



MEMORANDUM

To: Board of Trustees, Village of Croton-on-Hudson
From: Swans Engineering, PLLC
Date: November 12, 2023
RE: Viridian Valley Dispensary
Adult-Use Retail Dispensary License Application
Traffic and Parking Assessment

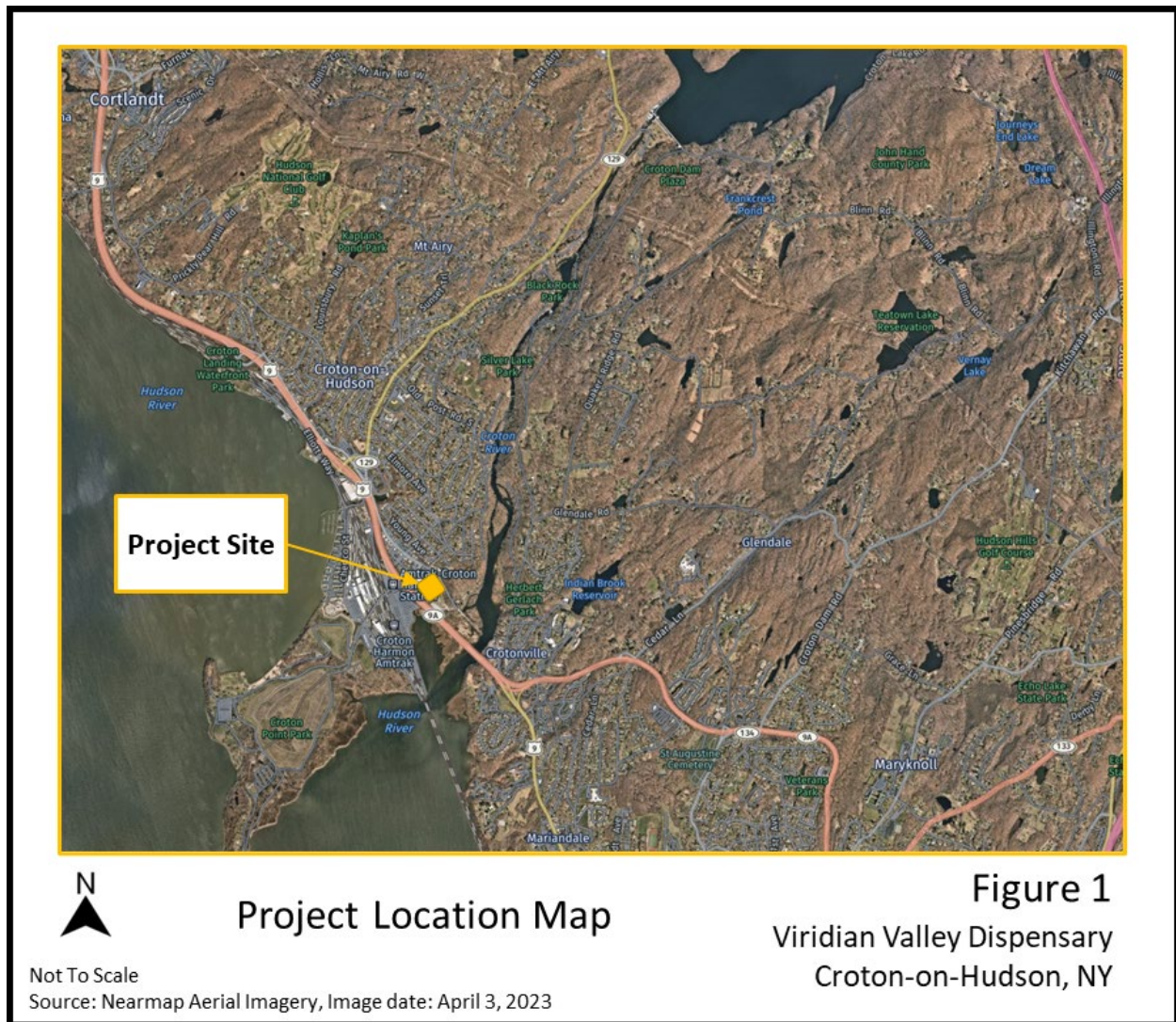
SUMMARY

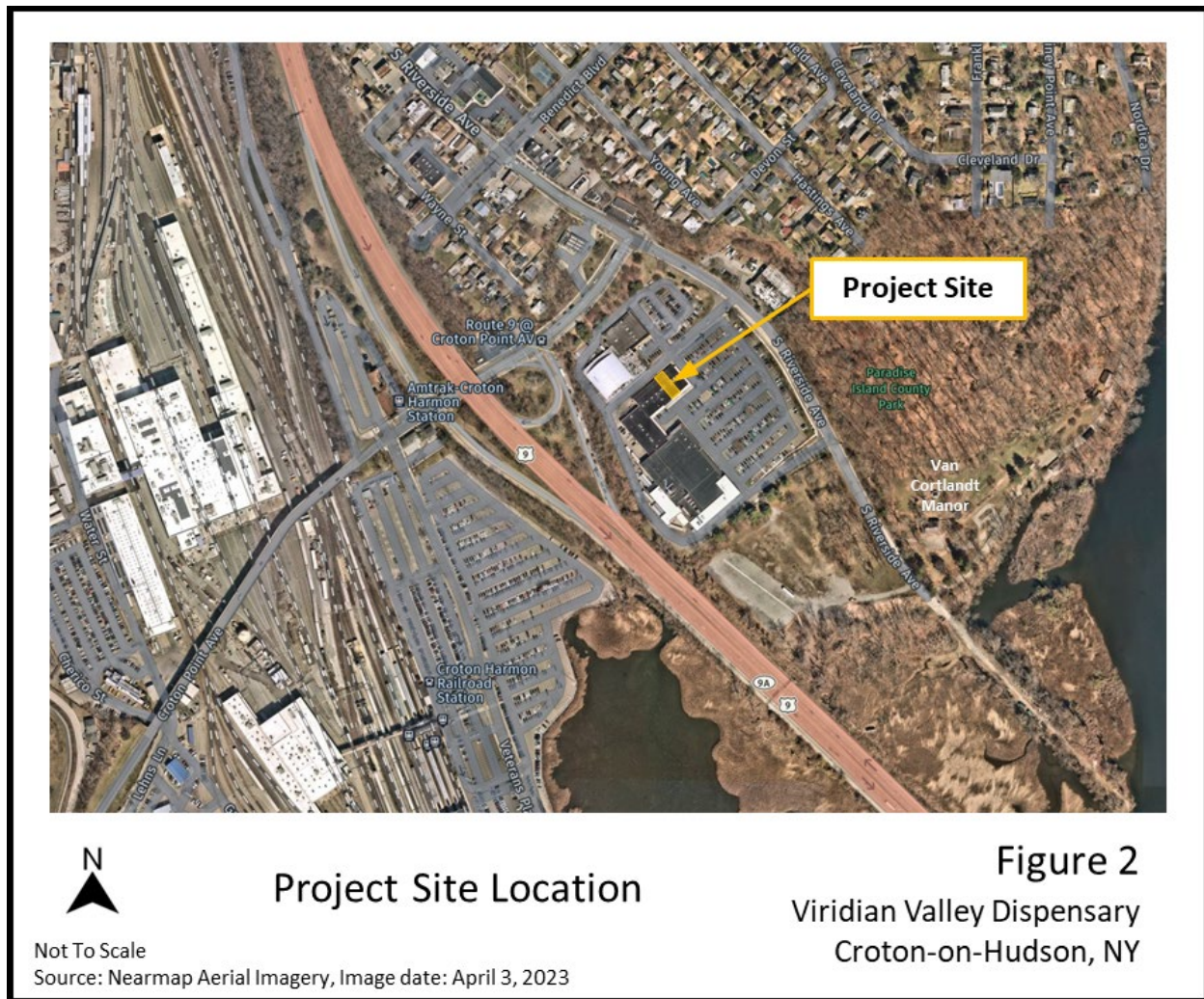
Viridian Valley has retained Swans Engineering, PLLC to perform an assessment of the potential traffic and parking impacts associated with the proposed Viridian Valley Dispensary ("Proposed Project") located at 440 S Riverside Avenue, Croton-on-Hudson, NY, 10520 ("Project Site"). The intent of this assessment is to provide traffic and parking information to the Croton-on-Hudson Board of Trustees related to the adult-use retail dispensary license application and subsequent draft letter to the Office of Cannabis Management expressing the Village's position as to the proposed location. This assessment qualifies existing traffic operations in the vicinity of the Project Site, studies parking occupancy, quantifies projected trips related to normal dispensary operations and the removal of the laundry facility currently operating in the space, and assesses potential impacts to traffic. This memorandum provides a description of the assessment methodology, evaluation, and findings.

For the reasons detailed in this memorandum, the Proposed Project is not anticipated to have a significant adverse impact on the traffic operations of the surrounding roadway network nor on parking availability within the 440-460 S Riverside Avenue parking lot. The parking lot and street network have available capacity to accommodate the projected vehicle trips and parking demand for the Proposed Project.

PROJECT DESCRIPTION

The Proposed Project will consist of a 1,900 square foot (sf) cannabis dispensary in a unit within a shopping plaza at the Project Site, 440 S Riverside Avenue, Croton-on-Hudson, NY. The Proposed Project would replace an existing full-service laundry facility ("Existing Use") within the shopping plaza. No infrastructure modifications outside of the building are expected with the Proposed Project. **Figures 1 and 2** present the project location and site location. Based on information provided by Viridian Valley, the Proposed Project expects to operate from 10:00 AM to 10:00 PM, seven days a week, with the possibility of closing earlier on Sundays. It is anticipated that the dispensary will have approximately seven employees working at a time.





EXISTING CONDITIONS

Project Site

The Proposed Project will be located within a shopping plaza at 440 S Riverside Avenue, as seen in **Figure 3**. The plaza includes three separate building numbers, 420, 440 and 460 S Riverside Avenue. The shopping plaza is accessed by two driveways, the North Driveway between 420 and 440 S Riverside Avenue and the South Driveway at the southernmost end of the plaza. These driveways are two-lane (one in each direction) and stop controlled at S Riverside Avenue. S Riverside Avenue is uncontrolled at these locations. Land use in the vicinity of the Project Site is primarily commercial-retail and historic; Van Cortlandt Manor to the south of the Project Site is a National Historic Landmark.



420 S Riverside Avenue is situated on the north end of the plaza, with various businesses including a gym, health services facilities, UPS store, salon, pet groomer and dance studio. It has an associated parking lot with 80 spaces that is signed for use by visitors to that building only. Eight spaces are Americans with Disabilities Act (ADA) accessible and four are signed for 15-minute parking. The remaining 68 spaces are general use for the building.

440 and 460 S Riverside Avenue are south of 420 S Riverside Avenue on the south side of the North Driveway and share a parking lot. The businesses within 440 S Riverside Avenue include two restaurants, laundromat, health services facilities, salon, cellular store, and liquor store. A Shop Rite grocery store is located within 460 S Riverside Avenue. The 440/460 S Riverside Avenue parking lot has 365 parking spaces. 16 spaces are ADA accessible and six are designated as Shop Rite Pickup Spaces. The remaining 343 spaces are for general use of the two buildings and are signed as such. Pedestrians can access the shopping plaza via a sidewalk along S Riverside Ave and along the South Driveway. The nearest Bus Stop is on Croton Point Avenue.

It is noted that the Great Jack O’Lantern Blaze (“Blaze”) operates various weekday and weekend nights for approximately one month around Halloween each year and is hosted in Van Cortlandt Manor, to the south of the shopping plaza. Parking for the Blaze is located south of the shopping plaza. Visitors use the South Driveway in the shopping plaza to access the event parking but are not allowed to park within the shopping plaza lots.

S Riverside Avenue

S Riverside Avenue, in the vicinity of the Project Site, is a north-south four-lane (two in each direction) minor arterial that begins south of the shopping plaza at Van Cortlandt Park, joins with Route 9A at Croton Point Avenue, and continues north approximately one mile north to Brook Street where it becomes N Riverside Avenue. It has a posted speed limit of 30 miles per hour. In the vicinity of the Project Site, there is a sidewalk on the east side of S Riverside Avenue, between Croton Point Avenue and the North Driveway. At the North Driveway there is an uncontrolled crosswalk across S Riverside Avenue and the sidewalk then continues south along the west side of S Riverside Avenue until it reaches the sidewalk along the South Driveway into the shopping plaza. S Riverside Avenue intersects Croton Point Avenue at a signalized intersection with an approximate field-measured cycle length of 70 seconds, pedestrian pushbuttons and crosswalks on the south and west leg. Field observations during a weekday PM Peak period and a Saturday Midday Peak period indicated that the intersection typically operates below capacity.

Estimated volume data for 2019 (the most recent year available) was obtained for S Riverside Avenue 875 feet to the south of Croton Point Avenue, between the North and South Driveways from the New York State Department of Transportation (NYSDOT) Traffic Data Viewer (TDV) and is presented in **Table 1**. Observations at the Project Site indicated that the North Driveway may be more heavily used than the South Driveway, and therefore volume between the North Driveway and Croton Point Avenue are likely higher for that segment of S Riverside Avenue. Estimated volume data for the segment between Croton Point Avenue and Maple Street (approximately 0.5 miles north of Croton Point Avenue) was also available and is presented in **Table 2**.

Table 1: NYSDOT 2019 Estimated Traffic Data for S Riverside Avenue between Croton Point Ave and Van Cortlandt Manor

	2019 Estimated Volumes
Average Annual Daily Traffic (AADT)	779
Design Hourly Volume (DHV)	100
Directional Design Hourly Volume (DDHV)	66
AM Peak Hour (vph*)	46
Midday Peak Hour (vph)	61
PM Peak Hour (vph)	110

* vehicles per hour (vph)

Table 2: NYSDOT 2019 Estimated Traffic Data for S Riverside Avenue/Route 9A between Croton Point Ave and Maple St

	2019 Estimated Volumes
Average Annual Daily Traffic (AADT)	7,713
Design Hourly Volume (DHV)	615
Directional Design Hourly Volume (DDHV)	383
AM Peak Hour (vph*)	502
Midday Peak Hour (vph)	557
PM Peak Hour (vph)	712

* vehicles per hour (vph)

Croton Point Avenue

Croton Point Avenue is a four lane (two in each direction) east-west minor arterial that begins at the intersection with S Riverside Avenue and continues west to Croton Point Park. It provides a connection to NY Route 9/9A via on- and off-ramps and also the Croton-Harmon Metro-North Station via Veterans Plaza. The roadway is signed with a 30 mile per hour speed limit, has one bus stop for the Bee-Line Bus, and has on-street bike lanes and sidewalks on each side. Estimated volume data is available for Croton Point Avenue, between S Riverside Avenue and East End Bridge over the railroad from the NYSDOT TDV and is presented in **Table 3**.

Table 3: NYSDOT 2019 Estimated Traffic Data for Croton Point Avenue

	2019 Estimated Volumes
Average Annual Daily Traffic (AADT)	14,238
Design Hourly Volume (DHV)	1,161
Directional Design Hourly Volume (DDHV)	826
AM Peak Hour (vph*)	768
Midday Peak Hour (vph)	790
PM Peak Hour (vph)	1,182

* vehicles per hour (vph)

FIELD OBSERVATIONS AND DATA COLLECTION

Traffic and parking field observations were made on Saturday November 4, 2023 from 11:00 AM to 3:00 PM, during a typical Saturday midday peak period. Observations were also made on Tuesday November 7, 2023 from 3:30 PM to 6:30 PM during a typical weekday PM Peak Period.

Given the timeframe available to collect observations and data with respect to application deadlines, and the need to avoid collecting data days and times when the Blaze was open, it was decided to collect weekday data on November 7th, Election Day. It is not anticipated that traffic volumes and patterns differed significantly from typical operation in the vicinity of the Project Site during these observations; there is no polling location near the Project Site, and the roadway serves only businesses and Van Cortlandt Manor south of Croton Point Avenue.

TRAFFIC OBSERVATIONS

Traffic along S Riverside Avenue in the vicinity of the project was qualitatively observed during a Weekday PM Peak Period (3:30 PM to 6:30 PM) and Saturday Midday Peak Period (11:00 AM to 3:00 PM). Traffic volumes were generally low and the roadway was observed to operate well below capacity. There is no through traffic on S Riverside Avenue from Croton Point Avenue south to Van Cortlandt Manor and that portion of the roadway only serves a business driveway at the intersection, the shopping plaza, two businesses across the street from the shopping plaza and Van Cortlandt Manor. The signalized intersection of S Riverside Avenue and Croton Point Avenue was observed during the observation periods and typically operated below capacity. The signal has an estimated 70 second cycle with two phases, approximately 40 seconds for the north/south S Riverside Avenue phase, and 30 seconds for the Croton Point Avenue phase. Any observed queuing at the intersection during a red phase was able to clear the intersection during the green phase. Pedestrian volumes were generally observed to be low, with volumes higher closer to Croton Point Avenue and the Metro North Croton-Harmon Station. Bicycles were occasionally present on Croton Point Avenue, and tended to platoon, likely coinciding with trains unloading passengers.

EXISTING PARKING OCCUPANCY DATA COLLECTION

Hourly parking occupancy data was collected during a Weekday PM Peak Period (3:30 PM to 6:30 PM) (See **Table 4**) and Saturday Midday Peak Period (11:00 AM to 3:00 PM) (See **Table 5**). The number of parking spaces occupied were recorded hourly during these periods to determine the parking peak hour during the collection period, as well as to develop an average parking availability for the peak period. It is assumed that 359 spaces total (365 total spaces minus 6 assigned Shop Rite Pickup spaces) are available for all patrons of the 440-460 S Riverside Avenue shopping plaza businesses. Parking availability for the adjacent lot, at 420 S Riverside Avenue was not considered in this assessment, since it is signed for use only by visitors to 420 S Riverside Avenue.

Weekday PM Peak Period

The Weekday PM Peak Hour was observed to be 3:30 PM – 4:30 PM with a parking occupancy of 59 percent, which leaves 146 total spaces available for additional parking. The average parking occupancy during the Weekday PM Peak Period was 53 percent, with 169 spaces available.

Table 4: Observed Parking Occupancy - Weekday PM Peak Period (359 Total Spaces*)

Time Period	Spaces Occupied	Spaces Available	Percent Spaces Occupied	Percent Spaces Available
3:30 PM - 4:30 PM	213	146	59%	41%
4:30 PM – 5:30 PM	188	171	52%	48%
5:30 PM – 6:30 PM	168	191	47%	53%
Average	190	169	53%	47%

*Total Spaces do not include 6 Shop Rite Order Pickup Spaces

Saturday Midday Peak Period

The Saturday Midday Peak Hour was observed to be 12:00 PM – 1:00 PM with a parking occupancy of 61 percent, which leaves 141 total spaces available for additional parking. The average parking occupancy during the Saturday Midday Peak Period was 57 percent, with 154 spaces available.

Table 5: Observed Parking Occupancy - Saturday Midday Peak Period (359 Total Spaces*)

Time Period	Spaces Occupied	Spaces Available	Percent Spaces Occupied	Percent Spaces Available
11:00 AM - 12:00 PM	205	154	57%	43%
12:00 PM – 1:00 PM	218	141	61%	39%
1:00 PM – 2:00 PM	200	159	56%	44%
2:00 PM – 3:00 PM	198	161	55%	45%
Average	205	154	57%	43%

*Total Spaces do not include 6 Shop Rite Order Pickup Spaces

PROJECT GENERATED TRAFFIC

The Proposed Project consists of a cannabis dispensary in a shopping plaza at 440 S Riverside Avenue in Croton-On-Hudson, NY where an existing laundromat currently operates. **Figure 2** presents the location of the Proposed Project, parking lot and surrounding roadways. Based on information provided by Viridian Valley, the dispensary will be 1,900 sf with operating hours from 10:00 AM to 10:00 PM, seven days per week, with the possibility of closing early on Sundays. It is expected that approximately seven employees will be working on site at a time. Projected trip generation rates were developed using Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, a widely utilized reference source that provides average trip generation rates for various uses based on data collected throughout the country. The ITE Trip Generation Manual contains the use “Marijuana Dispensary”, Land Use Code (LUC) 882, which was used for this assessment. Projected Project generated vehicle trip rates for the Weekday PM and Saturday Midday Peak Hour of the generator can be found in **Table 6** below:

Table 6: Projected Project Generated Trip Generation Rates (LUC 882)

	Vehicle Trips per 1,000 sf GFA ^{1,2}	Project Vehicle Trips (1,900 sf GFA ¹)	Directional Distribution		Trips	
			In	Out	In	Out
Weekday Daily Trips	211	401	50%	50%	201	200
Saturday Daily Trips	259	493	50%	50%	246	247
Weekday PM Peak Hour of the Generator	25	47	49%	51%	23	24
Saturday Peak Hour of the Generator	29	55	50%	50%	27	28

(1) Gross Floor Area (GFA)

(2) Based on ITE Trip Generation Manual 11th Edition

Based on the projections presented above, the Proposed Project would generate 23 trips into the site and 24 trips out of the site, during the PM Peak Hour of the dispensary. The Proposed Project would generate 27 trips into the site and 28 trips out of the site during the Saturday Peak Hour of the dispensary.

Within shopping plazas, it is common for there to be an interaction between businesses within the plaza, which would reduce the sum of total trips to the site, called “internal trip capture.” While there may be some internal trip capture available for the Proposed Project (e.g. visiting the Proposed Use and then Shop

Rite in one trip to the shopping plaza), to be conservative, no deductions to total trips were made for internal capture in this assessment. Similarly, there were no assumed pass-by-trips. Given that the Project Site is located on a road that ends just to the south of the shopping plaza, it is unlikely that there would be pass-by trips.

The Proposed Project will be replacing the Existing Use, the full-service laundry facility. The projected net change in trips to the shopping plaza would be determined by both the decrease in trips related to the removal of the Existing Use, and the increase in trips associated with the Proposed Project.

For example, if the Existing Use currently generates five trips in and five trips out (10 trips total) during the Weekday PM Peak period, the net increase in total trips to the Project Site as a result of the Proposed Project would be 37 total trips (18 in and 19 out):

	<i>In</i>	<i>Out</i>	<i>Total</i>
<i>Existing Use</i>	-5	-5	-10
<i>Proposed Use</i>	+23	+24	+47
<i>Net Increase</i>	+18	+19	+37

Because the ITE Trip Generation Manual does not include trip generation rates for a full-service laundry facility, this assessment conservatively does not take into account the decrease in trips due to the removal of the Existing Use. If trips related to the Existing Use were included in the assessment, the net increase in trips would be *lower* than what is presented here.

TRAFFIC AND PARKING ASSESSMENT

Traffic Assessment

Expected vehicle trips due to the Proposed Project would be 47 vehicles per hour (vph) (23 in and 24 out) during the PM Peak Hour and 55 vph (27 in, 28 out) during the Saturday Midday Peak Hour. As described above, a reduction in trips related to the removal of the Existing Use was not included in this assessment, and if it had, the net increase in trips would be lower than what is being reported here. These rates approximately equate to less than one vehicle per minute total, or less than one vehicle every two minutes per direction. The traffic signal at S Riverside Avenue and Croton Point Avenue was observed during both a Saturday Midday Peak Period and a Weekday PM Peak Period as described above. The cycle length was estimated to be approximately 70 seconds with 40 seconds allotted to the S Riverside Avenue approach, and 30 seconds allotted to the Croton Point Avenue approach. The signal was observed to operate below capacity during these periods. A 70 second cycle length equates to approximately 51.4 signal cycles per hour. Applying the net peak hour trips to the signal would result in approximately one additional vehicle every cycle for both the PM Peak Hour and Saturday Midday Peak Hours. This minor increase in traffic is not expected to result in a significant impact on traffic operations at the signal or on the surrounding roadways.

Parking Assessment

As discussed above, and seen in **Figure 3**, there were 146 parking spaces, 41 percent of the 359 total spaces, available in the 440-460 S Riverside Avenue lot during the Weekday PM Peak hour of parking. There were 141 spaces, 39 percent of the total, available during the Saturday Midday Peak Hour of parking. It is assumed that parking for 440-460 S Riverside Avenue is contained entirely within the 440-460 S Riverside Parking Lot, and parking for 420 S Riverside Avenue is contained entirely within the 420 S Riverside Parking Lot. Based on information provided by Viridian Valley, it is anticipated that there will be seven employees working at any time during the day. While there may be employee parking available at the rear

of the shopping plaza, it is conservatively assumed that the employees would park in the main lot. Viridian Valley also provided information related to dispensary patrons; customers are expected to spend anywhere from five to 15 minutes in the store. For the purposes of this assessment, it is assumed that customers arrive at a steady rate and spend 15 minutes on site.

Table 7 presents projected parking occupancy and **Table 8** presents projected parking availability for the 440-460 S Riverside Avenue parking lot with the Proposed Project. Of note, parking data for the Existing Use was not included in this study, so increased parking availability due to the removal of the laundromat was not included as part of the parking assessment. The parking demand is calculated in two parts, employees and customers. Because the Proposed project expects to have seven employees on site during business hours, it is assumed that each employee would require a parking space, so seven total parking spaces would be occupied by employees. Assuming customers arrive at a steady rate during the peak hour, remain for fifteen minutes, and then leave at a steady rate, each parking space occupied by a customer would be occupied for 15 minutes out of the hour, leaving that parking space vacant for other use during the other 45 minutes. This means with 23 customers arriving during the Weekday PM Peak Hour and 28 customers arriving during the Saturday Midday Peak Hour, only one quarter of total hourly customers (six and eight, respectively) would be occupying a space at any given time. The customer totals were added to the employee totals to determine total required parking spaces in the peak hours. Parking required by the Proposed Project would be 13 spaces during the PM Peak Hour and 14 spaces during the Saturday Peak Hours, less than four percent of total spaces within the lot. Under future conditions, parking occupancy would increase by 13 spaces in the Weekday PM Peak Hour, from 213 to 226 occupied spaces, and would increase by 14 spaces in the Saturday Midday Peak Hour, from 218 to 232 occupied spaces. This would result in a total parking availability of 37 percent during the Weekday PM Peak Hour and 35 percent during the Saturday Midday Peak Hour.

Table 7: Projected Parking Occupancy with the Proposed Project

	Existing Occupied Spaces	Projected Project Demand			Projected Occupied Spaces
		Employees	Customers	Total	
Weekday PM Peak Hour	213	+7	+6	+13	226
Saturday Midday Peak Hour	218	+7	+7	+14	232

Table 8: Projected Parking Availability with the Proposed Project

	Existing Spaces Available	Future Spaces Available	Existing Percent Spaces Available*	Projected Percent Spaces Available*
Weekday PM Peak Hour	146	133	41%	37%
Saturday Midday Peak Hour	141	127	39%	35%

*Based on 359 total spaces (Total spaces do not include 6 Stop and Shop Order Pickup Spaces)

It should be noted that the ITE Parking Generation Manual, 6th Edition, provides parking demand information for LUC 882. According to ITE, the average parking supply ratio for 11 study sites is 10 spaces per 1,000 sf GFA with an average peak parking occupancy of 55 percent. Applying these values to the Proposed Project would result in 19 parking spaces for the Proposed Project, with an average peak parking occupancy of 10 to 11 vehicles, all of which could be accommodated by existing available parking within the 440-460 S Riverside Avenue lot.

Based on the parking occupancy assessment described above, Proposed Project parking would be accommodated by the 440-460 S Riverside Avenue lot without a significant impact on parking availability for other businesses within the plaza.

VARIABILITY DISCUSSION

It has been noted that cannabis dispensaries may experience a temporary increase in vehicle trips and parking demand when they first open, compared to normal operation. This has generally been attributed to the historical lack of existing dispensaries in a region and the novelty of the legalization of cannabis, as well as driven by brand recognition. This assessment does not seek to quantify these temporary traffic conditions; it only considers average vehicle and parking trips that can be expected during normal dispensary operations.

Discussions have been held with Viridian Valley, which is a new standalone business with no current stores or brand recognition, and they are aware of the potential for a temporary increase in vehicle trips and parking. They are willing to work with the Village of Croton-on-Hudson and the shopping plaza landlord to develop traffic and parking mitigation strategies to utilize in the event that significant impacts are expected or experienced on the surrounding roadway network or within the parking lot at 440-460 S Riverside Avenue. Options considered may include implementing delivery service or establishing a shuttle service to a separate lot, as needed. Details and time frame of implementations of these or other options would be discussed and agreed upon between Viridian Valley and the Village prior to the business opening.

CONCLUSION

Based on the observations, analysis, and discussions above, the Proposed Project would generate an additional 47 to 55 total vehicle trips per hour during the Weekday PM and Saturday Midday Peak Hours, less than one additional vehicle per minute. Parking availability at 440-460 S Riverside Avenue with the Proposed Project in place, would be between 35 and 37 percent during the peak hours. It is expected that normal Proposed Project operations would not significantly impact the surrounding network nor the parking lot.