



**BARBARICK WASTE TRANSFER STATION**  
**VARIANCE OF REQUIRED BUILDING SETBACK**  
**LETTER OF INTENT**

**Affiliated Party Information:**

**Owner/Leasee/Applicant:**

BR 8812 Cliff Allen Point LLC  
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Add "PCD File No. AL2310"

## **PROPERTY INFORMATION: BARBARICK WASTE TRANSFER STATION**

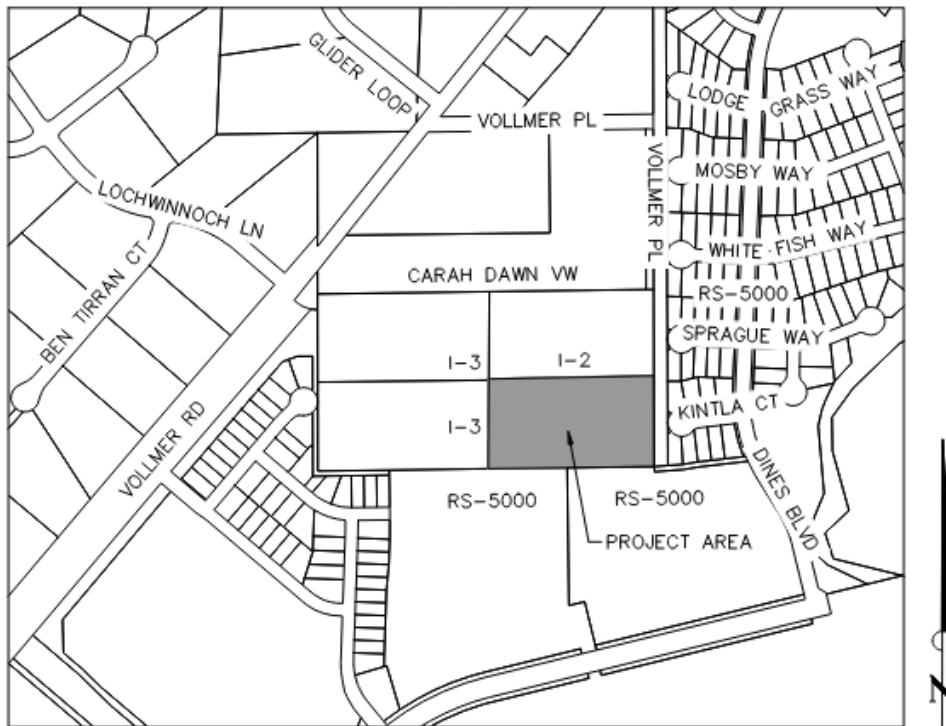
SITE ADDRESS: 8812 Cliff Allen Pt, Colorado Springs, CO 80908  
PARCEL ID: 5233002013  
ZONING: I-3 CAD-O Heavy Industrial/Commercial Airport Overlay District  
ACREAGE: 5.29 acres

### **LETTER OF INTENT**

#### **PROJECT UNDERSTANDING**

Kimley-Horn's role in this project is to lead the entitlement process and provide civil engineering / Landscape Architecture + Planning services throughout the Site Development Plan and Construction Document planning processes with El Paso County.

The purpose of this project is to develop a waste transfer station facility (WTS), on the property: Parcel ID: 5233003013, located at: 8812 Cliff Allen Pt, Colorado Springs. Included in this project is: ~12,000 S.F. waste transfer building, drive aisles, scale house with ground scales, landscape buffering and screening as required for County Code Compliance. Vicinity map shown below.



**VICINITY MAP**  
SCALE: 1" = 250'

**SERVICE UNDERSTANDING**

The services provided by the Waste Transfer Station (WTS) include the indoor drop-off, removal, and recycling of various forms of **Dry Waste. Dry Waste pertains to various goods or materials such as/made of wood, plastic, composites, glass, and metals. Wet waste, such as garbage or other organic or consumable wastes, are not accepted at the WTS.** Located within the proposed ~12,000 S.F. WTS building, are six waste collection bins, used for various wood, plastic, composite, metal, etc. **Goods anticipated to be dropped off include, but are not limited to: bedframes, dressers, televisions, workout equipment, scrapped lumber, household remodel debris, yard clippings, etc.** These bins are laid out so the customer can safely and easily pull up to, or back into the drop off stall and safely relocate their wastes directly into the bins. Located outside the WTS building are three metal recycling bins, also located for safe customer access. Two of such bins are for **Steel Recycling** and one for **Non-Ferrous Metal Recycling**. Non-ferrous metals pertain to aluminum, titanium, zinc, lead, nickel, copper, and copper alloys (brass, bronze, etc.). This waste material will be picked up daily as the containers are filled and transferred to the regional facilities. It is anticipated that 1 to 2 containers will be removed each day.

**NOTE:** The Indoor Waste Disposal and Recycling Facilities was reviewed by the Colorado Department of Public Health & Environment (CDPHE) office, and was found Not Requiring a Certificate of Designation, required with traditional waste disposal sites based on the natural and limited storage and type of waste on the site.

**SITE UNDERSTANDING (See site plan for reference)**

As the site sits, lots to the north, northwest, and west are zoned industrial. Their respective land uses are self-storage, RV Storage, and Large Equipment Supply and Storage. The site of interest: 8812 Cliff Allen Pt, is a leased parcel, sharing an entrance with an existing auto mechanic shop (Dirt Road Diesel). Lots to the east are zoned residential, with residential homes existing there today. The lot to the south of the site is also zoned residential and is currently vacant. Within the project lot is an existing easement supporting the regional stormwater detention pond. The capacity of the pond is 1.49 ac-ft, and footprint of pond/easement is approximately 0.91 acres. The pond receives flows from the adjacent (I-3 Zone) industrial lots to the north and west, as well as the lots just to the north of Carah Dawn View, the public which is the drive serving the site.

The El Paso County Board of Adjustments granted dimensional variance on April 26<sup>th</sup>, 2023, allowing for minimum 35' building setbacks from the northern and western property frontages. This request and approval was made specifically with regard to the development code section 5.2.59.E.1.g.

In addition, the site layout is compliant to the standards set forth in Table 5-5: Density and Dimensional Standards for Industrial Districts (I-3 Zone).

**SPECIAL USE REQUEST**

This Special Use Request is responding to **5.2.59(B)(1)** – Approval of a site development plan is required for all waste disposal recycling facilities, unless otherwise provided. Approval of a special use may be required in specific zoning districts. Waste disposal sites subject to a CD are not allowed to use the administrative special use process.

**COMPLIANCE TO REQUIRED USE AND DIMENSIONAL STANDARDS (LDC – CHAPTER 5)**

**5.2.59(E)(1) General Requirements - Trash Transfer or Intermediate Processing Facilities Not Requiring a Certificate of Designation**

- (a) Receive only household, commercial, and industrial wastes
  - a. The site will only accept dry waste goods (i.e. wood, plastic, composites, glass, and metal) – Such as, but not limited to: bedframes, dressers, TVs, workout equipment, etc.
  - b. The site will also recycle non-ferrous metals (i.e. aluminum, titanium, zinc, lead, nickel, copper, and copper alloys)
- (b) No Radioactive Materials
  - a. No radioactive materials are accepted – Radiation detection devices shall be used.
- (c) Transfer Standards
  - a. The proposed Transfer Facility operations occurs within the enclosed building. Garage style roll-doors are utilized to access/restrict removal and drop off areas.
- (d) Transfer Stations Comply with Regulations
  - a. The proposed project will comply with the design criteria and operations standards of the state.
- (e) Comply with State Design Criteria and Operations
  - a. The facility will comply with the design criteria of the state.
- (f) Issues to be Addressed by Operational Plan
  - a. O&M Plan addresses interim storage of wastes (when necessary), location of equipment, temporary parking of vehicles, methods of cleaning, means of disposal, alternative disposal plan.
- (g) Solid Waste Structure Location
  - a. Structure is compliant to approved setback requirements. The El Paso County Board of Adjustments granted dimensional variance on April 26<sup>th</sup>, 2023 allowing for minimum 35' building setbacks from the northern and western property frontages.
- (h) No dumping or Storage of Waste in Open Areas
  - a. Dumping and storage to occur within the waste collection bins located inside the enclosed facility.
- (i) Additional Findings
- (j) Closure Plan
  - a. A closure plan is included in the operations manual for the proposed transfer station. CDPHE notification, debris removal, sweeping, and final cleanup is proposed.

**5.3.2 Special Use**

The proposed site is in accordance with 5.3.2 and responds to 5.3.2(C) Criteria for Approval with the following. The proposed use is generally consistent with the applicable El Paso County Master Plans by Placetype, being within the Priority Development Area, and being consistent with the call for water conservation. The use will exist in harmony with the character of the industrial subdivision and surrounding residential by providing a clean, efficient, and necessary service to the general public for dry-waste and recycling transfer operations. Impacts to existing infrastructure is mitigated by the water friendly nature of the use and minimal additional runoff production. The special use will not create unmitigated traffic congestion or traffic hazards, and it is anticipated that the connecting intersection will operate acceptably throughout the 2045 development horizon. All vehicle queues are anticipated to be maintained within the existing storage lengths, per the current traffic study. Lastly, the special use will comply with all applicable local, county, state, and federal laws and regulations, and will not be detrimental to the public health, safety and welfare of the present or future residents of El Paso County.

**COMPLIANCE TO GENERAL DEVELOPMENT STANDARDS (LDC – CHAPTER 6)**

The proposed site is compliant to all applicable general development standards set forth by Chapter 6 of the El Paso County Land Development Code.

**Development Standards for Ancillary Facilities and Activities**

**6.2.2 Landscape Requirements:**

- Minor Private Road, 20’ Setback – 1 tree per 25 feet.
- Maintaining existing screening and buffering per use. This is achieved by existing topography and vegetated berm associated with the regional detention facility on site, the proposed/existing tree line along the south and east landscape buffer frontages, the existing chain link property fencing around the entirety of the site, and the existing ~6.5’ paneled fencing along the south and east property frontages.

**6.2.3 Lighting**

- Full cut off lights are required and are to be installed on the proposed enclosure
  - o Max 10fc and 0.1fc allowable spillover to adjacent sites

**6.2.5 Parking, Loading and Maneuvering Standards**

- A setback reduction to the northern and western property boundaries has been granted via the Board of Adjustments. This has allowed for more room for safe and efficient site maneuverability by customers and removal service drivers.

**6.2.7 Operational Standards**

- A setback reduction to the northern and western property boundaries has been granted via the Board of Adjustments. This has allowed for a greater setback distance from the adjacent residentially zoned areas to the south and east of the property.
  - o Dust Control
    - Water is provided on-site for dust control via soil wetting
    - Existing ground material is a crushed asphalt millings and gravel mixture
  - o Noise Control
    - While there is deliveries and pick-ups are scheduled to pass through a check-in station, all other operations are to take place within the building enclosure

**6.2.8 Maintenance Plans**

- An Operations & Maintenance Manual is proposed and addresses long-term maintenance for the facility per the Colorado Department of Public Health & Environment (CDPHE) standards.

**Environmental Standards****6.3.2 Drainage and Floodplain**

- The existing detention pond on site has capacity for runoff associated with the proposed improvements. Drainage and capacity study will be included in the required Final Drainage Report.

**6.3.3 Fire Protection and Wildfire Mitigation**

- The fire protection plan for the site will be submitted for approval by Black Forest Fire and Rescue / Colorado Springs Fire Department.
- Wall mounted fire extinguishers are proposed for the enclosure
- Water is provided to the property via the existing well located at the northern property frontage

**EL PASO COUNTY MASTER PLAN****Project Site Placetype: Employment Center**

El Paso County's primary location for large-scale, nonretail business that provide significant employment and economic development opportunities. Being that the site is within the Employment Center Placetype, it is important to note that the proposed business will offer employment opportunity to this industrial subdivision and will serve the general public in a way that doesn't currently exist in this region of Colorado Springs and El Paso County.

## Areas of Change: Priority Development Area

“El Paso County is expecting significant growth over the next 20 years. While large expanses of undeveloped land exist throughout the County, particularly in the Rural Placetype, development should be prioritized elsewhere to efficiently utilize and extend existing infrastructure, conserve water resources, and strengthen established neighborhoods. This framework identifies specific locations throughout the County that should be prioritized first for new residential development to help accommodate growth. While some priority development areas may be made up of a mix of placetypes, each area is driven by a predominant placetype that defines most of the area.”

This project responds to the Area of Change and Priority Development Area sections of the Master Plan by proposing new services to the industrial subdivision and providing the surrounding community with recycling services for dry goods.

## El Paso County Water Master Plan

The proposed site responds to the El Paso County Water Master Plan’s call for water conservation with it’s low-water consumption model. The proposed use is not reliant on water and is considered a “dry site”.

## OVERLAY ZONING (CAD-O)

The proposed site is within the CAD-O, airport overlay zone. The proposed site responds to all requirements associated with CAD-O zoning.

## PROVISION OF UTILITIES

Water, sanitary sewer, and gas service is not needed for the proposed building and operations. Existing water is provided to the property via the existing well located at the northern property frontage. An existing septic field serves the property just east of proposed enclosure. Electric is to be serviced from the existing transformer at the north of the site. The existing business and primary user of the lot, Dirt Road Diesel, utilizes water, sanitary sewer, gas, and electric services.

## ACCESS TO SITE & TRAFFIC GENERATION

The site is accessed from the intersection of Vollmer Road and Lochwinnoch Lane. The eastbound leg of the Vollmer Road and Lochwinnoch Lane intersection facilitates traffic into Carah Dawn View, then southwards via Cliff Allen Pt. The proposed site for the Barbarick Waste Transfer Station is accessed from Cliff Allen Pt. It is anticipated that this intersection will operate acceptably throughout the 2045 development horizon, and all vehicle queues are anticipated to be maintained within the existing storage lengths, per the traffic study. See **Appendix A**.

State the trip generation from the TIS, study conclusions, and if there are any improvements that need to be completed (if so state the responsible party for completing the improvements.)

A driveway access waiver is required. Please apply on EDARP.

**ADJACENT PROPERTY INFORMATION**

**Adjacent Property to the West:**

PARCEL ID: 5233002011

OWNER: HW Diesel Enterprises

ZONING: I-3

USE: Self Storage, Large Vehicle and Freight Storage, Construction Equipment Supply

**Adjacent Property to the North:**

PARCEL ID: 5233002012

OWNER: BWH Properties LLC

ZONING: I-2

USE: Self Storage and RV Storage

**Adjacent Property to the Northwest:**

PARCEL ID: 5233002010

OWNER: Lewis-Wolf Properties LLLP

ZONING: I-3

USE: Self Storage, Large Vehicle and Freight Storage, Construction Equipment Supply

**Adjacent Property to the East:**

PARCEL ID: 5233302013

OWNER: Joseph Vasquez

ZONING: RS-5000

USE: Single Family Residential

**Adjacent Property to the East:**

PARCEL ID: 5233302014

OWNER: Mic Phillips

ZONING: RS-5000

USE: Single Family Residential

**Adjacent Property to the East:**

PARCEL ID: 5233302022

OWNER: Chad Caskey

ZONING: RS-5000

USE: Single Family Residential



**APPENDIX A**

Remove the traffic impact study from the letter of intent since the TIS is being reviewed as a separate document.

Traffic Impact Study

# Barbarick Waste Transfer Station

El Paso County, Colorado

Prepared for:


**Graham Construction Management**

**Kimley»Horn**

T R A F F I C I M P A C T S T U D Y

Traffic Engineer's Statement

The attached traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.



September 15, 2022

\_\_\_\_\_  
Jeffrey R. Planck, P.E., PE #53006

\_\_\_\_\_  
Date

Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

\_\_\_\_\_  
Mr. Richard Graham, Jr.  
Graham Construction Management  
4615 Northpark Drive  
Colorado Springs, CO 80918

\_\_\_\_\_  
Date

**Barbarick Waste Transfer Station**

El Paso County, Colorado

**Prepared for**  
**Graham Construction Management**  
4615 Northpark Drive  
Colorado Springs, CO 80918

**Prepared by**  
**Kimley-Horn and Associates, Inc.**  
2 North Nevada Avenue  
Suite 300  
Colorado Springs, Colorado 80903  
(719) 453-0180

September 2022



*This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.*

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## 1.0 EXECUTIVE SUMMARY

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This report has been prepared to document the results of a Traffic Impact Study for the Barbarick Waste Transfer Station project proposed at 8812 Cliff Allen Point in El Paso County, Colorado. Specifically, the project is located near the southeast corner of the Lochwinnoch Lane and Vollmer Road intersection. For the purposes of this study, Barbarick Waste Transfer Station is anticipated to include an intermediate transfer facility. It is expected that Barbarick Waste Transfer Station will be completed in the next several years; therefore, analysis was conducted for the 2025 short-term buildout horizon as well as the 2045 long-term twenty-year planning horizon.

The purpose of this traffic study is to identify project traffic generation characteristics to determine potential project traffic related impacts on the local street system and to develop the necessary mitigation measures required for the identified traffic impacts. The intersection of Vollmer Road and Lochwinnoch Lane was incorporated into this traffic study in accordance with El Paso County standards and requirements.

Regional access to Barbarick Waste Transfer Station will be provided by SH-21 and US-24. Primary access will be provided by Vollmer Road. Direct access will be provided by the existing east leg at the intersection of Lochwinnoch Lane and Vollmer Road.

Barbarick Waste Transfer Station is expected to generate approximately 280 weekday daily trips, with 36 of these trips occurring during both the morning and afternoon peak hours. Of the 280 weekday daily trips, 10 are anticipated to be heavy vehicle trips with two (2) heavy vehicle trips during both peak hours.

Based on the analysis presented in this report, Kimley-Horn believes Barbarick Waste Transfer Station will be successfully incorporated into the existing and future roadway network with the existing geometry and control. The intersection of Vollmer Road and Lochwinnoch Lane is anticipated to operate acceptably throughout 2045 and all vehicle queues are anticipated to be maintained within the existing storage lengths. The road impact fee associated with the project is expected to be \$22,380.

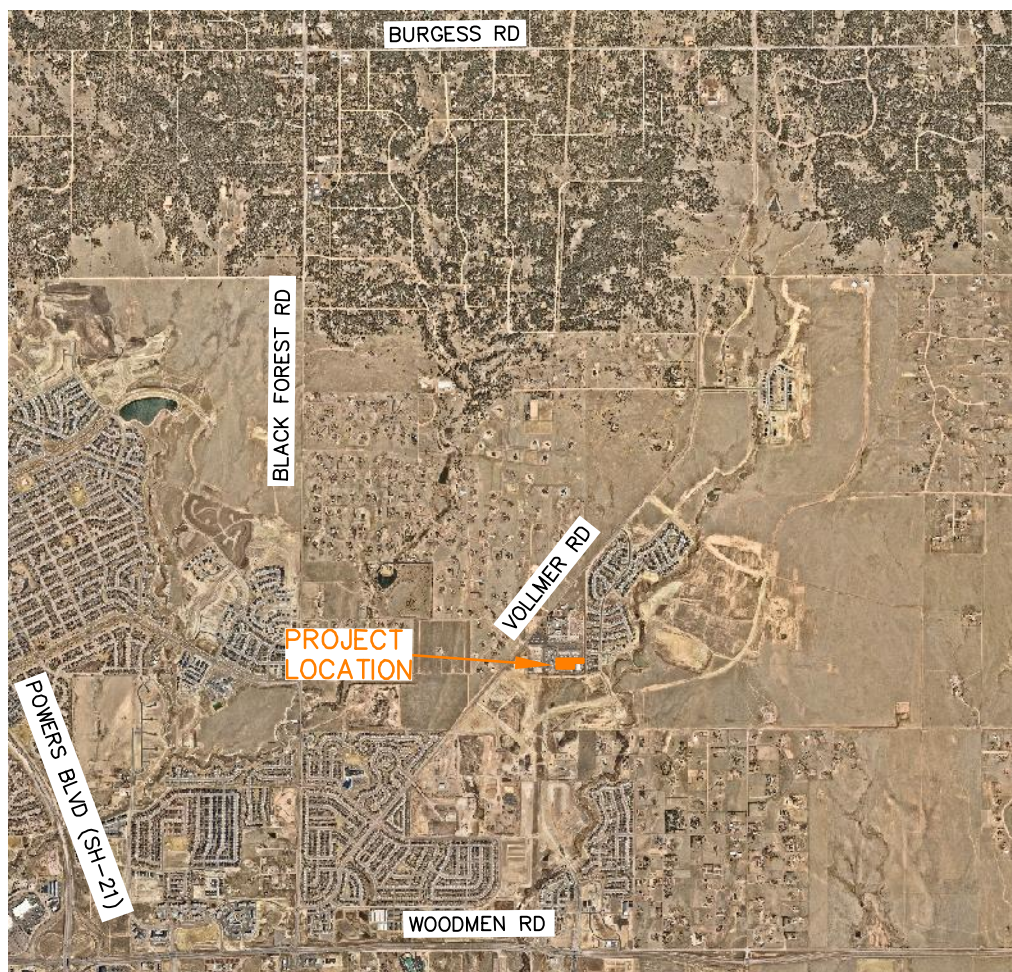
## 2.0 INTRODUCTION

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Kimley-Horn and Associates, Inc. has prepared this report to document the results of a Traffic Impact Study for the Barbarick Waste Transfer Station project proposed at 8812 Cliff Allen Point in El Paso County, Colorado. Specifically, the project is located near the southeast corner of the Lochwinnoch Lane and Vollmer Road intersection. A vicinity map illustrating the Barbarick Waste Transfer Station development location is shown in **Figure 1**. For the purposes of this study, Barbarick Waste Transfer Station is anticipated to include an intermediate transfer facility. A conceptual site plan is attached in **Appendix D**. It is expected that Barbarick Waste Transfer Station will be completed in the next couple years; therefore, analysis was conducted for the 2025 short-term buildout horizon as well as the 2045 long-term twenty-year planning horizon.

The purpose of this traffic study is to identify project traffic generation characteristics to determine potential project traffic related impacts on the local street system and to develop the necessary mitigation measures required for the identified traffic impacts. The intersection of Vollmer Road and Lochwinnoch Lane was incorporated into this traffic study in accordance with El Paso County standards and requirements.

Regional access to Barbarick Waste Transfer Station will be provided by SH-21 and US-24. Primary access will be provided by Vollmer Road. Direct access will be provided by the existing east leg at the intersection of Lochwinnoch Lane and Vollmer Road.



BARBARICK WASTE TRANSFER STATION  
EL PASO COUNTY, COLORADO  
VICINITY MAP

FIGURE 1



## **3.0 EXISTING AND FUTURE CONDITIONS**

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### **3.1 Existing Study Area**

The existing site is comprised of a diesel engine repair service. West of the site are single family homes. East of the site is vacant land that is currently being developed. Vacant land, industrial uses, and single-family homes are located to the south. An RV and boat storage facility is located to the north of the site.

### **3.2 Existing Roadway Network**

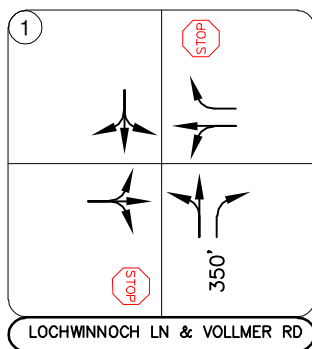
Vollmer Road provides two through lanes of travel in each direction, northeastbound and southwestbound, with a 45 mile per hour speed limit through the study area. Lochwinnoch Lane consists of one through lane in each direction extending primarily eastbound and westbound at the study area key intersection.

The unsignalized intersection of Lochwinnoch Lane and Vollmer Road operates with stop-control on the eastbound Lochwinnoch Lane and westbound Carah Dawn View approaches. For the purposes of this analysis, Vollmer Road is considered a north/south roadway while Lochwinnoch Lane is considered an east/west roadway. The northbound and westbound approaches provide a shared left turn/through lane and a right turn lane. The southbound and eastbound approaches provide one shared lane for all movements. An aerial photo of the existing intersection configuration is below (north is up - typical).



*Lochwinnoch Lane & Vollmer Road*

The intersection lane configuration and control for the study area intersection are shown in **Figure 2**.



**LEGEND**

- Study Area Key Intersection
- Stop Controlled Approach
- Roadway Speed Limit
- 100' Turn Lane Length (feet)

BARBARICK WASTE TRANSFER STATION  
 EL PASO COUNTY, COLORADO  
 EXISTING GEOMETRY AND CONTROL

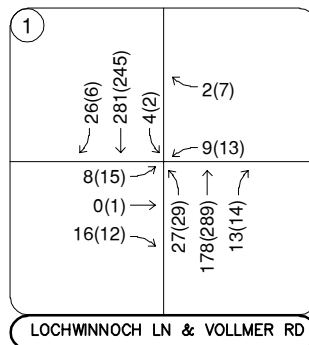
FIGURE 2

### 3.3 Existing Traffic Volumes

Existing turning movement counts were conducted at the study intersection on Thursday, August 25, 2022, during the morning and afternoon peak hours. The counts were conducted during the morning and afternoon peak hours of adjacent street traffic in 15-minute intervals from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM on this count date. The existing intersection traffic volumes are shown in **Figure 3** with count sheets provided in **Appendix A**.

### 3.4 Unspecified Development Traffic Growth

According to the 2040 traffic projections from the El Paso County Major Transportation Corridor Plan (MTCP) traffic model compared to the existing traffic volumes, the area surrounding the site is expected to have an average 18-year growth factor of 1.43. This growth factor equates to an annual growth rate of 1.99 percent. Future traffic volume projections and growth rate calculations are provided in **Appendix B**. Therefore, a 1.99 percent annual growth rate was used to calculate future traffic volumes at the study area intersection. This annual growth rate was used to estimate short-term 2025 and long-term 2045 traffic volume projections at the key intersection. The calculated background traffic volumes for 2025 and 2045 are shown in **Figure 4** and **Figure 5**, respectively.



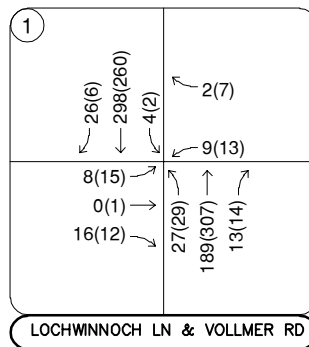
Thursday, August 25, 2022  
7:00 to 8:00AM (4:15 to 5:15PM)

**LEGEND**

- (X) Study Area Key Intersection
- XXX(XXX) Weekday AM(PM)  
Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

BARBARICK WASTE TRANSFER STATION  
EL PASO COUNTY, COLORADO  
2022 EXISTING TRAFFIC VOLUMES

FIGURE 3



**LEGEND**

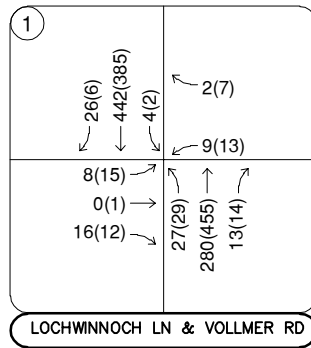
⊗ Study Area Key Intersection

XXX(XXX) Weekday AM(PM)  
Peak Hour Traffic Volumes

XX,X00 Estimated Daily Traffic Volume

BARBARICK WASTE TRANSFER STATION  
EL PASO COUNTY, COLORADO  
2025 BACKGROUND TRAFFIC VOLUMES

FIGURE 4



**LEGEND**

⊗ Study Area Key Intersection

XXX(XXX) Weekday AM(PM)  
Peak Hour Traffic Volumes

XX,X00 Estimated Daily Traffic Volume

BARBARICK WASTE TRANSFER STATION  
EL PASO COUNTY, COLORADO  
2045 BACKGROUND TRAFFIC VOLUMES

FIGURE 5

## 4.0 PROJECT TRAFFIC CHARACTERISTICS

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### 4.1 Trip Generation

Site-generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the *Trip Generation Manual*<sup>1</sup> published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses. However, for this study, Kimley-Horn used user-specific trip generation based on trips at a similar Peak Disposal and Recycling facility located at 856 Washington Street in Monument, Colorado, for traffic associated with the development. Further, steel recycling collection data from Colorado Industrial Recycling located at 2730 E. Las Vegas Street in Colorado Springs as well as data from the Green for Life trash collection facility were used for site generated traffic. Trips at the existing site were collected daily from August 2018 to July 2022. To be conservative, the month with highest number of trips, June 2022, was used for the trip generation. Of note, operations significantly decrease during the winter season and colder months. The operations primarily consist of personal vehicles utilizing the site to unload waste or recycle steel materials while trucks with 40-yard dumpster containers will haul out recycled steel and waste. The peak month for waste trucks occurred in June 2022 with 73 trucks collecting waste from the facility and hauling off-site. Likewise, the peak month for steel recycling trucks occurred in June 2022 with 7 trucks collecting recycled steel and hauling off-site. Further, trips generated on the existing diesel engine repair site were not subtracted from the existing counts to conservatively evaluate the key intersection.

Barbarick Waste Transfer Station is expected to generate approximately 280 weekday daily trips, with 36 of these trips occurring during both the morning and afternoon peak hours. Of the 280, weekday daily trips, 10 trips are anticipated to be heavy vehicle trips with two (2) heavy vehicle trips during both peak hours. **Table 1** summarizes the estimated trip generation for the Barbarick Waste Transfer Station.

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<sup>1</sup> Institute of Transportation Engineers, *Trip Generation Manual*, Eleventh Edition, Washington DC, 2021.



**Table 1 – Barbarick Waste Transfer Station Traffic Generation**

Vehicle and Trip Type	Weekday Vehicle Trips						
	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Passenger Vehicle Trash/Recycle Drop-off	270	17	17	34	17	17	34
Truck - GFL Boxes Picked up	8	1	1	2	1	1	2
Truck - Recycled Steel Pick up	2	0	0	0	0	0	0
<b>Total Site Generated Trips</b>	<b>280</b>	<b>18</b>	<b>18</b>	<b>36</b>	<b>18</b>	<b>18</b>	<b>36</b>

#### 4.2 Trip Distribution

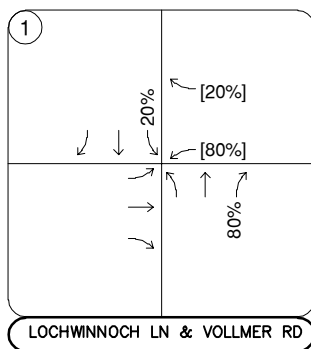
Distribution of site traffic on the street system was based on the area street system characteristics, existing traffic patterns, existing and anticipated surrounding demographic information, and the proposed access system for the project. The directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source. The project trip distribution for the proposed development is illustrated in **Figure 6**.

#### 4.3 Traffic Assignment

Barbarick Waste Transfer Station traffic assignment was obtained by applying the project trip distribution to the estimated traffic generation of the development shown in **Table 1**. Traffic assignment is shown in **Figure 7**.

#### 4.4 Total (Background Plus Project) Traffic

Site traffic volumes were added to the background volumes to represent estimated traffic conditions for the short-term 2025 buildout horizon and long-term 2045 twenty-year planning horizon. These total traffic volumes for the study area are illustrated for the 2025 and 2045 horizon years in **Figures 8** and **9**, respectively.



**LEGEND**

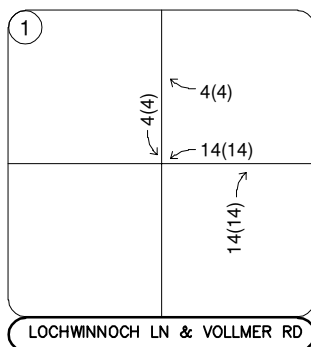
(X) Study Area Key Intersection

XX% External Trip Distribution Percentage

XX%[XX%] Entering[Exiting] Trip Distribution Percentage

BARBARICK WASTE TRANSFER STATION  
 EL PASO COUNTY, COLORADO  
 PROJECT TRIP DISTRIBUTION

FIGURE 6



**LEGEND**

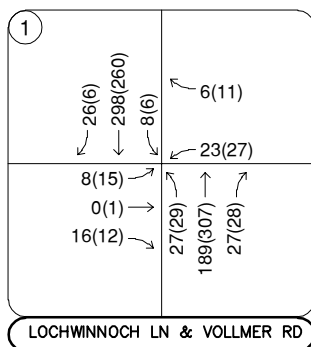
(X) Study Area Key Intersection

XXX(XXX) Weekday AM(PM)  
 Peak Hour Traffic Volumes

[XX,X00] Estimated Daily Traffic Volume

BARBARICK WASTE TRANSFER STATION  
 EL PASO COUNTY, COLORADO  
 PROJECT TRAFFIC ASSIGNMENT

FIGURE 7



**LEGEND**

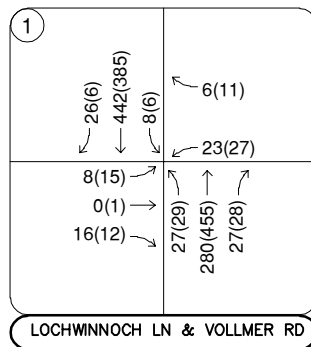
⊗ Study Area Key Intersection

XXX(XXX) Weekday AM(PM)  
Peak Hour Traffic Volumes

XX,X00 Estimated Daily Traffic Volume

BARBARICK WASTE TRANSFER STATION  
EL PASO COUNTY, COLORADO  
2025 TOTAL TRAFFIC VOLUMES

FIGURE 8



**LEGEND**

(X) Study Area Key Intersection

XXX(XXX) Weekday AM(PM)  
 Peak Hour Traffic Volumes

XX,X00 Estimated Daily Traffic Volume

BARBARICK WASTE TRANSFER STATION  
 EL PASO COUNTY, COLORADO  
 2045 TOTAL TRAFFIC VOLUMES

FIGURE 9

## 5.0 TRAFFIC OPERATIONS ANALYSIS

Kimley-Horn’s analysis of traffic operations in the site vicinity was conducted to determine potential capacity deficiencies in the 2025 and 2045 development horizons at the identified key intersection. The acknowledged source for determining overall capacity is the current edition of the *Highway Capacity Manual (HCM)*<sup>2</sup>.

### 5.1 Analysis Methodology

Capacity analysis results are listed in terms of Level of Service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). Based on El Paso County standards, the threshold for acceptable LOS is not less than LOS D during peak hours. **Table 2** shows the definition of level of service for signalized and unsignalized intersections.

**Table 2 – Level of Service Definitions**

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Definitions provided from the Highway Capacity Manual, Sixth Edition, Transportation Research Board, 2016.

The study area intersection was analyzed based on average total delay analysis for unsignalized intersections. Under the unsignalized analysis, the LOS for a two-way stop-controlled intersection is determined by the computed or measured control delay and is defined for each minor movement.

<sup>2</sup> Transportation Research Board, *Highway Capacity Manual*, Sixth Edition, Washington DC, 2016.

## 5.2 Key Intersection Operational Analysis

Calculations for the operational level of service at the key intersection for the study area are provided in **Appendix C**. The existing year analysis is based on the lane geometry and intersection control shown in **Figure 2**. Existing peak hour factors were used for all horizons. Additionally, truck percentages were used for all horizons. Synchro traffic analysis software was used to analyze the unsignalized key intersection for HCM level of service.

### Lochwinnoch Lane & Vollmer Road

The unsignalized intersection of Lochwinnoch Lane and Vollmer Road operates with stop-control on the eastbound and westbound Vollmer Road approaches. The intersection movements operate acceptably at LOS C or better during both peak hours under existing conditions. With project traffic, all movements are anticipated to continue operating at an acceptable level of service throughout the 2045 horizon. Therefore, no improvements or modifications are anticipated to be needed at this intersection based on the addition of project traffic and this operational level of service analysis. **Table 3** provides the results of the LOS analysis conducted at this intersection.

**Table 3 – Lochwinnoch Lane & Vollmer Road LOS Results**

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
<b>2022 Existing</b>				
Northbound Left	8.2	A	7.9	A
Eastbound Approach	12.6	B	13.3	B
Westbound Through/Left	16.1	C	15.5	C
Westbound Right	9.5	A	10.0	B
Southbound Left	7.8	A	8.0	A
<b>2025 Background</b>				
Northbound Left	8.3	A	7.9	A
Eastbound Approach	12.9	B	13.7	B
Westbound Through/Left	16.8	C	16.2	C
Westbound Right	9.6	A	10.2	B
Southbound Left	7.8	A	8.0	A
<b>2025 Background Plus Project</b>				
Northbound Left	8.3	A	7.9	A
Eastbound Approach	13.1	B	14.0	B
Westbound Through/Left	17.8	C	16.9	C
Westbound Right	9.6	A	10.2	B
Southbound Left	7.9	A	8.1	A
<b>2045 Background</b>				
Northbound Left	8.9	A	8.3	A
Eastbound Approach	16.7	C	18.6	C
Westbound Through/Left	24.5	C	13.3	C
Westbound Right	10.3	B	11.4	B
Southbound Left	8.1	A	8.5	A
<b>2045 Background Plus Project</b>				
Northbound Left	8.9	A	8.3	A
Eastbound Approach	17.0	C	19.0	C
Westbound Through/Left	27.1	D	25.4	D
Westbound Right	10.3	B	11.4	B
Southbound Left	8.2	A	8.5	A



### 5.3 El Paso County Turn Lane Requirement Analysis

The El Paso County Engineering Criteria Manual (ECM) was used to determine if left and right turn lanes are warranted along Vollmer Road. El Paso County classifies Vollmer Road as a Minor Arterial roadway. According to El Paso County ECM guidelines for Minor Arterials, a left turn lane is required for any access with a projected peak hour left turning volume of 25 vehicles per hour or greater, a right turn lane is required for any access with a projected peak hour right turning volume of 50 vehicles per hour or greater, and a right turn acceleration lane is generally not required.

Based on Vollmer Road providing a posted speed limit of 45 miles per hour, the turn lane requirements that the project traffic contributes to are as follows:

#### Lochwinnoch Lane and Vollmer Road:

- A southbound left turn lane **is not** warranted at this intersection based on projected 2045 total traffic volumes being eight (8) southbound left turns during the peak hour and the threshold being 25 vehicles per hour.
- A northbound right turn lane exists but **is not** warranted at this intersection based on projected 2045 total traffic volumes being 28 northbound right turns during the peak hour and the threshold being 50 vehicles per hour.

## 5.4 Vehicle Queuing Analysis

A vehicle queuing analysis was conducted for the study area intersection. The queuing analysis was performed using Synchro presenting the results of the 95<sup>th</sup> percentile queue lengths. Results are shown in the following **Table 4** with calculations provided within the level of service operational sheets of **Appendix C**.

**Table 4 – Turn Lane Queuing Analysis Results**

Intersection Turn Lane	Existing Turn Lane Length (feet)	2025 Calculated Queue (feet)	2025 Recommended Length (feet)	2045 Calculated Queue (feet)	2045 Recommended Length (feet)
<b>Lochwinnoch Ln &amp; Vollmer Rd</b>					
Northbound Right	350'	0'	350'	0'	350'
Westbound Left/Through	100'	25'	100'	25'	100'
Westbound Right	C	25'	C	25'	C

C = Continuous Lane

As shown in the table above, vehicle queues are all anticipated to remain within the existing turn lane lengths through 2045.

## 5.5 Sight Distance Evaluation

It is recommended that sight triangles be provided at all site access points to give drivers exiting the site a clear view of oncoming traffic. Landscaping and objects within sight triangles must not obstruct drivers' views of the adjacent travel lanes. ECM design sight distances for left turn from stop from public street intersections (Table 2-21) was evaluated at the intersection of Vollmer Road and Lochwinnoch Lane. ECM does not provide sight distances for right-turning vehicles from stop for public street intersections; therefore, AASHTO standards were used for right-turn from stop distances at the intersection of Vollmer Road and Lochwinnoch Lane.

According to Table 2-21 from ECM and a roadway design speed of 45 miles per hour along Vollmer Road, the intersection sight distance for a vehicle turning left from stop is 500 feet for a two-lane roadway. With AASHTO standards, the sight distance for a vehicle turning right from stop is 430 feet. Therefore, all obstructions for left turning vehicles from stop should be clear to the right within the triangle created with a vertex point located 10 feet from the edge of the major road traveled way (typical position of the minor road driver's eye when stopped) and a line-of-sight distance of 500 feet located in the middle of the nearest southbound through lane along

Vollmer Road. Likewise, all obstructions for right turning vehicles from stop should be clear to the left within the triangle created with a vertex point located 10 feet from the edge of the major road traveled way and a line-of-sight distance of 430 feet located in the middle of the nearest northbound through lane along Vollmer Road. It is believed that the intersection of Vollmer Road and Lochwinnoch Lane is appropriately located to provide necessary sight distances.

### 5.6 Bicycle and Pedestrian Access

Sidewalks are not present on either side of the Vollmer Road and Lochwinnoch Lane intersection. Sidewalks and bicycle lanes are not provided along Vollmer Road or Lochwinnoch Road.

### 5.7 Road Impact Fees

Road impact fees were evaluated based on the El Paso County Road Impact Fee Schedule. Based on these fee schedule guidelines, the fee per 1,000 square feet of Warehouse is \$1,865. Therefore, the road impact fee for the proposed 12,000 square foot building is expected to be \$22,380. Road impact fee calculations are shown in **Table 5**.

**Table 5 – Road Impact Fees**

Use	Units	Fee / Unit	Total Fee
Warehouse	12.00 KSF	\$1,865	\$22,380

During the final plat process, the project team will determine if the impact fees are paid up front or if the property will be included in one of the available public improvement districts with reduced upfront costs. The project team will determine payment methods with the final plat.

## 5.8 Heavy Vehicle Assessment

The heavy vehicle percentage adjacent to the intersection of Lochwinnoch Lane and Vollmer Road is currently 6.2 percent during the morning peak hour and 4.4 percent during the afternoon peak hour. An industry standard 10 percent K-factor was utilized to estimate an average daily traffic volume of 6,100 vehicles per day along Vollmer Road. The afternoon heavy vehicle percentage of 4.4 percent was utilized to estimate a daily heavy vehicle estimate of 268 trucks (6,100 x 0.044). The project is anticipated to add 10 daily truck trips during the peak day of the peak month. This equates to a 3.7 percent (10/268) increase in the overall number of daily trucks along Vollmer Road. However, the heavy vehicle usage of 4.4 percent along Vollmer Road remains the same due to the small number of trucks added daily by this project. This is due to passenger vehicles generated by the project being added to Vollmer Road as well as trucks and the overall truck percentage along Vollmer Road remaining the same  $((268 \text{ existing trucks} + 10 \text{ project trucks}) / (6,100 \text{ existing vehicles} + 280 \text{ project vehicles}))$ . It should also be noted that this is calculated with the highest project generated volume day in the entire calendar year and not the average project generation. Therefore, an approximate total of five heavy vehicles (10 trips) are expected to be added to the roadway network on a peak day, and this is expected to have a negligible impact to the surrounding roadway.

## 6.0 CONCLUSIONS AND RECOMMENDATIONS

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Based on the analysis presented in this report, Kimley-Horn believes Barbarick Waste Transfer Station will be successfully incorporated into the existing and future roadway network with the existing geometry and control. The intersection of Vollmer Road and Lochwinnoch Lane is anticipated to operate acceptably throughout 2045 and all vehicle queues are anticipated to be maintained within the existing storage lengths. The road impact fee associated with the project is expected to be \$22,380.

# APPENDICES

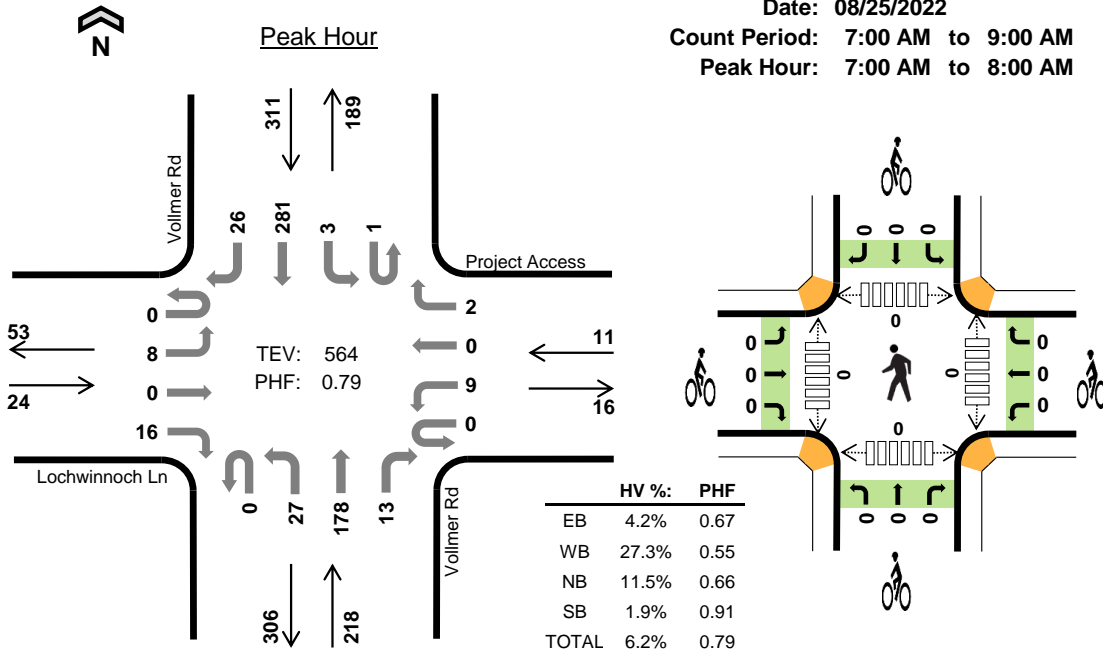
# APPENDIX A

## Intersection Count Sheets

### Vollmer Rd Lochwinnoch Ln



Date: 08/25/2022  
 Count Period: 7:00 AM to 9:00 AM  
 Peak Hour: 7:00 AM to 8:00 AM



#### Two-Hour Count Summaries

Interval Start	Lochwinnoch Ln				Project Access				Vollmer Rd				Vollmer Rd				15-min Total	Rolling One Hour	
	Eastbound		Westbound		Northbound		Southbound		UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	1	0	3	0	1	0	0	0	5	36	3	0	0	70	7	126	0	
7:15 AM	0	2	0	7	0	3	0	2	0	5	47	0	1	1	76	2	146	0	
7:30 AM	0	1	0	4	0	1	0	0	0	4	29	6	0	0	65	4	114	0	
7:45 AM	0	4	0	2	0	4	0	0	0	13	66	4	0	2	70	13	178	564	
8:00 AM	0	5	0	3	0	1	0	0	0	3	53	2	0	0	43	9	119	557	
8:15 AM	0	1	0	5	0	2	0	0	0	1	40	5	0	0	32	2	88	499	
8:30 AM	0	2	0	2	0	4	0	1	0	3	42	3	0	1	47	0	105	490	
8:45 AM	0	2	0	6	0	3	0	0	0	4	43	0	0	0	51	1	110	422	
Count Total	0	18	0	32	0	19	0	3	0	38	356	23	1	4	454	38	986	0	
Peak Hour	All	0	8	0	16	0	9	0	2	0	27	178	13	1	3	281	26	564	0
	HV	0	1	0	0	0	3	0	0	0	2	21	2	0	1	4	1	35	0
	HV%	-	13%	-	0%	-	33%	-	0%	-	7%	12%	15%	0%	33%	1%	4%	6%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	5	1	6	0	0	0	0	0	0	0	0	0	0
7:15 AM	1	0	8	2	11	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	7	2	10	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	2	5	1	8	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	1	7	1	9	0	0	0	0	0	0	0	0	0	0
8:15 AM	1	1	5	1	8	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	2	3	2	7	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0
Count Total	2	7	43	11	63	0	0	0	0	0	0	0	0	0	0
Peak Hour	1	3	25	6	35	0	0	0	0	0	0	0	0	0	0



<b>Two-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	Lochwinnoch Ln				Project Access				Vollmer Rd				Vollmer Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	1	6	0
7:15 AM	0	1	0	0	0	0	0	0	0	0	8	0	0	1	1	0	11	0
7:30 AM	0	0	0	0	0	1	0	0	0	0	2	4	1	0	0	2	10	0
7:45 AM	0	0	0	0	0	2	0	0	0	0	0	4	1	0	0	1	8	35
8:00 AM	0	0	0	0	0	1	0	0	0	0	0	6	1	0	0	1	9	38
8:15 AM	0	0	0	1	0	1	0	0	0	0	0	4	1	0	0	1	8	35
8:30 AM	0	0	0	0	0	1	0	1	0	0	0	3	0	0	1	1	7	32
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	4	28
Count Total	0	1	0	1	0	6	0	1	0	2	37	4	0	2	8	1	63	0
Peak Hour	0	1	0	0	0	3	0	0	0	2	21	2	0	1	4	1	35	0

<b>Two-Hour Count Summaries - Bikes</b>																		
Interval Start	Lochwinnoch Ln			Project Access			Vollmer Rd			Vollmer Rd			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

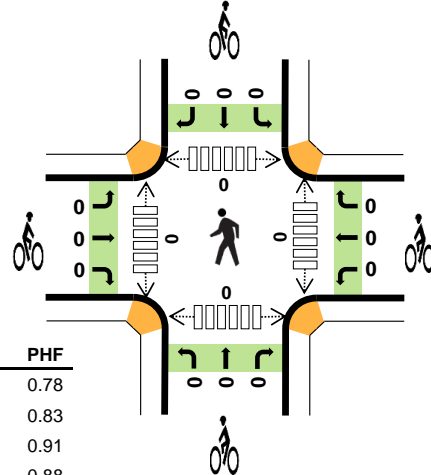
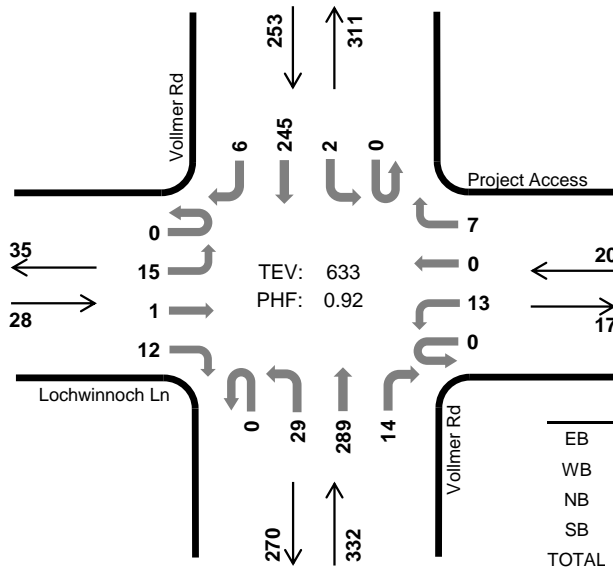
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

## Vollmer Rd Lochwinnoch Ln



Peak Hour

Date: 08/25/2022  
Count Period: 4:00 PM to 6:00 PM  
Peak Hour: 4:15 PM to 5:15 PM



	HV %:	PHF
EB	3.6%	0.78
WB	10.0%	0.83
NB	3.6%	0.91
SB	5.1%	0.88
TOTAL	4.4%	0.92

### Two-Hour Count Summaries

Interval Start	Lochwinnoch Ln				Project Access				Vollmer Rd				Vollmer Rd				15-min Total	Rolling One Hour	
	Eastbound		Westbound		Westbound		Northbound		Southbound		Southbound		Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	1	0	5	0	3	0	1	0	7	52	2	0	0	51	1	123	0	
4:15 PM	0	3	0	3	0	3	0	2	0	5	68	3	0	0	63	3	153	0	
4:30 PM	0	3	0	6	0	2	0	4	0	6	80	3	0	0	59	1	164	0	
4:45 PM	0	2	1	2	0	4	0	0	0	10	78	3	0	2	69	1	172	612	
5:00 PM	0	7	0	1	0	4	0	1	0	8	63	5	0	0	54	1	144	633	
5:15 PM	0	1	1	3	0	2	0	0	0	8	63	2	0	0	68	1	149	629	
5:30 PM	0	2	0	4	0	5	2	2	0	6	62	1	0	1	41	4	130	595	
5:45 PM	0	1	1	1	0	1	0	1	0	3	89	1	0	0	44	3	145	568	
Count Total	0	20	3	25	0	24	2	11	0	53	555	20	0	3	449	15	1,180	0	
Peak Hour	All	0	15	1	12	0	13	0	7	0	29	289	14	0	2	245	6	633	0
	HV	0	0	0	1	0	1	0	1	0	0	11	1	0	1	11	1	28	0
	HV%	-	0%	0%	8%	-	8%	-	14%	-	0%	4%	7%	-	50%	4%	17%	4%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	1	1	6	8	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	1	6	2	10	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	1	3	1	5	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	1	6	7	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	2	4	6	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	1	3	4	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0
Count Total	1	3	14	27	45	0	0	0	0	0	0	0	0	0	0
Peak Hour	1	2	12	13	28	0	0	0	0	0	0	0	0	0	0

<b>Two-Hour Count Summaries - Heavy Vehicles</b>																			
Interval Start	Lochwinnoch Ln				Project Access				Vollmer Rd				Vollmer Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	6	0	8	0	
4:15 PM	0	0	0	1	0	1	0	0	0	0	0	6	0	0	0	2	0	10	0
4:30 PM	0	0	0	0	0	0	0	1	0	0	2	1	0	0	1	0	5	0	
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	4	1	7	30	
5:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0	6	28	
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	20	
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	4	19	
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	15	
Count Total	0	0	0	1	0	2	0	1	0	1	12	1	0	1	25	1	45	0	
Peak Hour	0	0	0	1	0	1	0	1	0	0	11	1	0	1	11	1	28	0	
<b>Two-Hour Count Summaries - Bikes</b>																			
Interval Start	Lochwinnoch Ln			Project Access			Vollmer Rd			Vollmer Rd			15-min Total	Rolling One Hour					
	Eastbound			Westbound			Northbound			Southbound									
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT							
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Note: U-Turn volumes for bikes are included in Left-Turn, if any.</i>																			

# APPENDIX B

## Future Traffic Projections

MTCP Growth Rate: Barbarick Waste Transfer Station

Location	2022 AADT	2040 AADT	Growth Factor	Growth Rate
Vollmer Rd S/O Burgess Rd	6100	8700	1.43	1.99%

# APPENDIX C

## Intersection Analysis Worksheets

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕	↗		↕	↗		↔	
Traffic Vol, veh/h	8	0	16	9	0	2	27	178	13	4	281	26
Future Vol, veh/h	8	0	16	9	0	2	27	178	13	4	281	26
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	-	-	-	-	-	0	-	-	350	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	6	6	6	6	6	6	6	6	6	6	6	6
Mvmt Flow	10	0	20	11	0	3	34	225	16	5	356	33

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	686	692	373	686	692	225	389	0	0	241	0	0
Stage 1	383	383	-	293	293	-	-	-	-	-	-	-
Stage 2	303	309	-	393	399	-	-	-	-	-	-	-
Critical Hdwy	7.16	6.56	6.26	7.16	6.56	6.26	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.16	5.56	-	6.16	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.56	-	6.16	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.554	4.054	3.354	3.554	4.054	3.354	2.254	-	-	2.254	-	-
Pot Cap-1 Maneuver	356	362	664	356	362	805	1148	-	-	1302	-	-
Stage 1	632	605	-	707	663	-	-	-	-	-	-	-
Stage 2	698	652	-	624	595	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	344	348	664	335	348	805	1148	-	-	1302	-	-
Mov Cap-2 Maneuver	344	348	-	335	348	-	-	-	-	-	-	-
Stage 1	611	602	-	683	640	-	-	-	-	-	-	-
Stage 2	672	630	-	602	592	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.6		14.9		1		0.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1148	-	-	507	335	805	1302	-	-
HCM Lane V/C Ratio	0.03	-	-	0.06	0.034	0.003	0.004	-	-
HCM Control Delay (s)	8.2	0	-	12.6	16.1	9.5	7.8	0	-
HCM Lane LOS	A	A	-	B	C	A	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	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	15	1	12	13	0	7	29	289	14	2	245	6
Future Vol, veh/h	15	1	12	13	0	7	29	289	14	2	245	6
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	-	-	-	-	-	0	-	-	350	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	16	1	13	14	0	8	32	314	15	2	266	7

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	664	667	270	659	655	314	273	0	0	329	0	0
Stage 1	274	274	-	378	378	-	-	-	-	-	-	-
Stage 2	390	393	-	281	277	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.14	6.54	6.24	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.536	4.036	3.336	2.236	-	-	2.236	-	-
Pot Cap-1 Maneuver	371	377	764	374	383	722	1279	-	-	1219	-	-
Stage 1	728	680	-	640	612	-	-	-	-	-	-	-
Stage 2	630	602	-	721	678	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	358	365	764	358	370	722	1279	-	-	1219	-	-
Mov Cap-2 Maneuver	358	365	-	358	370	-	-	-	-	-	-	-
Stage 1	705	679	-	620	593	-	-	-	-	-	-	-
Stage 2	604	583	-	706	677	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.3		13.6		0.7		0.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1279	-	-	464	358	722	1219	-	-
HCM Lane V/C Ratio	0.025	-	-	0.066	0.039	0.011	0.002	-	-
HCM Control Delay (s)	7.9	0	-	13.3	15.5	10	8	0	-
HCM Lane LOS	A	A	-	B	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	0	-	-



Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔		↔	↔		↔	
Traffic Vol, veh/h	8	0	16	9	0	2	27	189	13	4	298	26
Future Vol, veh/h	8	0	16	9	0	2	27	189	13	4	298	26
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	-	-	-	-	-	0	-	-	350	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	6	6	6	6	6	6	6	6	6	6	6	6
Mvmt Flow	10	0	20	11	0	3	34	239	16	5	377	33

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	721	727	394	721	727	239	410	0	0	255	0	0
Stage 1	404	404	-	307	307	-	-	-	-	-	-	-
Stage 2	317	323	-	414	420	-	-	-	-	-	-	-
Critical Hdwy	7.16	6.56	6.26	7.16	6.56	6.26	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.16	5.56	-	6.16	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.56	-	6.16	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.554	4.054	3.354	3.554	4.054	3.354	2.254	-	-	2.254	-	-
Pot Cap-1 Maneuver	337	346	646	337	346	790	1128	-	-	1287	-	-
Stage 1	615	592	-	694	654	-	-	-	-	-	-	-
Stage 2	686	643	-	608	583	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	326	332	646	316	332	790	1128	-	-	1287	-	-
Mov Cap-2 Maneuver	326	332	-	316	332	-	-	-	-	-	-	-
Stage 1	593	589	-	670	631	-	-	-	-	-	-	-
Stage 2	660	620	-	586	580	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.9		15.5		1		0.1	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1128	-	-	487	316	790	1287	-	-
HCM Lane V/C Ratio	0.03	-	-	0.062	0.036	0.003	0.004	-	-
HCM Control Delay (s)	8.3	0	-	12.9	16.8	9.6	7.8	0	-
HCM Lane LOS	A	A	-	B	C	A	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	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	15	1	12	13	0	7	29	307	14	2	260	6
Future Vol, veh/h	15	1	12	13	0	7	29	307	14	2	260	6
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	-	-	-	-	-	0	-	-	350	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	16	1	13	14	0	8	32	334	15	2	283	7

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	701	704	287	696	692	334	290	0	0	349	0	0
Stage 1	291	291	-	398	398	-	-	-	-	-	-	-
Stage 2	410	413	-	298	294	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.14	6.54	6.24	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.536	4.036	3.336	2.236	-	-	2.236	-	-
Pot Cap-1 Maneuver	351	359	747	353	365	703	1260	-	-	1199	-	-
Stage 1	713	668	-	624	599	-	-	-	-	-	-	-
Stage 2	615	590	-	706	666	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	338	347	747	337	353	703	1260	-	-	1199	-	-
Mov Cap-2 Maneuver	338	347	-	337	353	-	-	-	-	-	-	-
Stage 1	690	667	-	604	580	-	-	-	-	-	-	-
Stage 2	589	571	-	691	665	-	-	-	-	-	-	-

Approach	EB		WB			NB			SB		
HCM Control Delay, s	13.7		14.1			0.7			0.1		
HCM LOS	B		B								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1260	-	-	442	337	703	1199	-	-
HCM Lane V/C Ratio	0.025	-	-	0.069	0.042	0.011	0.002	-	-
HCM Control Delay (s)	7.9	0	-	13.7	16.2	10.2	8	0	-
HCM Lane LOS	A	A	-	B	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	0	-	-

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕		↕	
Traffic Vol, veh/h	8	0	16	23	0	6	27	189	27	8	298	26
Future Vol, veh/h	8	0	16	23	0	6	27	189	27	8	298	26
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	-	-	-	-	-	0	-	-	350	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	6	6	6	6	6	6	6	6	6	6	6	6
Mvmt Flow	10	0	20	29	0	8	34	239	34	10	377	33

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	742	755	394	731	737	239	410	0	0	273	0	0
Stage 1	414	414	-	307	307	-	-	-	-	-	-	-
Stage 2	328	341	-	424	430	-	-	-	-	-	-	-
Critical Hdwy	7.16	6.56	6.26	7.16	6.56	6.26	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.16	5.56	-	6.16	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.56	-	6.16	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.554	4.054	3.354	3.554	4.054	3.354	2.254	-	-	2.254	-	-
Pot Cap-1 Maneuver	327	333	646	332	341	790	1128	-	-	1267	-	-
Stage 1	608	586	-	694	654	-	-	-	-	-	-	-
Stage 2	676	632	-	600	577	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	313	318	646	310	325	790	1128	-	-	1267	-	-
Mov Cap-2 Maneuver	313	318	-	310	325	-	-	-	-	-	-	-
Stage 1	586	580	-	669	630	-	-	-	-	-	-	-
Stage 2	645	609	-	575	571	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.1		16.1		0.9		0.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1128	-	-	477	310	790	1267	-	-
HCM Lane V/C Ratio	0.03	-	-	0.064	0.094	0.01	0.008	-	-
HCM Control Delay (s)	8.3	0	-	13.1	17.8	9.6	7.9	0	-
HCM Lane LOS	A	A	-	B	C	A	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.3	0	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	15	1	12	27	0	11	29	307	28	6	260	6
Future Vol, veh/h	15	1	12	27	0	11	29	307	28	6	260	6
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	-	-	-	-	-	0	-	-	350	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	16	1	13	29	0	12	32	334	30	7	283	7

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	720	729	287	706	702	334	290	0	0	364	0	0
Stage 1	301	301	-	398	398	-	-	-	-	-	-	-
Stage 2	419	428	-	308	304	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.14	6.54	6.24	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.536	4.036	3.336	2.236	-	-	2.236	-	-
Pot Cap-1 Maneuver	341	347	747	348	360	703	1260	-	-	1184	-	-
Stage 1	704	661	-	624	599	-	-	-	-	-	-	-
Stage 2	608	581	-	698	659	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	325	333	747	331	346	703	1260	-	-	1184	-	-
Mov Cap-2 Maneuver	325	333	-	331	346	-	-	-	-	-	-	-
Stage 1	681	656	-	604	580	-	-	-	-	-	-	-
Stage 2	579	562	-	680	654	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14		15		0.6		0.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1260	-	-	429	331	703	1184	-	-
HCM Lane V/C Ratio	0.025	-	-	0.071	0.089	0.017	0.006	-	-
HCM Control Delay (s)	7.9	0	-	14	16.9	10.2	8.1	0	-
HCM Lane LOS	A	A	-	B	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.3	0.1	0	-	-

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	8	0	16	9	0	2	27	280	13	4	442	26
Future Vol, veh/h	8	0	16	9	0	2	27	280	13	4	442	26
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	-	-	-	-	-	0	-	-	350	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	6	6	6	6	6	6	6	6	6	6	6	6
Mvmt Flow	10	0	20	11	0	3	34	354	16	5	559	33

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1018	1024	576	1018	1024	354	592	0	0	370	0	0
Stage 1	586	586	-	422	422	-	-	-	-	-	-	-
Stage 2	432	438	-	596	602	-	-	-	-	-	-	-
Critical Hdwy	7.16	6.56	6.26	7.16	6.56	6.26	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.16	5.56	-	6.16	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.56	-	6.16	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.554	4.054	3.354	3.554	4.054	3.354	2.254	-	-	2.254	-	-
Pot Cap-1 Maneuver	212	232	509	212	232	681	964	-	-	1167	-	-
Stage 1	489	491	-	602	581	-	-	-	-	-	-	-
Stage 2	594	572	-	483	483	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	203	220	509	196	220	681	964	-	-	1167	-	-
Mov Cap-2 Maneuver	203	220	-	196	220	-	-	-	-	-	-	-
Stage 1	467	488	-	575	555	-	-	-	-	-	-	-
Stage 2	565	546	-	461	480	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	16.7		21.9		0.7		0.1	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	964	-	-	339	196	681	1167	-	-
HCM Lane V/C Ratio	0.035	-	-	0.09	0.058	0.004	0.004	-	-
HCM Control Delay (s)	8.9	0	-	16.7	24.5	10.3	8.1	0	-
HCM Lane LOS	A	A	-	C	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.2	0	0	-	-

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	15	1	12	13	0	7	29	455	14	2	385	6
Future Vol, veh/h	15	1	12	13	0	7	29	455	14	2	385	6
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	-	-	-	-	-	0	-	-	350	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	16	1	13	14	0	8	32	495	15	2	418	7

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	997	1000	422	992	988	495	425	0	0	510	0	0
Stage 1	426	426	-	559	559	-	-	-	-	-	-	-
Stage 2	571	574	-	433	429	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.14	6.54	6.24	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.536	4.036	3.336	2.236	-	-	2.236	-	-
Pot Cap-1 Maneuver	221	241	627	223	245	571	1124	-	-	1045	-	-
Stage 1	602	582	-	510	508	-	-	-	-	-	-	-
Stage 2	502	500	-	597	581	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	211	231	627	211	234	571	1124	-	-	1045	-	-
Mov Cap-2 Maneuver	211	231	-	211	234	-	-	-	-	-	-	-
Stage 1	578	580	-	490	488	-	-	-	-	-	-	-
Stage 2	475	480	-	582	579	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	18.6		19.1		0.5		0	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1124	-	-	296	211	571	1045	-	-
HCM Lane V/C Ratio	0.028	-	-	0.103	0.067	0.013	0.002	-	-
HCM Control Delay (s)	8.3	0	-	18.6	23.3	11.4	8.5	0	-
HCM Lane LOS	A	A	-	C	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.2	0	0	-	-

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	8	0	16	23	0	6	27	280	27	8	442	26
Future Vol, veh/h	8	0	16	23	0	6	27	280	27	8	442	26
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	-	-	-	-	-	0	-	-	350	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	6	6	6	6	6	6	6	6	6	6	6	6
Mvmt Flow	10	0	20	29	0	8	34	354	34	10	559	33

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1039	1052	576	1028	1034	354	592	0	0	388	0	0
Stage 1	596	596	-	422	422	-	-	-	-	-	-	-
Stage 2	443	456	-	606	612	-	-	-	-	-	-	-
Critical Hdwy	7.16	6.56	6.26	7.16	6.56	6.26	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.16	5.56	-	6.16	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.16	5.56	-	6.16	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.554	4.054	3.354	3.554	4.054	3.354	2.254	-	-	2.254	-	-
Pot Cap-1 Maneuver	205	223	509	209	228	681	964	-	-	1149	-	-
Stage 1	483	486	-	602	581	-	-	-	-	-	-	-
Stage 2	586	561	-	477	478	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	194	210	509	192	215	681	964	-	-	1149	-	-
Mov Cap-2 Maneuver	194	210	-	192	215	-	-	-	-	-	-	-
Stage 1	461	480	-	575	555	-	-	-	-	-	-	-
Stage 2	553	536	-	452	472	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	17		23.6		0.7		0.1	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	964	-	-	330	192	681	1149	-	-
HCM Lane V/C Ratio	0.035	-	-	0.092	0.152	0.011	0.009	-	-
HCM Control Delay (s)	8.9	0	-	17	27.1	10.3	8.2	0	-
HCM Lane LOS	A	A	-	C	D	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.5	0	0	-	-

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕		↕	
Traffic Vol, veh/h	15	1	12	27	0	11	29	455	28	6	385	6
Future Vol, veh/h	15	1	12	27	0	11	29	455	28	6	385	6
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	-	-	-	-	-	0	-	-	350	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	16	1	13	29	0	12	32	495	30	7	418	7

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1016	1025	422	1002	998	495	425	0	0	525	0	0
Stage 1	436	436	-	559	559	-	-	-	-	-	-	-
Stage 2	580	589	-	443	439	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.14	6.54	6.24	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.536	4.036	3.336	2.236	-	-	2.236	-	-
Pot Cap-1 Maneuver	215	233	627	219	242	571	1124	-	-	1032	-	-
Stage 1	595	576	-	510	508	-	-	-	-	-	-	-
Stage 2	497	492	-	590	575	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	203	222	627	206	230	571	1124	-	-	1032	-	-
Mov Cap-2 Maneuver	203	222	-	206	230	-	-	-	-	-	-	-
Stage 1	571	571	-	490	488	-	-	-	-	-	-	-
Stage 2	467	472	-	571	570	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	19		21.3		0.5		0.1	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1124	-	-	287	206	571	1032	-	-
HCM Lane V/C Ratio	0.028	-	-	0.106	0.142	0.021	0.006	-	-
HCM Control Delay (s)	8.3	0	-	19	25.4	11.4	8.5	0	-
HCM Lane LOS	A	A	-	C	D	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.5	0.1	0	-	-

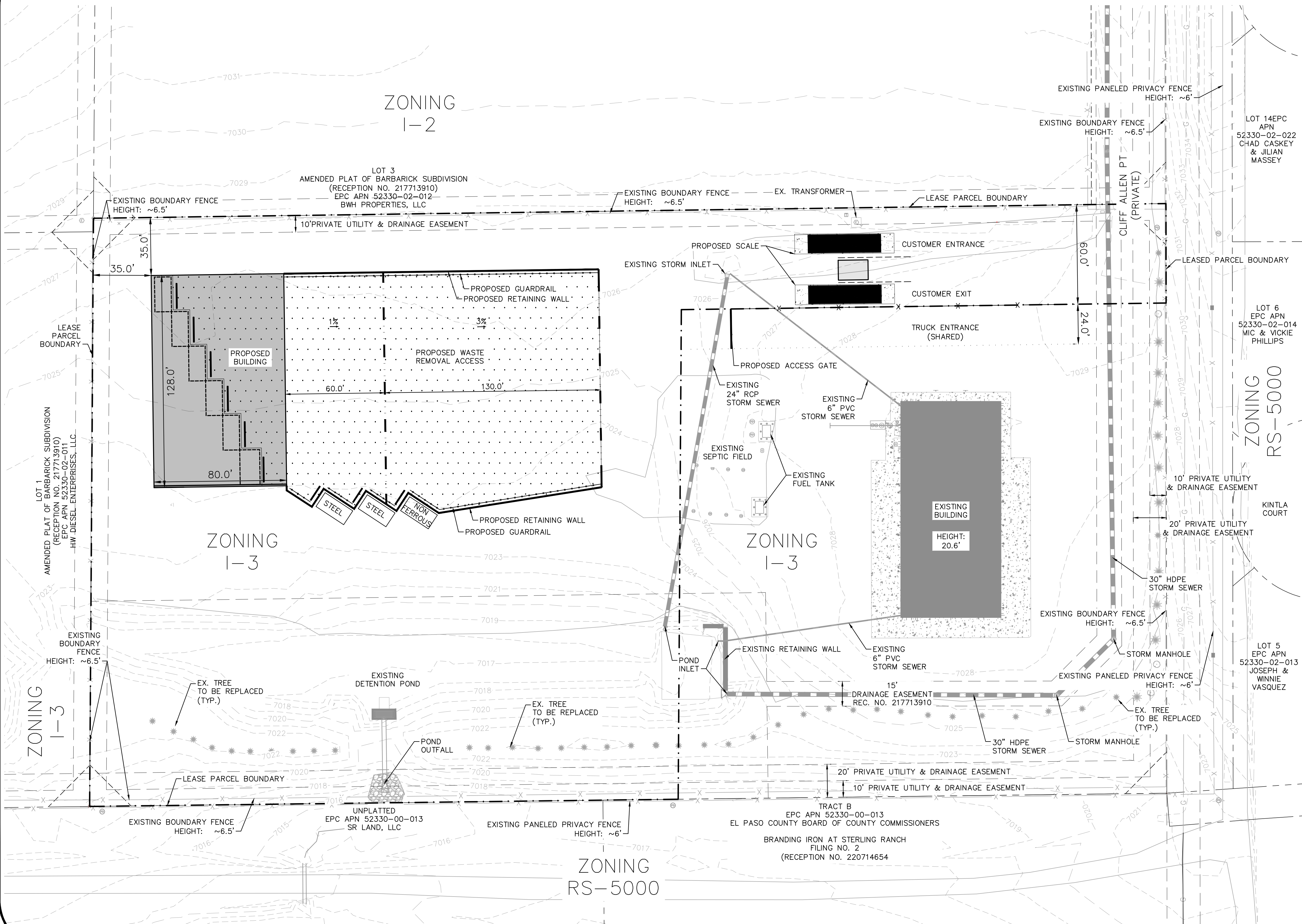


# APPENDIX D

## Conceptual Site Plan

# BARBARICK WASTE TRANSFER STATION

## SITE PLAN EXHIBIT



- ### LEGEND
- EXISTING GRAVEL ROAD
  - EXISTING CONTOUR (MAJOR)
  - EXISTING CONTOUR (MINOR)
  - EXISTING BARRIER FENCE
  - STORM SEWER
  - SANITARY SEWER (SEPTIC)
  - WATER MAIN
  - GAS MAIN
  - EXISTING VEGETATION
  - EXISTING BUILDING COLUMN
  - PROPERTY LINE
  - PRIVATE UTILITY & DRAINAGE EASEMENT
  - PROPOSED RETAINING WALL
  - LEASE PARCEL BOUNDARY
  - TRUCK ENTRANCE (SHARED)

### OWNER/APPLICANT

BR 8812 CLIFF ALLEN POINT LLC  
 ATTN: RICHARD GRAHAM  
 EMAIL: GRAHAMINVESTMENTS@GMAIL.COM  
 PHONE: 719-440-9414

### LEASE PARCEL INFORMATION

PARCEL SIZE: 3.297 ACRES (143,638 S.F.)  
 ZONING: I-3 (HEAVY INDUSTRIAL)  
 EXISTING LAND USE: DIESEL MECHANIC SHOP / STORAGE YARD (LARGE VEHICLES, FREIGHT CONTAINERS, ETC.)

EXISTING SITE COVERAGE: GRAVEL/ASPHALT MILLINGS AND NATURAL PASTURE/MEADOW VEGETATIVE COVER WITHIN THE EXISTING DETENTION POND EASEMENT (RECEPTION NO. 217713910)

LANDSCAPING / OPEN SPACE: ~30% (44,001 S.F. OR 1.01 ACRES)  
 LOT COVERAGE (BUILDING & ACCESS): ~25% (36,461 S.F.)

