	14	1	1	0	13	210	1	0	78	120
Future Vol, veh/h	145	1	14	1	1	0	13	210	1	0	78	120
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	15	2	14	2	2	2	15	2	2	2	2	18
Mvmt Flow	177	1	17	1	1	0	16	256	1	0	95	146

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	457	457	168	466	530	257	241	0	0	257	0	0
Stage 1	168	168	-	289	289	-	-	-	-	-	-	-
Stage 2	289	289	-	177	241	-	-	-	-	-	-	-
Critical Hdwy	7.25	6.52	6.34	7.12	6.52	6.22	4.25	-	-	4.12	-	-
Critical Hdwy Stg 1	6.25	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.25	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.635	4.018	3.426	3.518	4.018	3.318	2.335	-	-	2.218	-	-
Pot Cap-1 Maneuver	493	500	846	507	455	782	1253	-	-	1308	-	-
Stage 1	804	759	-	719	673	-	-	-	-	-	-	-
Stage 2	691	673	-	825	706	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	487	493	846	490	448	782	1253	-	-	1308	-	-
Mov Cap-2 Maneuver	487	493	-	490	448	-	-	-	-	-	-	-
Stage 1	792	759	-	708	663	-	-	-	-	-	-	-
Stage 2	679	663	-	807	706	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.5	12.7	0.5	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1253	-	-	506	468	1308	-	-
HCM Lane V/C Ratio	0.013	-	-	0.386	0.005	-	-	-
HCM Control Delay (s)	7.9	0	-	16.5	12.7	0	-	-
HCM Lane LOS	A	A	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.8	0	0	-	-

APPENDIX C-7: 2024 BUILD IMPROVED AM PEAK HOUR

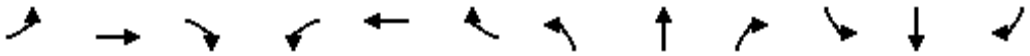


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	240	174	36	130	9	61	41	16	10	56	46
Future Volume (veh/h)	67	240	174	36	130	9	61	41	16	10	56	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1781	1826	1648	1781	1870	1678	1722	1337	1870	1767	1870
Adj Flow Rate, veh/h	71	253	183	38	137	9	64	43	17	11	59	48
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	8	5	17	8	2	15	12	38	2	9	2
Cap, veh/h	842	621	449	516	1068	70	83	56	22	14	73	60
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.10	0.10	0.10	0.09	0.09	0.09
Sat Flow, veh/h	1242	961	695	839	1653	109	846	569	225	153	819	667
Grp Volume(v), veh/h	71	0	436	38	0	146	124	0	0	118	0	0
Grp Sat Flow(s),veh/h/ln	1242	0	1656	839	0	1762	1639	0	0	1639	0	0
Q Serve(g_s), s	2.1	0.0	11.4	2.1	0.0	2.9	6.6	0.0	0.0	6.4	0.0	0.0
Cycle Q Clear(g_c), s	5.0	0.0	11.4	13.4	0.0	2.9	6.6	0.0	0.0	6.4	0.0	0.0
Prop In Lane	1.00		0.42	1.00		0.06	0.52		0.14	0.09		0.41
Lane Grp Cap(c), veh/h	842	0	1070	516	0	1138	160	0	0	147	0	0
V/C Ratio(X)	0.08	0.00	0.41	0.07	0.00	0.13	0.77	0.00	0.00	0.80	0.00	0.00
Avail Cap(c_a), veh/h	842	0	1070	516	0	1138	492	0	0	219	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	0.0	7.7	10.9	0.0	6.2	39.6	0.0	0.0	40.2	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	1.2	0.3	0.0	0.2	7.7	0.0	0.0	12.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	3.5	0.4	0.0	0.9	3.0	0.0	0.0	3.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.3	0.0	8.8	11.2	0.0	6.4	47.4	0.0	0.0	52.4	0.0	0.0
LnGrp LOS	A	A	A	B	A	A	D	A	A	D	A	A
Approach Vol, veh/h		507			184			124			118	
Approach Delay, s/veh		8.6			7.4			47.4			52.4	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		63.1		13.8		63.1		13.1				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		36.0		27.0		36.0		12.0				
Max Q Clear Time (g_c+I1), s		13.4		8.6		15.4		8.4				
Green Ext Time (p_c), s		2.8		0.6		0.9		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			19.0									
HCM 6th LOS			B									

APPENDIX C-8: 2024 BUILD IMPROVED PM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	228	96	35	337	41	201	73	49	17	47	105
Future Volume (veh/h)	67	228	96	35	337	41	201	73	49	17	47	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1781	1752	1648	1781	1870	1826	1796	1722	1870	1737	1870
Adj Flow Rate, veh/h	74	253	107	39	374	46	223	81	54	19	52	117
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	8	10	17	8	2	5	7	12	2	11	2
Cap, veh/h	354	541	229	357	709	87	248	90	60	22	62	138
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.23	0.23	0.23	0.14	0.14	0.14
Sat Flow, veh/h	967	1188	503	900	1556	191	1057	384	256	157	430	968
Grp Volume(v), veh/h	74	0	360	39	0	420	358	0	0	188	0	0
Grp Sat Flow(s),veh/h/ln	967	0	1691	900	0	1747	1697	0	0	1555	0	0
Q Serve(g_s), s	5.3	0.0	13.3	2.8	0.0	15.5	18.4	0.0	0.0	10.6	0.0	0.0
Cycle Q Clear(g_c), s	20.9	0.0	13.3	16.1	0.0	15.5	18.4	0.0	0.0	10.6	0.0	0.0
Prop In Lane	1.00		0.30	1.00		0.11	0.62		0.15	0.10		0.62
Lane Grp Cap(c), veh/h	354	0	770	357	0	796	399	0	0	222	0	0
V/C Ratio(X)	0.21	0.00	0.47	0.11	0.00	0.53	0.90	0.00	0.00	0.85	0.00	0.00
Avail Cap(c_a), veh/h	354	0	770	357	0	796	453	0	0	294	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.0	0.0	17.0	22.5	0.0	17.6	33.4	0.0	0.0	37.6	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	2.0	0.6	0.0	2.5	18.9	0.0	0.0	15.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	5.0	0.6	0.0	6.1	9.5	0.0	0.0	4.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.4	0.0	19.0	23.1	0.0	20.1	52.3	0.0	0.0	53.3	0.0	0.0
LnGrp LOS	C	A	B	C	A	C	D	A	A	D	A	A
Approach Vol, veh/h		434			459			358			188	
Approach Delay, s/veh		20.2			20.3			52.3			53.3	
Approach LOS		C			C			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		46.0		26.1		46.0		17.9				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		34.0		24.0		34.0		17.0				
Max Q Clear Time (g_c+I1), s		22.9		20.4		18.1		12.6				
Green Ext Time (p_c), s		1.8		0.7		2.3		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			32.6									
HCM 6th LOS			C									

APPENDIX D: SIMTRAFFIC OUTPUTS

APPENDIX D-1: 2022 EXISTING AM PEAK HOUR

Intersection: 1: CR 1 & WV 51

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	29	8	80	77
Average Queue (ft)	3	0	33	32
95th Queue (ft)	15	5	63	60
Link Distance (ft)	2061	2289	2161	1995
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: CR 1 & Charles St/CR 1/7

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	29	31	6
Average Queue (ft)	4	12	0
95th Queue (ft)	21	37	4
Link Distance (ft)	383	2155	739
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: CR 1 & Grace St

Movement	EB	WB
Directions Served	LTR	LTR
Maximum Queue (ft)	56	18
Average Queue (ft)	23	1
95th Queue (ft)	45	10
Link Distance (ft)	2361	387
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

APPENDIX D-2: 2022 EXISTING PM PEAK HOUR

Intersection: 1: CR 1 & WV 51

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	65	43	255	138
Average Queue (ft)	12	4	106	60
95th Queue (ft)	40	24	216	112
Link Distance (ft)	2061	2289	2161	1995
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: CR 1 & Charles St/CR 1/7

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	29	54	40
Average Queue (ft)	4	24	3
95th Queue (ft)	20	49	20
Link Distance (ft)	383	2155	2161
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: CR 1 & Grace St

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	46	24	34
Average Queue (ft)	20	2	2
95th Queue (ft)	44	13	15
Link Distance (ft)	2361	387	2490
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

APPENDIX D-3: 2024 NO-BUILD AM PEAK HOUR

Intersection: 1: CR 1 & WV 51

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	34	3	75	77
Average Queue (ft)	3	0	34	31
95th Queue (ft)	21	2	63	58
Link Distance (ft)	2061	2289	2161	1995
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: CR 1 & Charles St/CR 1/7

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	29	31	11
Average Queue (ft)	5	13	0
95th Queue (ft)	23	37	8
Link Distance (ft)	383	2155	2161
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: CR 1 & Grace St

Movement	EB	WB
Directions Served	LTR	LTR
Maximum Queue (ft)	56	31
Average Queue (ft)	23	1
95th Queue (ft)	46	11
Link Distance (ft)	2361	387
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

APPENDIX D-4: 2024 NO-BUILD PM PEAK HOUR

Intersection: 1: CR 1 & WV 51

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	57	32	295	167
Average Queue (ft)	13	3	125	65
95th Queue (ft)	43	18	242	128
Link Distance (ft)	2061	2289	2161	1995
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: CR 1 & Charles St/CR 1/7

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	29	53	29
Average Queue (ft)	4	24	2
95th Queue (ft)	19	50	14
Link Distance (ft)	383	2155	2161
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: CR 1 & Grace St

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	47	30	23
Average Queue (ft)	22	1	2
95th Queue (ft)	47	12	15
Link Distance (ft)	2361	387	2490
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

APPENDIX D-5: 2024 BUILD AM PEAK HOUR

Intersection: 1: CR 1 & WV 51

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	64	74	171	149
Average Queue (ft)	9	11	57	48
95th Queue (ft)	37	43	119	99
Link Distance (ft)	2061	2289	2161	1995
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: CR 1 & Charles St/CR 1/7

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	29	67	10	22
Average Queue (ft)	4	22	0	1
95th Queue (ft)	21	52	7	11
Link Distance (ft)	383	2155	739	2161
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: CR 1 & Grace St

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	107	24	40
Average Queue (ft)	47	1	5
95th Queue (ft)	87	12	26
Link Distance (ft)	2361	387	2490
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

APPENDIX D-6: 2024 BUILD PM PEAK HOUR

Intersection: 1: CR 1 & WV 51

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	89	76	1565	260
Average Queue (ft)	17	10	987	99
95th Queue (ft)	55	42	1958	231
Link Distance (ft)	2061	2289	2161	1995
Upstream Blk Time (%)			5	
Queuing Penalty (veh)			15	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: CR 1 & Charles St/CR 1/7

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	33	57	157	36
Average Queue (ft)	4	27	38	6
95th Queue (ft)	20	53	284	26
Link Distance (ft)	383	2155	739	2161
Upstream Blk Time (%)			2	
Queuing Penalty (veh)			6	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: CR 1 & Grace St

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	202	25	110
Average Queue (ft)	65	2	10
95th Queue (ft)	159	13	73
Link Distance (ft)	2361	387	2490
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 22

APPENDIX D-7: 2024 BUILD IMPROVED AM PEAK HOUR

Intersection: 1: CR 1 & WV 51

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	82	223	106	90	200	163
Average Queue (ft)	16	62	15	15	79	70
95th Queue (ft)	52	160	57	55	151	136
Link Distance (ft)		2059		2287	2153	1988
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	150		150			
Storage Blk Time (%)		1	0			
Queuing Penalty (veh)		1	0			

Intersection: 2: CR 1 & Charles St/CR 1/7

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	29	67	16	34
Average Queue (ft)	4	22	1	2
95th Queue (ft)	21	52	9	15
Link Distance (ft)	383	2155	739	2153
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: CR 1 & Grace St

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	107	24	49
Average Queue (ft)	48	1	5
95th Queue (ft)	87	12	26
Link Distance (ft)	2361	387	2490
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 1

APPENDIX D-8: 2024 BUILD IMPROVED PM PEAK HOUR

Intersection: 1: CR 1 & WV 51

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	139	234	102	258	358	192
Average Queue (ft)	28	80	18	89	180	85
95th Queue (ft)	80	174	62	204	295	156
Link Distance (ft)		2059		2287	2153	1988
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	150		150			
Storage Blk Time (%)		2		2		
Queuing Penalty (veh)		1		1		

Intersection: 2: CR 1 & Charles St/CR 1/7

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	33	56	10	57
Average Queue (ft)	3	27	0	4
95th Queue (ft)	20	52	7	26
Link Distance (ft)	383	2155	739	2153
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: CR 1 & Grace St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	133	25	40	12
Average Queue (ft)	59	2	3	0
95th Queue (ft)	101	13	20	6
Link Distance (ft)	2361	387	2490	739
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 2

APPENDIX E: SIGNAL WARRANT ANALYSIS

APPENDIX E-1: WARRANT 1 EIGHT-HOUR VEHICULAR VOLUME

WARRANT 1 -- EIGHT-HOUR VEHICULAR VOLUME

2022 Existing Year

Major Street	**WV 51**
Minor Street	**CR 1**
Jurisdiction	**Middleway**
85% Speed > 40 mph	**YES**
Population < 10K	**YES**
# of Lanes on Major Street	**1**
# of Lanes on Minor Street	**1**
Minor St. Right Turns Discounted	**YES**
Have five (5) correctable crashes occurred in 1 year?	**YES**

HOUR	MAJOR ST VOLUME	MINOR ST VOLUME
6-7 AM	**414**	**55**
7-8 AM	**465**	**71**
8-9 AM	**406**	**60**
9-10 AM	**352**	**57**
10-11 AM	**387**	**67**
11-12 PM	**412**	**76**
12-1 PM	**439**	**90**
1-2 PM	**449**	**95**
2-3 PM	**495**	**114**
3-4 PM	**548**	**186**
4-5 PM	**613**	**176**
5-6 PM	**623**	**170**
6-7 PM	**519**	**126**

FINDINGS:

Condition 'A' Satisfied	**NO**
Condition 'B' Satisfied	**NO**
Combination 'A' & 'B' Satisfied	**NO**
WARRANT 1 Satisfied?	**NO**

COMMENTS:

Pagones Theorem was utilized to adjust the right turn volume on CR 1 (40% reduction in right turns)

WARRANT 1 -- EIGHT-HOUR VEHICULAR VOLUME
CONDITION 'A' -- MINIMUM VEHICULAR VOLUME

Major Street	WV 51
Minor Street	CR 1
Jurisdiction	Middleway
85% Speed > 40 mph	YES
Population < 10K	YES
# of Lanes on Major Street	1
# of Lanes on Minor Street	1
Minor St. Right Turns Discounted	YES
Major St. Warranting Volume	500
Minor St. Warranting Volume	150
30% Warrant Volume Reduction	YES

HOUR	MAJOR STREET VOLUME	MINOR STREET VOLUME	MAJOR ST WARRANT VOLUME	MINOR ST WARRANT VOLUME	HOUR MET
7-8 AM	414	55	350	105	NO
8-9 AM	465	71	350	105	NO
9-10 AM	406	60	350	105	NO
10-11 AM	352	57	350	105	NO
11-12 PM	387	67	350	105	NO
12-1 PM	412	76	350	105	NO
1-2 PM	439	90	350	105	NO
2-3 PM	449	95	350	105	NO
3-4 PM	495	114	350	105	YES
4-5 PM	548	186	350	105	YES
5-6 PM	613	176	350	105	YES
6-7 PM	623	170	350	105	YES

FINDINGS:

Number of Hours Condition 'A' Met	5
Condition 'A' Satisfied?	NO

COMMENTS:

Pagones Theorem was utilized to adjust the right turn volume on CR 1 (40% reduction in right turns)

WARRANT 1 -- EIGHT-HOUR VEHICULAR VOLUME
CONDITION 'B' -- INTERRUPTION OF CONTINUOUS TRAFFIC

Major Street	WV 51
Minor Street	CR 1
Jurisdiction	Middleway
85% Speed > 40 mph	YES
Population < 10K	YES
# of Lanes on Major Street	1
# of Lanes on Minor Street	1
Minor St. Right Turns Discounted	YES
Major St. Warranting Volume	750
Minor St. Warranting Volume	75
30% Warrant Volume Reduction	YES

HOUR	MAJOR STREET VOLUME	MINOR STREET VOLUME	MAJOR ST WARRANT VOLUME	MINOR ST WARRANT VOLUME	HOUR MET
6-7 AM	414	55	525	53	NO
7-8 AM	465	71	525	53	NO
8-9 AM	406	60	525	53	NO
9-10 AM	352	57	525	53	NO
10-11 AM	387	67	525	53	NO
11-12 PM	412	76	525	53	NO
12-1 PM	439	90	525	53	NO
1-2 PM	449	95	525	53	NO
2-3 PM	495	114	525	53	NO
3-4 PM	548	186	525	53	YES
4-5 PM	613	176	525	53	YES
5-6 PM	623	170	525	53	YES
6-7 PM	519	126	525	53	NO

FINDINGS:

Number of Hours Condition 'B' Met	3
Condition 'B' Satisfied?	NO

COMMENTS:

Pagones Theorem was utilized to adjust the right turn volume on CR 1 (40% reduction in right turns)

WARRANT 1 -- EIGHT-HOUR VEHICULAR VOLUME

COMBINATION OF CONDITION 'A' & 'B' (56% VOLUME)

Major Street	WV 51
Minor Street	CR 1
Jurisdiction	Middleway

CONDITION 'A'

HOUR	MAJOR STREET VOLUME	MINOR STREET VOLUME	MAJOR ST WARRANT VOLUME	MINOR ST WARRANT VOLUME	HOUR MET
6-7 AM	414	55	280	84	NO
7-8 AM	465	71	280	84	NO
8-9 AM	406	60	280	84	NO
9-10 AM	352	57	280	84	NO
10-11 AM	387	67	280	84	NO
11-12 PM	412	76	280	84	NO
12-1 PM	439	90	280	84	YES
1-2 PM	449	95	280	84	YES
2-3 PM	495	114	280	84	YES
3-4 PM	548	186	280	84	YES
4-5 PM	613	176	280	84	YES
5-6 PM	623	170	280	84	YES
6-7 PM	519	126	280	84	YES

CONDITION 'B'

HOUR	MAJOR STREET VOLUME	MINOR STREET VOLUME	MAJOR ST WARRANT VOLUME	MINOR ST WARRANT VOLUME	HOUR MET
6-7 AM	414	55	420	42	NO
7-8 AM	465	71	420	42	YES
8-9 AM	406	60	420	42	NO
9-10 AM	352	57	420	42	NO
10-11 AM	387	67	420	42	NO
11-12 PM	412	76	420	42	NO
12-1 PM	439	90	420	42	YES
1-2 PM	449	95	420	42	YES
2-3 PM	495	114	420	42	YES
3-4 PM	548	186	420	42	YES
4-5 PM	613	176	420	42	YES
5-6 PM	623	170	420	42	YES
6-7 PM	519	126	420	42	YES

FINDINGS:

Number of Hours Combination A&B Met	7
Combination of A&B Satisfied?	**NO**

COMMENTS:

Pagones Theorem was utilized to adjust the right turn volume on CR 1 (40% reduction in right turns)

VEHICLE AND PEDESTRIAN VOLUME SUMMARY

COUNT LOCATION	
CITY	Middleway
STATE	WV
DATE	7/8/2022
INTERSECTION	Int 1: Leetown Road (CR 1) @ WV 51 (Middleway Pike)
COUNT BY	AMT

Friday

STREET	CR 1					CR 1					WV 51				WV 51				Total			PEAK HR
	From North					From South					From East				From West							
TIME	L	T	R	R*	TOT	L	T	R	R*	TOT	L	T	R	TOT	L	T	R	TOT	N-S	E-W	ALL	
0600 - 0615	1	6	5	3	12	9	3	0	0	12	0	11	1	12	9	31	20	60	24	72	96	96
0615 - 0630	2	6	5	3	13	6	3	0	0	9	0	19	0	19	19	36	38	93	22	112	134	230
0630 - 0645	0	11	7	4	18	11	8	1	1	20	0	22	2	24	18	41	41	100	38	124	162	392
0645 - 0700	4	3	9	5	16	10	3	1	1	14	2	21	1	24	19	38	25	82	30	106	136	528
0700 - 0715	**1**	**4**	**5**	**3**	**10**	**8**	**3**	**0**	**0**	**11**	**0**	**27**	**2**	**29**	**11**	**41**	**33**	**85**	**21**	**114**	**135**	567
0715 - 0730	**0**	**6**	**6**	**4**	**12**	**6**	**6**	**2**	**2**	**14**	**0**	**27**	**0**	**27**	**18**	**47**	**25**	**90**	**26**	**117**	**143**	576
0730 - 0745	**1**	**1**	**8**	**5**	**10**	**13**	**9**	**0**	**0**	**22**	**0**	**27**	**2**	**29**	**17**	**50**	**23**	**90**	**32**	**119**	**151**	565
0745 - 0800	**4**	**6**	**9**	**5**	**19**	**15**	**9**	**0**	**0**	**24**	**1**	**29**	**3**	**33**	**21**	**43**	**18**	**82**	**43**	**115**	**158**	***587***
0800 - 0815	1	7	9	5	17	9	6	0	0	15	0	19	1	20	15	48	17	80	32	100	132	584
0815 - 0830	2	8	9	5	19	6	5	0	0	11	0	27	4	31	10	32	16	58	30	89	119	560
0830 - 0845	4	4	11	7	19	11	1	0	0	12	1	35	3	39	15	54	9	78	31	117	148	557
0845 - 0900	4	8	7	4	19	11	9	2	2	22	0	30	5	35	10	40	15	65	41	100	141	540
0900 - 0915	3	6	8	5	17	9	3	2	2	14	1	30	4	35	8	30	22	60	31	95	126	534
0915 - 0930	6	3	13	8	22	8	3	0	0	11	0	22	8	30	9	42	11	62	33	92	125	540
0930 - 0945	5	3	7	4	15	12	5	3	2	20	0	30	2	32	10	27	9	46	35	78	113	505
0945 - 1000	3	4	6	4	13	10	3	0	0	13	0	28	3	31	9	36	11	56	26	87	113	477
1000 - 1015	5	4	10	6	19	9	6	2	2	17	2	21	6	29	11	27	9	47	36	76	112	463
1015 - 1030	5	9	4	2	18	10	7	1	1	18	0	31	4	35	16	37	10	63	36	98	134	472
1030 - 1045	2	3	13	8	18	8	4	0	0	12	0	35	5	40	11	42	18	71	30	111	141	500
1045 - 1100	3	4	11	7	18	12	7	2	2	21	2	32	0	34	8	49	11	68	39	102	141	528
1100 - 1115	5	5	10	6	20	12	4	1	1	17	0	38	1	39	12	33	14	59	37	98	135	551
1115 - 1130	5	5	11	7	21	10	1	3	2	14	2	29	7	38	13	36	13	62	35	100	135	552
1130 - 1145	9	5	19	11	33	12	1	2	2	15	4	39	8	51	12	40	7	59	48	110	158	569
1145 - 1200	9	3	10	6	22	11	8	6	5	25	1	28	11	40	12	45	7	64	47	104	151	579
1200 - 1215	4	5	15	9	24	17	3	4	3	24	4	32	5	41	5	34	14	53	48	94	142	586
1215 - 1230	0	6	11	7	17	16	11	1	1	28	3	57	3	63	13	36	18	67	45	130	175	626
1230 - 1245	4	5	18	11	27	14	4	0	0	18	5	38	4	47	8	43	15	66	45	113	158	626
1245 - 1300	3	6	10	6	19	13	8	0	0	21	5	31	4	40	15	38	9	62	40	102	142	617
1300 - 1315	7	6	17	10	30	15	11	2	2	28	3	41	11	55	11	47	8	66	58	121	179	654
1315 - 1330	7	5	14	8	26	19	2	2	2	23	1	46	5	52	11	34	15	60	49	112	161	640
1330 - 1345	7	2	17	10	26	10	6	1	1	17	3	40	3	46	8	36	13	57	43	103	146	628
1345 - 1400	3	4	16	10	23	16	9	4	3	29	1	42	6	49	10	39	15	64	52	113	165	651
1400 - 1415	5	8	13	8	26	14	9	4	3	27	4	49	6	59	9	43	13	65	53	124	177	649
1415 - 1430	4	6	17	10	27	14	15	1	1	30	1	45	9	55	8	41	16	65	57	120	177	665
1430 - 1445	6	10	18	11	34	18	8	1	1	27	1	42	0	43	11	53	12	76	61	119	180	699
1445 - 1500	2	12	14	8	28	22	8	2	2	32	3	61	6	70	10	38	14	62	60	132	192	726
1500 - 1515	7	6	21	13	34	32	11	0	0	43	2	51	3	56	10	32	12	54	77	110	187	736
1515 - 1530	1	9	17	10	27	36	10	6	5	52	1	78	3	82	22	48	10	80	79	162	241	800
1530 - 1545	5	9	23	14	37	36	10	3	2	49	1	61	5	67	12	43	18	73	86	140	226	846
1545 - 1600	2	13	14	8	29	33	9	2	2	44	1	63	7	71	14	37	14	65	73	136	209	863
1600 - 1615	5	12	20	12	37	26	16	1	1	43	1	67	3	71	9	49	12	70	80	141	221	897
1615 - 1630	**4**	**10**	**22**	**13**	**36**	**23**	**12**	**1**	**1**	**36**	**1**	**70**	**4**	**75**	**12**	**61**	**11**	**84**	**72**	**159**	**231**	887
1630 - 1645	**0**	**4**	**17**	**10**	**21**	**40**	**8**	**1**	**1**	**49**	**1**	**68**	**4**	**73**	**11**	**56**	**17**	**84**	**70**	**157**	**227**	888
1645 - 1700	**6**	**7**	**25**	**15**	**38**	**40**	**6**	**3**	**2**	**49**	**0**	**62**	**7**	**69**	**16**	**50**	**21**	**87**	**87**	**156**	**243**	922
1700 - 1715	**4**	**6**	**17**	**10**	**27**	**28**	**11**	**2**	**2**	**41**	**1**	**52**	**4**	**57**	**14**	**48**	**11**	**73**	**68**	**130**	**198**	***899***
1715 - 1730	3	5	19	11	27	27	15	4	3	46	3	89	8	100	18	58	19	95	73	195	268	936
1730 - 1745	4	9	14	8	27	27	18	7	6	52	2	64	4	70	11	51	15	77	79	147	226	935
1745 - 1800	1	7	14	8	22	23	10	1	1	34	1	68	6	75	12	48	16	76	56	151	207	899
1800 - 1815	3	5	17	10	25	26	7	3	2	36	1	59	6	66	10	47	13	70	61	136	197	898
1815 - 1830	2	7	19	11	28	25	10	2	2	37	3	61	7	71	9	59	10	78	65	149	214	844
1830 - 1845	9	4	12	7	25	14	10	5	4	29	4	42	8	54	10	44	14	68	54	122	176	794
1845 - 1900	3	8	7	4	18	16	9	1	1	26	2	43	4	49	13	43	7	63	44	112	156	743
Peak HR AM																						
0700 - 0800	***6***	***17***	***28***	***17***	***51***	***42***	***27***	***2***	***2***	***71***	***1***	***110***	***7***	***118***	***67***	***181***	***99***	***347***	***122***	***465***	***587***	
Peak HR PM																						
1615 - 1715	***14***	***27***	***81***	***49***	***122***	***131***	***37***	***7***	***6***	***175***	***3***	***252***	***19***	***274***	***53***	***215***	***60***	***328***	***297***	***602***	***899***	

R* = Reduced Right-Turn Volumes via Pagones Theorem

Pagones Theorem* provided by IDOT (modified for WVDOT)

First, determine which lane configuration represents the leg that is being studied. Then, based on the movements for each hour, find the percent reduction for each hour with Pagones Theorem.

Pagones Theorem

Situation	Approach configuration	Condition	Reduction of right turns
1	Shared Left/ Through/Right	$R > 0.7A$ $0.7A \varepsilon R > 0.35A$ $R \delta 0.35A$	Reduce R by 60 percent Reduce R by 40 percent Reduce R by 20 percent
2	Exclusive Left, Shared Through/ Right	$R > 3T$ $3T \varepsilon R > T/3$ $R \delta T/3$	Reduce R by 60 percent Reduce R by 40 percent Reduce R by 20 percent
3	Any configuration with an exclusive right turn lane (min 125' for WVDOT)		Reduce R by 75 percent in all cases
4	Shared Left/Through and Shared Through/Right	$R > (T + L)$ $L > (T + R)$ $L = T = R$ (±10 vehicles) $L = T > 3R$ $R = T > 3L$ All other cases	Reduce R by 65 percent Use Situation 2 Reduce R by 40 percent Reduce R by 20 percent Reduce R by 50 percent Reduce R by 30 percent
5	Exclusive Left, Exclusive Through and Shared Through/Right	$R > T$ $T \varepsilon R > T/2$ $T/2 \varepsilon R > T/4$ $R \delta T/4$	Reduce R by 75 percent Reduce R by 50 percent Reduce R by 30 percent Reduce R by 15 percent

Where: L = number of left turning vehicles in approach;
T = number of through vehicles in approach;
R = number of right turning vehicles in approach; and
$A = (L + T + R)$.

APPENDIX E-2: WARRANT 2 FOUR-HOUR VEHICULAR VOLUME

Warrant 2: Four-hour Vehicular Volume

1: WV 51 with CR 1

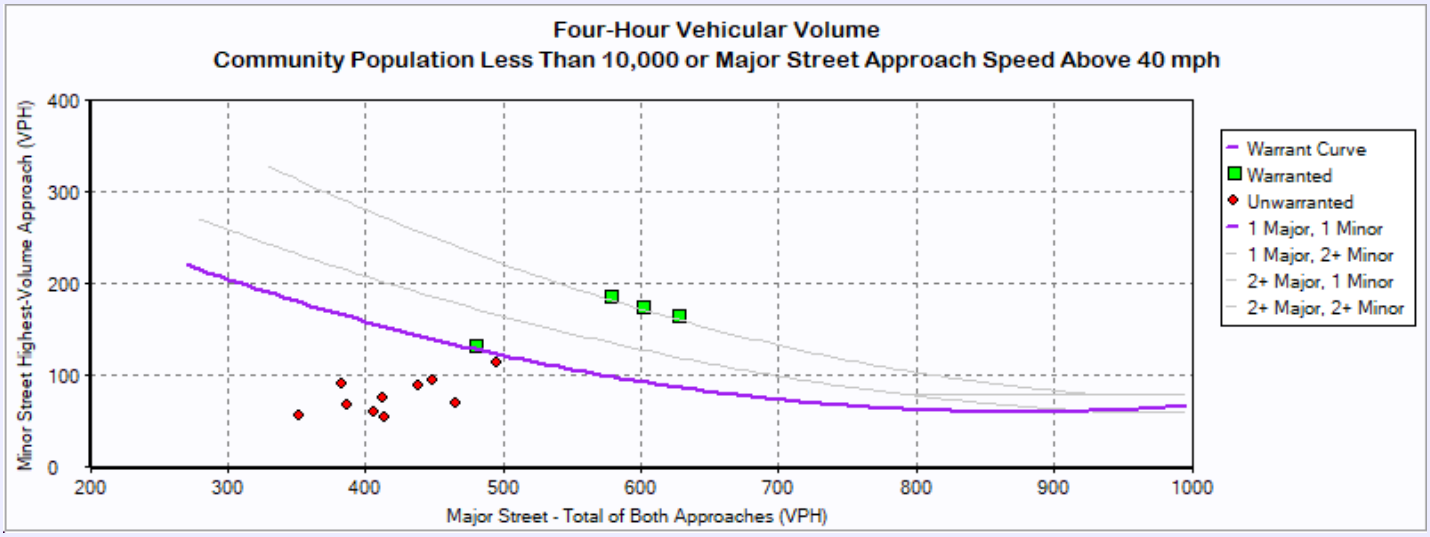
Intersection Information

	Major Street	Minor Street
Street Name	WV 51	CR 1
Direction	EB/WB	NB/SB
Number of Lanes	1	1
Approch Speed	45	30

Warrant 2 Met? **Yes**

Details:

Notes	4 Hours met (4 required)
Low population	Yes



Warrant 2: Four-hour Vehicular Volume

1: WV 51 with CR 1

Hourly Volumes

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
00:00:00 - 01:00:00	0	0
01:00:00 - 02:00:00	0	0
02:00:00 - 03:00:00	0	0
03:00:00 - 04:00:00	0	0
04:00:00 - 05:00:00	0	0
05:00:00 - 06:00:00	0	0
06:00:00 - 07:00:00	414	55
07:00:00 - 08:00:00	465	71
08:00:00 - 09:00:00	406	60
09:00:00 - 10:00:00	352	57
10:00:00 - 11:00:00	387	68
11:00:00 - 12:00:00	412	76
12:00:00 - 13:00:00	439	90
13:00:00 - 14:00:00	449	96
14:00:00 - 15:00:00	495	115
15:00:00 - 16:00:00	548	186
16:00:00 - 17:00:00	613	176
17:00:00 - 18:00:00	623	171
18:00:00 - 19:00:00	519	126
19:00:00 - 20:00:00	0	0
20:00:00 - 21:00:00	0	0
21:00:00 - 22:00:00	0	0
22:00:00 - 23:00:00	0	0

23:00:00 - 00:00:00	0	0

Warranted Hours

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
14:15:00 - 15:15:00	481.00	132.00
15:15:00 - 16:15:00	579.00	186.00
16:15:00 - 17:15:00	602.00	174.00
17:15:00 - 18:15:00	629.00	165.00

Note: Only data of hours warranted is represented in the above table.

APPENDIX E-3: WARRANT 7 CRASH EXPERIENCE

WARRANT 7 -- CRASH EXPERIENCE

Major Street	WV 51
Minor Street	CR 1
Jurisdiction	Middleway
Have five (5) correctable crashes occurred in 1 year?	YES

CONDITION 'A'

HOUR	MAJOR STREET VOLUME	MINOR STREET VOLUME	MAJOR ST WARRANT VOLUME	MINOR ST WARRANT VOLUME	HOUR MET
6-7 AM	414	55	280	84	NO
7-8 AM	465	71	280	84	NO
8-9 AM	406	60	280	84	NO
9-10 AM	352	57	280	84	NO
10-11 AM	387	67	280	84	NO
11-12 PM	412	76	280	84	NO
12-1 PM	439	90	280	84	YES
1-2 PM	449	95	280	84	YES
2-3 PM	495	114	280	84	YES
3-4 PM	548	186	280	84	YES
4-5 PM	613	176	280	84	YES
5-6 PM	623	170	280	84	YES
6-7 PM	519	126	280	84	YES

CONDITION 'B'

HOUR	MAJOR STREET VOLUME	MINOR STREET VOLUME	MAJOR ST WARRANT VOLUME	MINOR ST WARRANT VOLUME	HOUR MET
6-7 AM	414	55	420	42	NO
7-8 AM	465	71	420	42	YES
8-9 AM	406	60	420	42	NO
9-10 AM	352	57	420	42	NO
10-11 AM	387	67	420	42	NO
11-12 PM	412	76	420	42	NO
12-1 PM	439	90	420	42	YES
1-2 PM	449	95	420	42	YES
2-3 PM	495	114	420	42	YES
3-4 PM	548	186	420	42	YES
4-5 PM	613	176	420	42	YES
5-6 PM	623	170	420	42	YES
6-7 PM	519	126	420	42	YES

FINDINGS:

Condition A Satisfied?	7
Condition B Satisfied?	8
WARRANT 7 Satisfied?	**YES**

COMMENTS:

Report Number	Date Of Crash	Time Of Day	Day Of Week	County	Route1	Street	Intersecting Street	Junction Type	Intersection Type	Manner Of Collision	Lighting	Surface Condition
201704335	2/17/2017	1231	Friday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection-Related	4-Way Intersection	Right Angle	Daylight	Dry
201705979	3/8/2017	1149	Wednesday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Right Angle	Daylight	Dry
201708124	3/22/2017	1652	Wednesday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Right Angle	Daylight	Dry
201707435	3/29/2017	1756	Wednesday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection-Related	4-Way Intersection	Right Angle	Daylight	Dry
201717406	6/29/2017	1614	Thursday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Angle (Front to Side) Opposite Direction	Daylight	Dry
201721171	7/31/2017	1718	Monday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Angle (Front to Side) Opposite Direction	Daylight	Dry
201732127	11/20/2017	440	Monday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection-Related	4-Way Intersection	Right Angle	Dark - Not Lighted	Dry
201803521	2/9/2018	1248	Friday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Right Angle	Daylight	Dry
201810127	4/19/2018	1012	Thursday	JEFFERSON	51	MIDDLETOWN PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Right Angle	Daylight	Dry
201825881	9/13/2018	1523	Thursday	JEFFERSON	51	MIDDLE WAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Right Angle	Daylight	Dry
201826804	9/27/2018	1316	Thursday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Rear End	Daylight	Wet
201826945	9/30/2018	1205	Sunday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Right Angle	Daylight	Dry
201904264	2/18/2019	1545	Monday	JEFFERSON	51	MIDDLE WAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Right Angle	Daylight	Dry
201907257	3/22/2019	1727	Friday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Right Angle	Daylight	Dry
201924406	9/3/2019	1729	Tuesday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Right Angle	Daylight	Dry
201922719	9/4/2019	1355	Wednesday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Right Angle	Daylight	Dry
201926786	9/11/2019	1058	Wednesday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Right Angle	Daylight	Dry
202000943	1/13/2020	1515	Monday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection-Related	4-Way Intersection	Right Angle	Daylight	Dry
202000945	1/15/2020	2035	Wednesday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Right Angle	Dark - Lighted	Dry
202006479	3/26/2020	15	Thursday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection-Related	4-Way Intersection	Single Vehicle Crash	Dark - Lighted	Dry
202022851	10/28/2020	728	Wednesday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Right Angle	Daylight	Dry
202103904	2/17/2021	1748	Wednesday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Right Angle	Daylight	Dry
202120562	8/6/2021	1830	Friday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Angle (Front to Side) Opposite Direction	Daylight	Dry
202123007	9/29/2021	1830	Wednesday	JEFFERSON	51	MIDDLEWAY PIKE	LEETOWN ROAD	Junction, Non Interchange - Intersection	4-Way Intersection	Angle (Front to Side) Same Direction	Daylight	Dry

APPENDIX F: PROJECT CORRESPONDENCE

APPENDIX F-1: SCOPE OF WORK

Proposed TIS Scope of Work (SOW)

3M Site Redevelopment TIS

Middleway, Jefferson County

Purpose

The purpose of this SOW document is to delineate the assumptions of the Traffic Impact Study (TIS) for the proposed development project. Confirming assumptions at the beginning of the project helps to assure that the TIS will be completed only once and in a timely matter. This memorandum aims to create a communicative line between the WVDOH, the client, and the traffic engineer to discuss all of the issues involved with completing the TIS. This document will cover the following topics:

- Client Information
- Study Methodology
- Intersections to be studied
- Existing Traffic Data Collection
- Trip Generation
- Trip Distribution
- Site Access
- Approved Developments
- Additional Data Needs
- Local Government Coordination

Client Information

AMT is preparing this study on behalf of *Sidewinder Enterprises, LLC.* Our Point of Contact is *Sean Masterson*.

1 Grace Street
Kearneysville, WV 25430
sean@sidewinderenterprises.net

Study Methodology

The site is located at the end of Grace Street and west of Queen Street (CR 1). Site access is proposed to Grace Street via existing roadways. Both the AM (7-9 AM) and PM (3-6 PM) peak hours will be studied.

The analysis will follow the TED 106-2 along with applicable ITE and Highway Capacity methodologies which include four milestones:

- 2022 Existing Conditions
- 2024 Future No-Build Conditions (without proposed development and with any approved adjacent development in place)
- 2024 Future Build Conditions (with the proposed development in place)
- 2024 Future Build Improved Conditions (with the proposed development and recommended improvements in place)

Traffic analysis will consider Future Build conditions at the build-out year. Based upon current information, the development is assumed to fully built by 2024. A growth rate will be requested from WVDOH Performance Management Division and utilized to determine future traffic volumes.

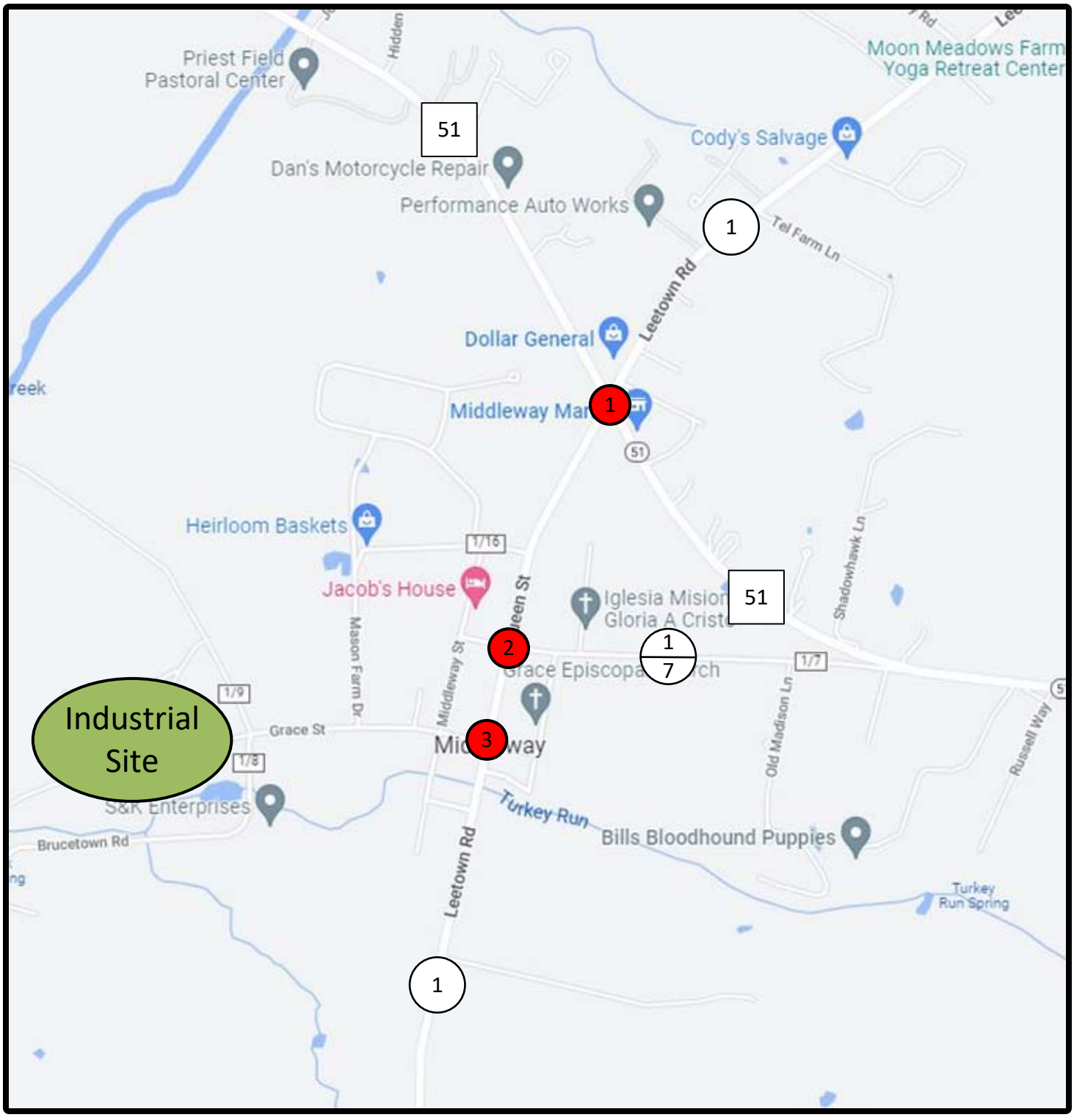
The analyses will be performed using the SYNCHRO 11.1 software package. The use of this software helps to ensure that the intersections will be analyzed in real life situations with intersections in coordination in all conditions.

Number of Intersections to be Studied

The following three (3) existing intersections will be included in the study for capacity analysis:

1. CR 1 (Leetown Road) with WV 51 (Middleway Pike)
    - Existing: Stop Controlled Plus Intersection
2. CR 1 (Queen Street) with Charles Street/Old Middleway Road (CR 1/7)
    - Existing: Stop Controlled Plus Intersection
3. CR 1 (Queen Street) with Grace Street
    - Existing: Stop Controlled Plus Intersection

Figure 1 shows the study area and key intersections. Figure 2 shows the current conceptual site plan with proposed access.



LEGEND

= Development

= Existing Intersection

N

NOT TO SCALE

3M Redevelopment TIS

Site Location Map

DATE: July 2022

FIGURE 1

200 100 0 200 400 600

GRAPHICAL SCALE: 1" = 200'

WV COORD. SYSTEM 1983, NORTH ZONE

OPEQUON CREEK

BUNKER HILL ROAD

1,000,000sf BUILDING
500' x 2,000'

Site Driveway with Grace Street

PROPOSED DRIVE AISLE TO BUILDING TO UTILIZE EXISTING GRACE STREET ENTRANCE

GRACE STREET

BRUCETOWN ROAD

TURKEY RUN

LEGEND

- SITE BOUNDARY
- ADJACENT PROPERTY LINE
- 5' CONTOUR (USGS)
- 500 EDGE OF WATER
- 100 YEAR FLOODPLAIN
- EX. BUILDING / STRUCTURE
- PR. BUILDING / STRUCTURE
- PR. DRIVE AISLE

NOTES:

1. BOUNDARY INFORMATION OBTAINED FROM ACSM/ALTA LAND TITLE SURVEY PREPARED BY GEORGE E. NAGEL & ASSOCIATES INC. DATED 05/13/2015.
2. 100 YEAR FLOODPLAIN OBTAINED FROM FEMA INFORMATION AND IS APPROXIMATE.
3. 5' CONTOUR DATA INTERPOLATED FROM USGS QUADRANGLE INFORMATION AND IS APPROXIMATE.

3M Redevelopment TIS

Site Plan

DATE: July 2022

FIGURE 2

N

NOT TO SCALE

Existing Traffic Data Collection

Full 13-hour turning movement count will be collected at the following intersection between the hours of 6AM to 7PM on a typical Friday. The 13-hour turning movement count will be utilized for traffic signal warrant analysis of the existing conditions. New turning movement counts will be collected at following intersection:

- CR 1 (Leetown Road) with WV 51 (Middleway Pike)

Peak hour turning movement counts at each existing intersection will be collected on a typical Friday when Jefferson County Schools are in session between the hours of 7AM to 9AM and 3PM to 6PM. New Turning Movement counts will be collected at the following locations:

- CR 1 (Queen Street) with Charles Street/Old Middleway Road (CR 1/7)
- CR 1 (Queen Street) with Grace Street

Trip Generation

The proposed site will be a redevelopment of 300-acre industrial site comprising 1,000,000 square feet (sf) with an expected number of 200 employees (See Figure 2). Additionally, the site is expected to generate approximately 160 vehicles/day that will be equally distributed during peak hours. Peak hour trip generation will be determined using trip rate data from the latest version of the ITE Trip Generation Manual using Land Use Codes (LUC) 110 (General Light Industrial) based on number of employees.

Trip Distribution

The site-generated trips to and from the proposed residential development will be distributed in accordance with the existing traffic patterns and land uses in the vicinity of the study area. Proposed trip distribution based upon current conditions is as follows:

- 10% to/from the south on CR 1
- 90% to/from the north on CR 1
    - 35% to/from the west on WV 51
    - 25% to/from the east on WV 51
    - 10% to/from east on CR 1/7 via WV 51
    - 20% to/from the north on CR 1

This proposed distribution results in an 90/10 north/south split for traffic entering the site from CR 1. Trip distribution will be confirmed once turning movement data is collected and discussed with WVDOH prior to submission of the preliminary TIS document.

Site Access

Access to the site is proposed to be provided by one existing site access point. Each of these are detailed below:

Site Drive #1 (Site Access 1)
Site Drive #1 is proposed as a full movement two-way approach to Grace Street near the eastern end of the parcel. Site Drive #1 is to be located approximately 2,000 feet west of Queen Street.

Site Drive #1 does not create a new intersection with the state highway system and the connection point appears to be simple and does not merit analysis.

Approved Developments

The TIS will include any applicable approved or pending TIS documents for projects in the vicinity of this proposed development, as determined by WVDOH.

Additional Data Needs

The following information is requested in order to complete the analysis for this project:

- Any potential improvement projects planned in this area

Local Government Coordination

AMT will provide the preliminary and final TIS reports to local government in accordance with the pending Development Agreement with *Sidewinder Enterprises, LLC.* The TIS will be provided to the following entities, plus any added through the development agreement process:

- Hagerstown Eastern Panhandle MPO (HEPMPO)
- Jefferson County Commission

Glaser, Caleb

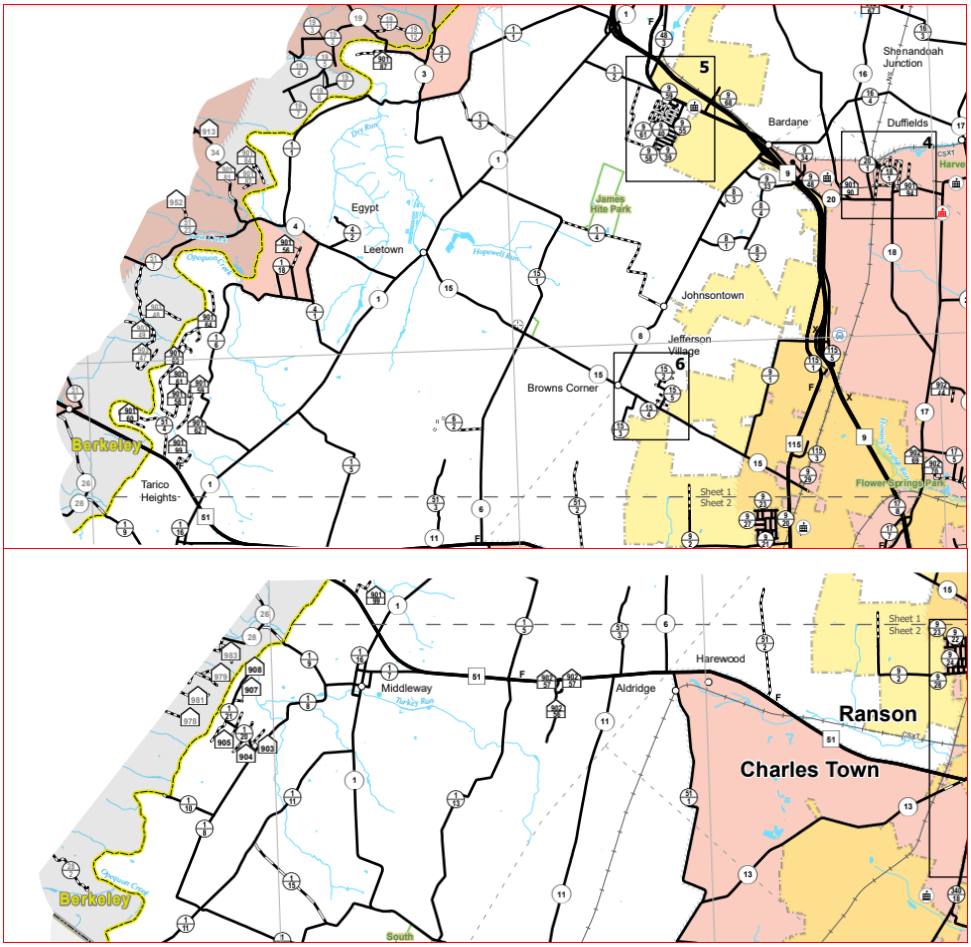
From: Cramer, David E <david.e.cramer@wv.gov>
Sent: Monday, July 18, 2022 9:45 AM
To: Glaser, Caleb
Cc: Donald R Meadows; Kenneth L Clohan; Trixie A Willis; Alanna J Keller; Kirk, Tim
Subject: Fwd: Proposed 3M Site Redevelopment TIS SOW - Jefferson County
Attachments: 2022_07_06, 3M Site Redevelopment TIS Proposed SOW.pdf

The DOH has no suggested revisions to this SOW. Developer should verify sufficiency of truck turning radii (without offtracking into opposing lane) at the affected intersections for the anticipated routing although that would be a design issue more so than a TIS issue. There are no known (to DOH) other developments within the project area.

A Developer agreement will be drafted by the DOH with the company noted in the SOW, however I cannot locate that company within the WV Secretary of State business registration database; please provide additional information concerning this company with respect to its registration in WV as a business.

If additional info is needed, please let us know. Thanks.

Dave



---------- Forwarded message ---------
From: **Glaser, Caleb** <cglaser@amtengineering.com>
Date: Wed, Jul 6, 2022 at 10:48 AM
Subject: Proposed 3M Site Redevelopment TIS SOW - Jefferson County
To: Cramer, David E <David.E.Cramer@wv.gov>
Cc: Kirk, Tim <tkirk@amtengineering.com>, Meadows, Donald R <Donald.R.Meadows@wv.gov>, Ken Clohan <kenneth.l.clohan@wv.gov>

Good Morning Dave,

Attached is our proposed Scope of Work (SOW) for an industrial redevelopment project located in Middleway, Jefferson County. The site is proposed to utilize an existing site driveway opposite Grace Street and providing direct access to CR 1. Please let us know if you have any questions or need additional information.

Best Regards,

Caleb Glaser P.E.

Engineer

P 304-400-4952 | **D** 304-903-7010 | **C** 216-640-5970
W www.amtengineering.com

--
David E. Cramer, PE
WV Department of Transportation
Commissioner's Office of Economic Development
Interim Director - Aeronautics Commission
1900 Kanawha Boulevard, East
Building 5, Room 110
Charleston, West Virginia 25305
304-414-6697 (office)

APPENDIX F-2: GROWTH RATE

Glaser, Caleb

From: TMA Traffic Monitoring, DOH <tmatrafficmonitoring@wv.gov>
Sent: Thursday, June 9, 2022 12:39 PM
To: Glaser, Caleb
Subject: Fwd: Traffic Data Request

---------- Forwarded message ---------
From: <TMATrafficMonitoring@wv.gov>
Date: Thu, Jun 9, 2022 at 12:38 PM
Subject: Traffic Data Request
To: <TMATrafficMonitoring@wv.gov>

Requestor Information
Name: Caleb Glaser
Email: cglaser@amtengineering.com
Phone Number: 2166405970

Thank you for submitting a traffic data request.

Response: The growth rate for this location is 1.4111%. The design designation for WV 51 - AADT: 8,362 K: 11% D: 65/35 T: 8% The design designation for CO 1 - AADT: 2,410 That is all I have for this route. Please let me know if you need anything else, and thank you for using the request form!

For questions about your request, please reply to this email.

APPENDIX F-3: COMMENT RESOLUTION

May 1, 2023

Mr. Perry Keller
WV Department of Transportation
Commissioner's Office of Economic Development
1900 Kanawha Boulevard, East
Building 5, Room 164
Charleston, West Virginia 25305

Re: Traffic Impact Study
3M Redevelopment
Jefferson County
AMT File No.: 22-0284.001

Dear Mr. Keller:

This letter is in reference to your email dated April 6, 2023 transmitting review comments regarding the Traffic Impact Study for the 3M Redevelopment project prepared by A. Morton Thomas and Associates, Inc. (AMT). Following are responses and intended resolution to your comments:

1) *Based on information within the TIS, it appears no definitive tenant is currently known for the project, therefore DOH will require that trip generation be revisited once a tenant is known to ensure that trips are not underestimated. This concern is primarily related to the significant difference in trips generated when comparing square footage to employees.*

   Acknowledged. At this time there is still no definitive tenant and the general Light Industrial LUC is appropriate. If a definitive tenant is in place in the future, a comparison of estimated trips will be performed and presented as either a memo or revised TIS to WVDOH for approval.

2) *TIS indicates that the proposed CR 1 NB need for a LTL approaching the intersection with WV 51 to be an existing issue, however, based on information within the study the need for this lane would appear to primarily be based on the build out of this proposed development. As such the need for the CR 1 NB LTL should be shown as a result of the proposed development.*

   Further discussions with WVDOH on the intersection confirmed a traffic signal project is to be performed at WV 51 with CR 1. This project would include the signal as well as exclusive left-turn lanes on the WV 51 approaches. Further analysis indicates that the signal is expected to operate adequately with split phasing and maintaining existing lane configuration on the CR 1 approaches. This is included in the Revised TIS Report.

Please let us know if you have any additional questions or desire clarification of any information provided in this response to your comments regarding the 3M Redevelopment Revised TIS. We are available at your convenience to discuss this project.

Sincerely,
A. Morton Thomas and Associates, Inc.

Caleb Glaser, P.E., PTOE
Project Engineer
cglaser@amtengineering.com

cc: Jason Gerhart (IFS)
Sean Masterson (Sidewinder Enterprises)

Glaser, Caleb

From: Keller, Perry J <perry.j.keller@wv.gov>
Sent: Thursday, April 6, 2023 11:26 AM
To: Glaser, Caleb
Subject: Fwd: Proposed 3M Site Redevelopment TIS SOW - Jefferson County

See below. Sorry for missing this earlier.

---------- Forwarded message ---------
From: **Meadows, Donald R** <donald.r.meadows@wv.gov>
Date: Thu, Apr 6, 2023 at 11:19 AM
Subject: Fwd: Proposed 3M Site Redevelopment TIS SOW - Jefferson County
To: Perry J Keller <perry.j.keller@wv.gov>
Cc: Kenneth L Clohan <kenneth.l.clohan@wv.gov>, Kevin A McDonald <kevin.a.mcdonald@wv.gov>

Perry,
Below are the comments I originally emailed to Dave prior to the agreement being executed.

After reviewing the TIS submitted by AMT for the proposed 3M Site Redevelopment I have the following comments:

1. Based on information within the TIS, it appears no definitive tenant is currently known for the project, therefore DOH will require that trip generation be revisited once a tenant is known to ensure that trips are not underestimated. This concern is primarily related to the significant difference in trips generated when comparing square footage to employees.

2. TIS indicates that the proposed CR 1 NB need for a LTL approaching the intersection with WV 51 to be an existing issue, however, based on information within the study the need for this lane would appear to primarily be based on the build out of this proposed development. As such the need for the CR 1 NB LTL should be shown as a result of the proposed development.

Consultant should address the above comments and provide a revised TIS for further review and/or approval. Also, I am not sure whether Ken had completed his review on this one as I don't have any comments from D5 in my correspondence files. Let me know if you have any questions or if you need any additional information. THANKS>DON

Donald R. Meadows
West Virginia Division of Highways
Traffic Engineering - Operations
1900 Kanawha Blvd. E.
Charleston, WV 25305
Office Ph: 304-414-7354
Cell Ph: 304-382-3160