TRAFFIC IMPACT STUDY

For

DUNKIN'

ABDD V. LLC
Proposed Dunkin' Drive-Thru Restaurant

Property Located at:

195 Godwin Avenue (CR 84)
Block 20.10 – Lot 5.01
Borough of Midland Park, Bergen County, NJ

Prepared by:

DYNAMIC TRAFFIC

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November 2, 2020
Revised: April 5, 2021

3486-99-001T

CGH

INTRODUCTION

It is proposed to construct a 2,173 SF Dunkin' restaurant with drive-through (The Project) on a parcel of land currently developed with a vacated Friendly's restaurant, located along the west side of Godwin Avenue (CR 84) between Princeton Avenue and Cross Avenue in the Borough of Midland Park, Bergen County, New Jersey, see Figure 1, in Appendix A. The site is designated as Block 20.10 – Lot 5.01 on the Borough Tax Maps. Access to the site is currently provided via one (1) full movement driveway along Godwin Avenue. It is proposed to close the existing access point and construct one (1) ingress only driveway and one (1) egress only driveway along Godwin Avenue. Parking will be provided via twelve (12) on-site parking spaces.

Dynamic Traffic, LLC has been retained to prepare this study to assess the traffic impact associated with the construction of The Project on the adjacent roadway network. This study documents the methodology, analyses, findings and conclusions of our study and includes:

- A detailed field inspection was conducted to obtain an inventory of existing roadway geometry, traffic control, and location and geometry of existing driveways and intersections.

- Existing traffic data was collected via manual turning movement (MTM) counts during the weekday AM, weekday PM and Saturday Midday peak periods at the intersections of Godwin Avenue with the north Salon ID driveway and Godwin Avenue with the south Salon ID driveway/Friendly's driveway.

- Projections of traffic to be generated by The Project were prepared utilizing trip generation data as published by the Institute of Transportation Engineers. Site traffic was then assigned to the adjacent street system based upon the anticipated directional distribution.

- Capacity analyses were conducted for the Existing, No Build, and Build conditions for the study intersections and the site driveways.

- The proposed site driveways were inspected for adequacy of geometric design, spacing and/or alignment to streets and driveways on the opposite side of the street, relationship to other driveways adjacent to the development, and conformance with accepted design standards.

- The parking layout and supply was assessed based on accepted design standards and demand experienced at similar developments.

EXISTING CONDITIONS

A review of the existing roadway conditions near the proposed site was conducted to provide the basis for assessing the traffic impact of the development. This included field investigations of the surrounding roadways and intersections, collection of traffic volume data, and extensive analyses.

Existing Roadway Conditions

The following are descriptions of the roadways in the study area:

Godwin Avenue (CR 84) is an Urban Principal Arterial roadway under the jurisdiction of Bergen County. In the vicinity of the site the posted speed limit is 30 MPH and the roadway provides one travel lane in each direction with a general north/south orientation. On-street parking is permitted along portions of both sides of the roadway while curb and sidewalk is provided along both sides of the roadway. Godwin Avenue provides a straight horizontal alignment and an uphill vertical alignment from south to north. The land uses along Godwin Avenue in the vicinity of The Project are primarily commercial.

Existing Traffic Volumes

Manual turning movement (MTM) counts were originally conducted on Wednesday, October 21, 2020 between 7:00 – 9:00 AM and on Saturday, October 24, 2020 between 11:00 AM – 2:00 PM at the intersections of Godwin Avenue with the north Salon ID driveway and Godwin Avenue with the south Salon ID driveway/Friendly's driveway. Supplemental MTM counts were conducted on Tuesday, March 16, 2021 between 4:30 – 6:30 PM at the same locations. In addition, automatic traffic recorder (ATR) counts were conducted along Godwin Avenue south of Erie Avenue from Wednesday, October 21, 2020 to Saturday, October 24, 2020 for purposes of normalizing the MTM count data.

It should be noted that traffic impacts associated with the COVID-19 pandemic were in effect as of the time of the traffic counts. As a result, current traffic volumes on the surrounding roadways are atypically low at this time and would not be representative of "existing" traffic conditions. Therefore, historical traffic volume data has been reviewed and compared with current traffic conditions.

ATR counts were previously conducted by this firm in October 2016 to the south of Erie Avenue. In order to better represent 2020 traffic volumes, the 2016 ATR volumes during the studied peak periods were grown utilizing an annual growth rate contained within the NJDOT Annual Background Growth Rate Table, which indicates a growth rate of 1.5% per year, for a period of four (4) years. The ATR traffic volumes representative of "existing" conditions were then compared to the October 2020 ATR volumes. Adjustment factors of 1.42, 1.29 and 1.22 were then calculated and applied to the weekday morning, weekday evening and Saturday midday counts, respectively, to develop traffic volumes that best represent "existing" conditions at the study intersections.

Review of the collected traffic data reveals that the weekday morning peak street hour (PSH) occurs between 7:45 – 8:45 AM, the weekday evening PSH occurs between 4:45 – 5:45 PM and the Saturday midday PSH occurs between 11:30 AM – 12:30 PM. Figure 2, located in Appendix A, shows the existing peak hour traffic volumes at the study intersections. All MTM and ATR counts are contained in Appendix B.

Existing Capacity Analysis

The methodology utilized in the capacity analyses is described in the *Highway Capacity Manual 2010*, published by the Transportation Research Board. In general, the term Level of Service (LOS) is used to provide a "qualitative" evaluation of capacity based upon certain "quantitative" calculations related to empirical values, such as traffic volume and intersection control.

An unsignalized (STOP sign controlled) driveway or side street along a through route is seldom critical from an overall capacity standpoint, however, it may be of great significance to the capacity of the minor cross-route, and it may influence the quality of traffic flow on both. When analyzing an unsignalized intersection, it is assumed that both the major street through and right turn movements are unimpeded and have the right-of-way over all side street traffic and left turns from the major street. All other turning movements in the intersection cross, merge with, or are otherwise impeded by major street movements. Traffic delays at unsignalized intersections are determined by sequentially processing these impeded movements. Table I describes the Level of Service ranges for unsignalized (stop controlled) intersections.

Table I
Level of Service Criteria
for Unsignalized Intersections

Level of Service	Average Control Delay (seconds per vehicle)
A	0.0 to 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	greater than 50.0

It should be noted that the analyses within the *Highway Capacity Manual* assume a random arrival for all the movements, which may not be the case if an adjacent traffic signal is present that platoons vehicles.

All capacity analyses were performed utilizing the Synchro software package (Synchro 11). Table II summarizes the existing Levels of Service (LOS) and delays. All capacity analysis calculation worksheets are contained in Appendix C.

Table III
Existing Levels of Service

Intersection	Direction/ Movement		AM PSH	PM PSH	SAT PSH
Godwin Avenue and North Salon Driveway	WB	LR	B (14)	C (21)	B (15)
	SB	LT	A (9)	A (9)	A (9)
Godwin Avenue and South Salon Driveway/Friendly's Driveway	EB	LTR	-	-	-
	WB	LTR	C (20)	C (25)	C (15)
	NB	LTR	-	-	-
	SB	LTR	A (9)	A (9)	A (9)

A (#) - Unsignalized Intersection Level of Service (seconds of delay per vehicle)

The following are discussions pertaining to each of the existing intersections analyzed. All capacity analysis calculation worksheets are contained in Appendix C.

Godwin Avenue and North Salon Driveway

The north salon driveway intersects Godwin Avenue to form an unsignalized T-intersection with the salon driveway under stop control. The northbound and southbound approaches of Godwin Avenue provide a shared through/right turn lane and a shared left turn/through lane, respectively. The westbound approach of the salon driveway provides a single lane for left and right turns.

A review of the existing analysis reveals that the individual intersection movements operate at Level of Service "C" or better during the analyzed peak periods. See Table II for the individual movement Levels of Service and delays.

Godwin Avenue and South Salon Driveway/Friendly's Driveway

The south salon driveway/Friendly's driveway intersects Godwin Avenue to form an unsignalized four-leg intersection with the salon driveway/Friendly's driveway under stop control. The northbound and southbound approaches of Godwin Avenue each provide a shared left turn/through/right turn lane. The eastbound approach of the Friendly's driveway provides a shared left turn/through/right turn lane. The westbound approach of the salon driveway provides a shared left turn/through/right turn lane.

A review of the existing analysis reveals that the individual intersection movements operate at Level of Service "C" or better during the analyzed peak periods. See Table II for the individual movement Levels of Service and delays.

FUTURE CONDITIONS

Traffic volumes and operational analyses were developed for both the Future No Build and Build conditions. The No Build conditions provide a baseline for assessing the impact of site development traffic on the roadway system. The process of developing the No Build and Build traffic volumes and the subsequent analyses is outlined below.

Regardless of whether the subject site is developed or not, traffic volumes on the surrounding roadways are expected to increase as a result of developments throughout the region. A growth rate for roadways within the study area was obtained from the NJDOT Annual Background Growth Rate Table, which indicates a growth rate of 1.5% per year.

Future No Build traffic volumes were developed by applying the background growth rate of 1.5% for two (2) years to the study area existing traffic volumes. Figure 4, in Appendix A, shows the Future No Build traffic volumes.

Traffic Generation

Projections of future traffic volumes were developed utilizing data as published in the Institute of Transportation Engineers (ITE) publication *Trip Generation, 10th Edition* for Land Use Code (LUC) 937 – Coffee/Donut Shop with Drive-Through Window.

According to studies conducted by ITE and NJDOT, traffic associated with LUC 937 is not 100% newly generated. Rather, a portion of the traffic is diverted from the existing traffic stream on the adjacent roadway network. This is because the proposed Dunkin' is not a destination land use, instead patrons stop on their way to/from other locations such as home or work. While it is noted that NJDOT identifies 63% and 50% passby traffic percentages for LUC 937, conservatively the passby percentages for LUC 934 – Fast-Food Restaurant with Drive-Thru were utilized for analysis purposes. ITE identifies 49%, 50% and 37% passby traffic percentages for LUC 934 which were used during the weekday morning, weekday evening and Saturday midday peak hours, respectively. Table III below details the traffic volumes associated with the subject project taking into account the passby credits.

Table III
Trip Generation Considering Passby Traffic

Trip Type		AM PSH			PM PSH			SAT PSH		
		In	Out	Total	In	Out	Total	In	Out	Total
2,173 SF Dunkin' with Drive-Thru Window	Total	98	95	193	47	47	94	96	95	191
	Passby	48	47	95	24	23	47	36	35	71
	New (Primary)	**50**	**48**	**98**	**23**	**24**	**47**	**60**	**60**	**120**

As previously noted, the site is currently developed with a vacated Friendly's restaurant. Although the restaurant is currently vacant, there is still trip generation potential associated with the existing development if the building became occupied. Therefore, the trip generation potential of the existing site was developed utilizing LUC 932 – High-Turnover (Sit-Down) Restaurant. Figure 3, located in Appendix A, shows the peak hour traffic volumes at the study intersections associated with the re-occupation of the existing Friendly's restaurant. Table IV below provides a comparison between the primary trips associated with the existing site and the primary trips projected for the proposed development based on ITE data.

Table IV
Existing vs. Proposed Primary Trip Generation Comparison

Trip Type	AM PSH			PM PSH			SAT PSH		
	In	Out	Total	In	Out	Total	In	Out	Total
Existing 2,530 SF Friendly's Restaurant	14	11	25	9	5	14	14	14	28
Proposed 2,173 SF Dunkin' with Drive-Thru Window	50	48	98	23	24	47	60	60	120
Difference	**+36**	**+37**	**+73**	**+14**	**+19**	**+33**	**+46**	**+46**	**+92**

As shown in Table IV above, it is anticipated that 73 additional primary trips during the weekday morning peak hour, 33 additional primary trips during the weekday evening peak hour and 92 additional primary trips during the Saturday midday peak hour are anticipated to access the site from the adjacent roadway network with the proposed redevelopment.

Once the magnitude of traffic to be generated by the site is known, it is necessary to assign that traffic to the adjacent street system. The distribution of new traffic to the surrounding roadways is based on the location of primary arterial roadways, major signalized intersections and existing traffic patterns. Located in Appendix A, Figure 5 illustrates the distribution of primary site generated trips, Figure 6 illustrates the primary site generated volumes, Figure 7 illustrates the distribution of passby site generated trips, Figure 8 illustrates the passby site generated volumes and Figure 9 illustrates the total site generated volumes assigned to the study area network. The site generated volumes were added to the No Build traffic volumes to generate the Build traffic volumes, which are shown in Figure 10.

Future Capacity Analysis

Operational conditions at the study intersections were analyzed under the No Build and Build conditions and are summarized in Table V below.

Table V
Future Build Levels of Service

Intersection	Direction/ Movement		AM PSH		PM PSH		SAT PSH	
			No Build	Build	No Build	Build	No Build	Build
Godwin Avenue and North Salon Driveway/North Site Driveway	WB	LR	B (14)	-	C (21)	-	C (15)	-
		LTR	-	C (15)	-	C (23)	-	C (17)
	NB	LTR	-	A (9)	-	A (9)	-	A (10)
	SB	LT	A (9)	-	A (9)	-	A (9)	-
		LTR	-	A (9)	-	A (9)	-	A (9)
Godwin Avenue and South Salon Driveway/South Site Driveway	EB	LTR	C (21)	D (28)	C (23)	D (26)	D (26)	E (45)
	WB	LTR	C (22)	-	D (27)	-	C (16)	-
		LR	-	C (23)	-	D (28)	-	C (17)
	NB	LTR	A (9)	-	A (9)	-	A (9)	-
	SB	LTR	A (9)	-	A (9)	-	A (9)	-
		LT	-	A (9)	-	A (9)	-	A (9)

A (#) - Unsignalized Intersection Level of Service (seconds of delay per vehicle)

Godwin Avenue and North Salon Driveway/North Site Driveway

The north site driveway is proposed to intersect Godwin Avenue opposite the north salon driveway to form an unsignalized four-leg intersection with the salon driveway under stop control. The northbound and southbound approaches of Godwin Avenue will each provide a shared left turn/through/right turn lane. The westbound approach of the salon driveway will provide a shared left turn/through/right turn lane. The site driveway will provide a single westbound lane away from the intersection. It should also be noted that the existing crosswalk across Godwin Avenue will be relocated slightly south so as not to conflict with the proposed driveway location.

As designed, the individual intersection movements are anticipated to operate at Level of Service "C" or better during the analyzed peak hours. See Table V for the individual movement Levels of Service and delays.

Godwin Avenue and South Salon Driveway/South Site Driveway

The south site driveway is proposed to intersect Godwin Avenue opposite the south salon driveway to form an unsignalized four-leg intersection with the site driveway and the salon driveway under stop control. The northbound and southbound approaches of Godwin Avenue will provide a shared through/right turn lane and a shared left turn/through lane, respectively. The eastbound approach of the site driveway will provide a shared left turn/through/right turn lane. The westbound approach of the salon driveway will provide a single lane for left and right turns.

As designed, the individual intersection movements are anticipated to operate at Level of Service "E" or better during the analyzed peak hours. See Table V for the individual movement Levels of Service and delays.

SITE PLAN

Site Access and Circulation

The site plan was reviewed with respect to the site access and on-site circulation design. As noted previously, access to The Project will be provided via one (1) ingress only driveway and one (1) egress only driveway along Godwin Avenue.

The newly constructed parking lot will be serviced by a single one-way parking aisle with a width of 18 feet, which meets the minimum Ordinance requirement and is in compliance with accepted engineering design standards. The access aisle will allow for 45-degree angled parking as well as parallel parking. The drive-thru will operate in a counterclockwise direction with the ability to stack nine (9) cars in the drive-thru lane with an additional capacity of six (6) cars in the mobile order lane. The Borough of Midland Park Ordinance also states that any drive-through or drive-up windows shall have a minimum queuing line length of 150 feet from center of the first service area or window. The site as proposed provides a queuing line length of 200 feet which satisfies the Ordinance requirements. As such, this access configuration is sufficient to accommodate the traffic volumes anticipated for The Project.

Parking

The Borough of Midland Park Ordinance sets forth a parking requirement of 2 parking spaces per service station, 1 parking space per every 2 seats and 1 parking space per 250 SF for quick service restaurant uses. This equates to a parking requirement of 23 spaces for the proposed 2,173 SF Dunkin' coffee shop with drive-thru window and 8 seats. The site as proposed provides 12 parking spaces, therefore the Ordinance requirements are not met and a variance is required.

It should be noted that an Operational Characteristics Study has been conducted by Dynamic Traffic for standalone coffee/donut shops with drive-throughs in northern New Jersey. Based upon this study of three (3) similar developments, a coffee/donut shop with drive-through generates an average peak parking demand of 6.32 spaces per 1,000 SF. This equates to a parking demand of 13 spaces.

Furthermore, it is our experience that approximately 70% of traffic generated by Dunkin' utilize the drive-thru system and do not park, thus reducing the actual parking demand for the site. The proposed Dunkin' will also be high-turnover in nature, meaning the parking spaces will only be occupied for a short period of time. Therefore, it is expected that customers wishing to park and walk into the Dunkin' to purchase their items will not have difficulty finding an available parking space. As such, the proposed parking supply of 12 spaces will be sufficient to support the anticipated demand of the project given the above factors.

It is proposed to provide angled parking stalls with dimensions of 9'x18' and parallel parking stalls with dimensions of 9'x24, which meets the minimum Ordinance requirement and is in compliance with accepted engineering design standards.

FINDINGS & CONCLUSIONS

Findings

Based upon the detailed analyses as documented herein, the following findings are noted:

- The proposed 2,173 SF Dunkin' with drive-through window is projected to generate 36 entering trips and 37 exiting trips during the weekday morning peak hour, 14 entering trips and 19 exiting trips during the weekday evening peak hour and 46 entering trips and 46 exiting trips during the Saturday midday peak hour that are "new" to the adjacent roadway network when compared to the existing Friendly's restaurant.

- Access to the site will be provided via one (1) ingress only driveway and one (1) egress only driveway along Godwin Avenue.

- As designed, the individual intersection movements of Godwin Avenue and the north salon driveway/north site driveway are anticipated to operate at Level of Service "C" or better during the studied peak hours.

- As designed, the individual intersection movements of Godwin Avenue and the south salon driveway/south site driveway are anticipated to operate at Level of Service "E" or better during the studied peak hours.

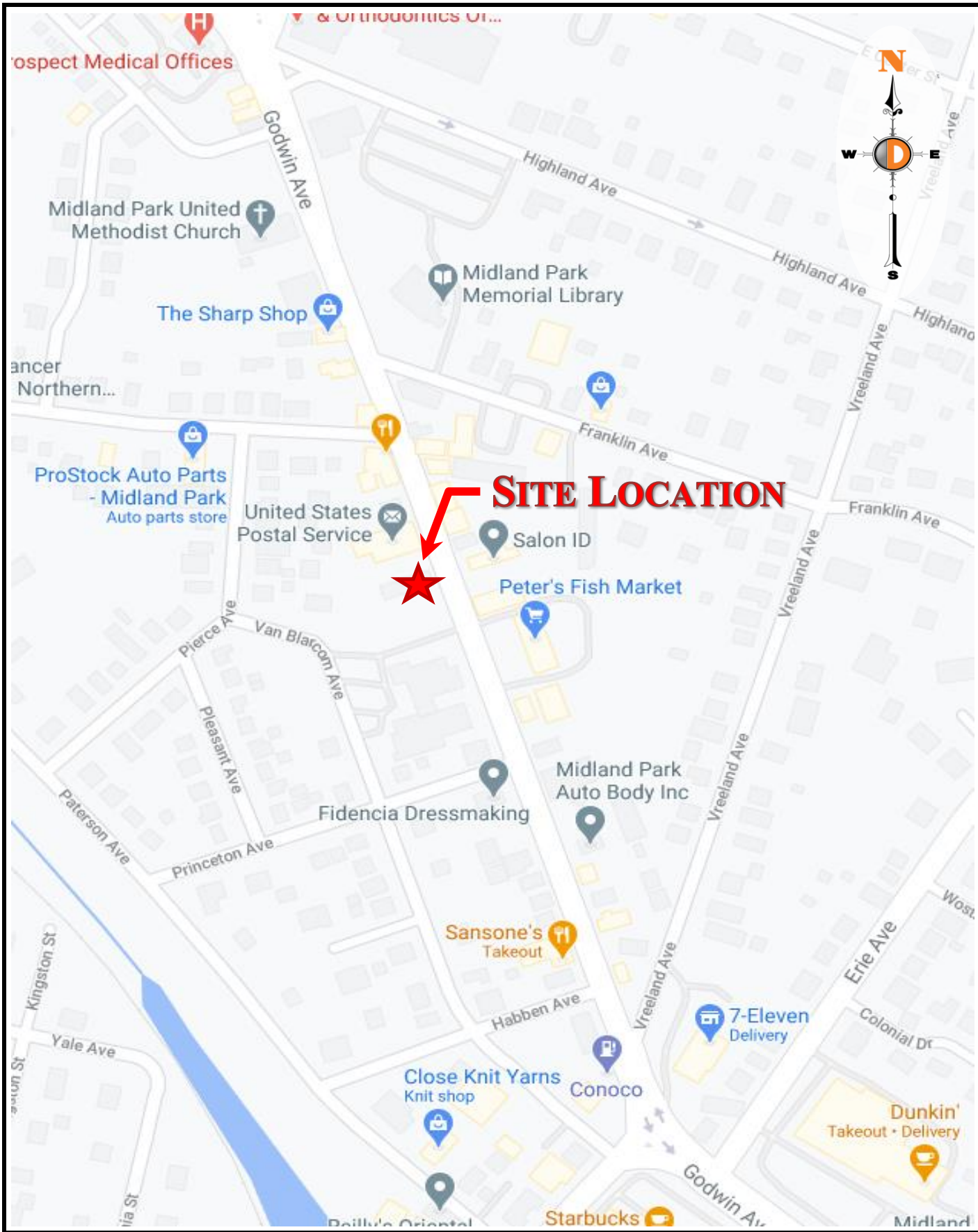
- As proposed, The Project's site driveways and internal circulation have been designed to provide for safe and efficient movement of vehicles on-site.

- The proposed parking supply and design is sufficient to support the projected demand.

Conclusions

Based upon our Traffic Impact Study as detailed in the body of this report, it is the professional opinion of Dynamic Traffic, LLC that the adjacent street system of the Borough of Midland Park and Bergen County will not experience any significant degradation in operating conditions with the construction of The Project. The site driveways are located to provide safe and efficient access to the adjacent roadway system. The site plan as proposed provides for good circulation throughout the site and provides adequate parking to accommodate The Project's needs.

Appendix A
Volume Figures



Proposed Dunkin' Drive-Thru Restaurant
Traffic Impact Study
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4/5/2021

Figure 1

Site Location Map

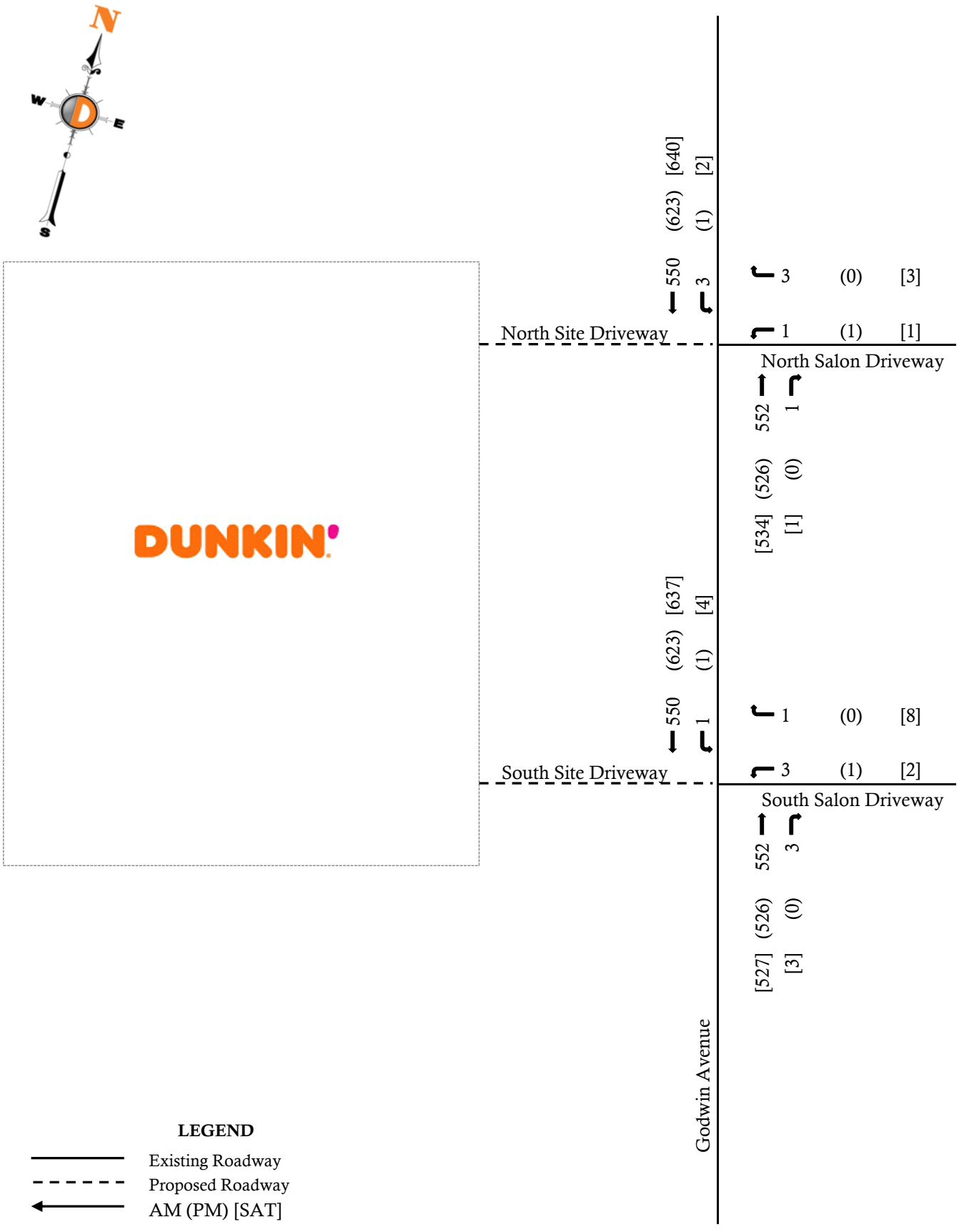

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Figure 2

Existing Traffic Volumes

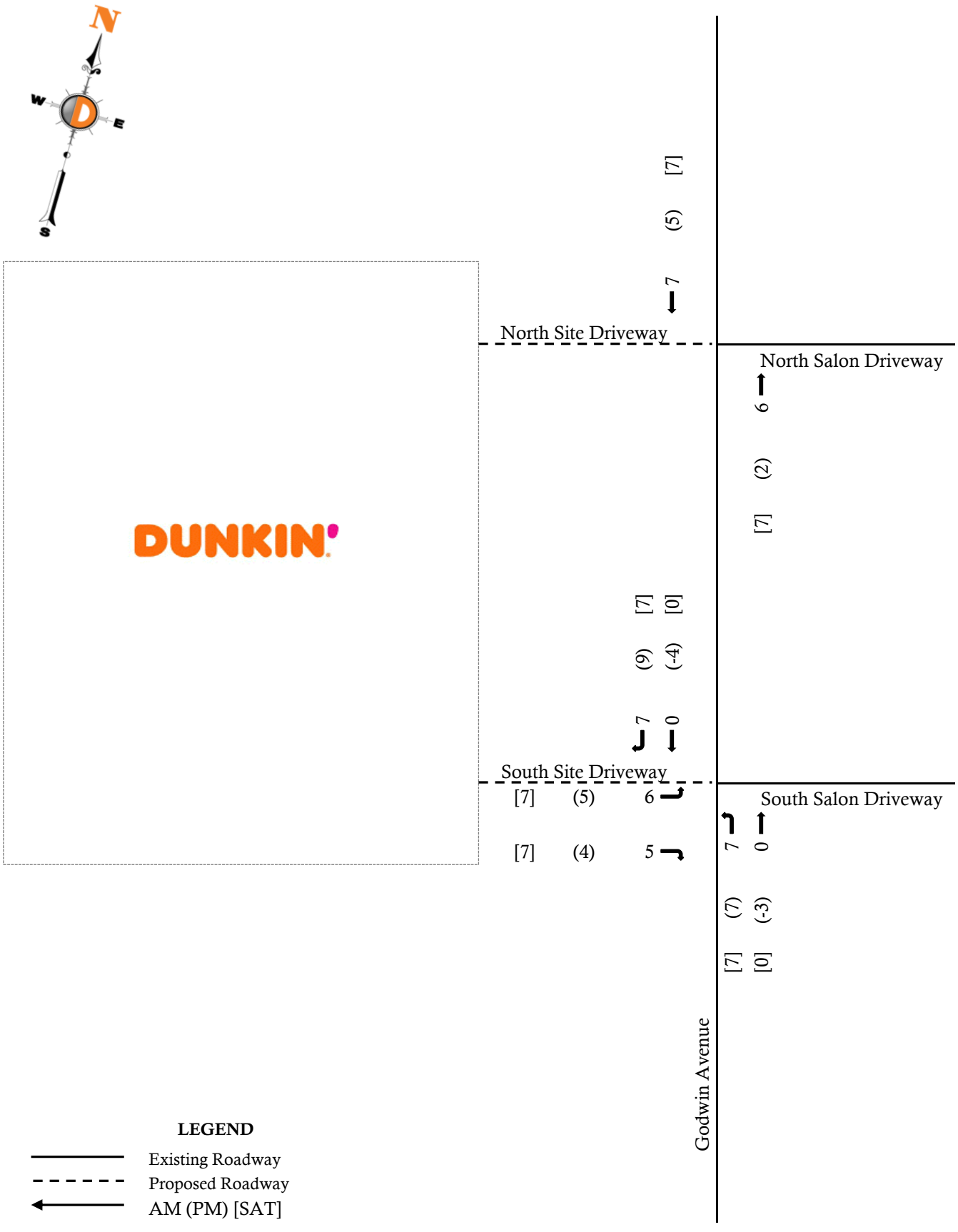

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Figure 3

Total Site Generated Trips - Existing Friendly's

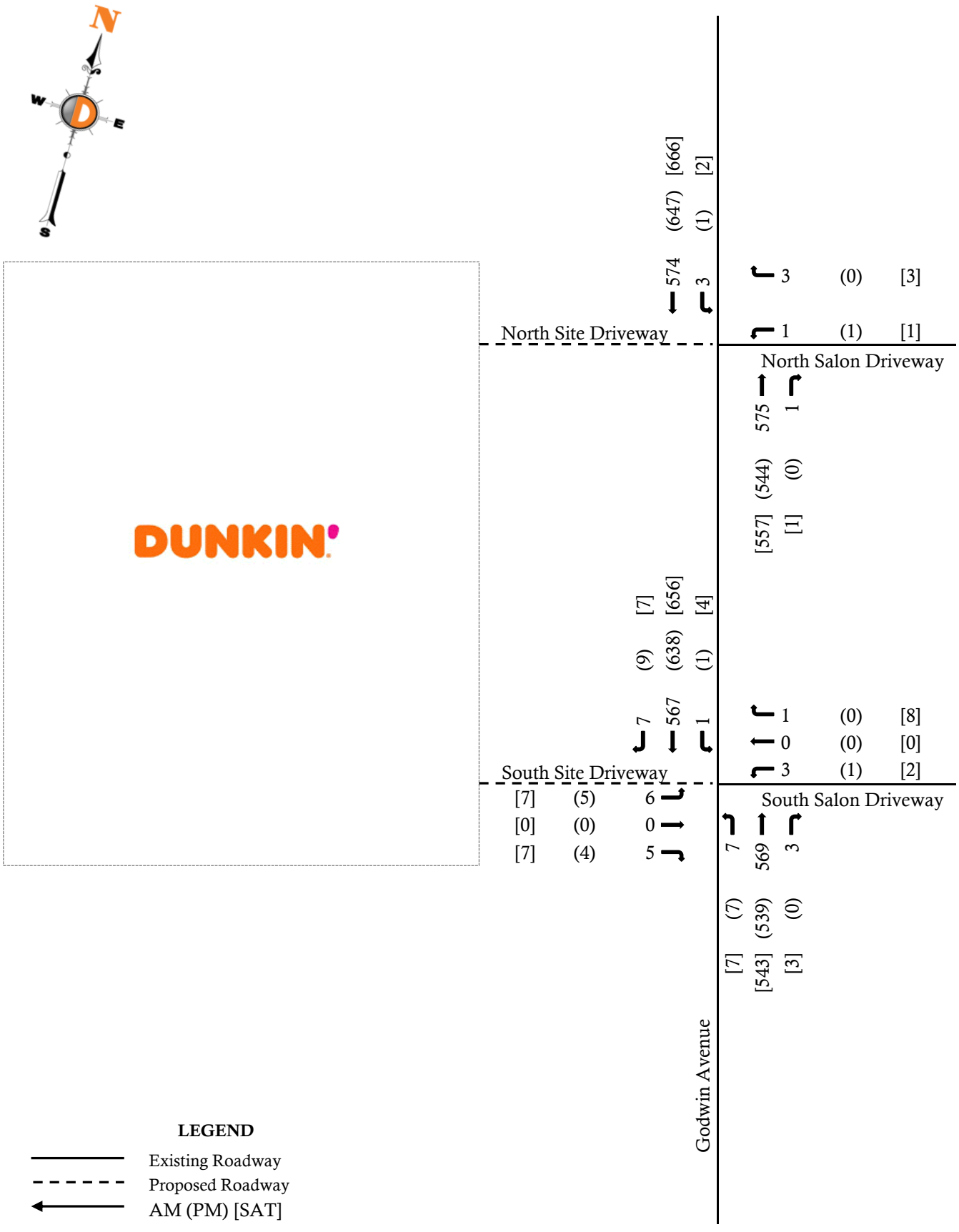

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Figure 4

No Build Traffic Volumes

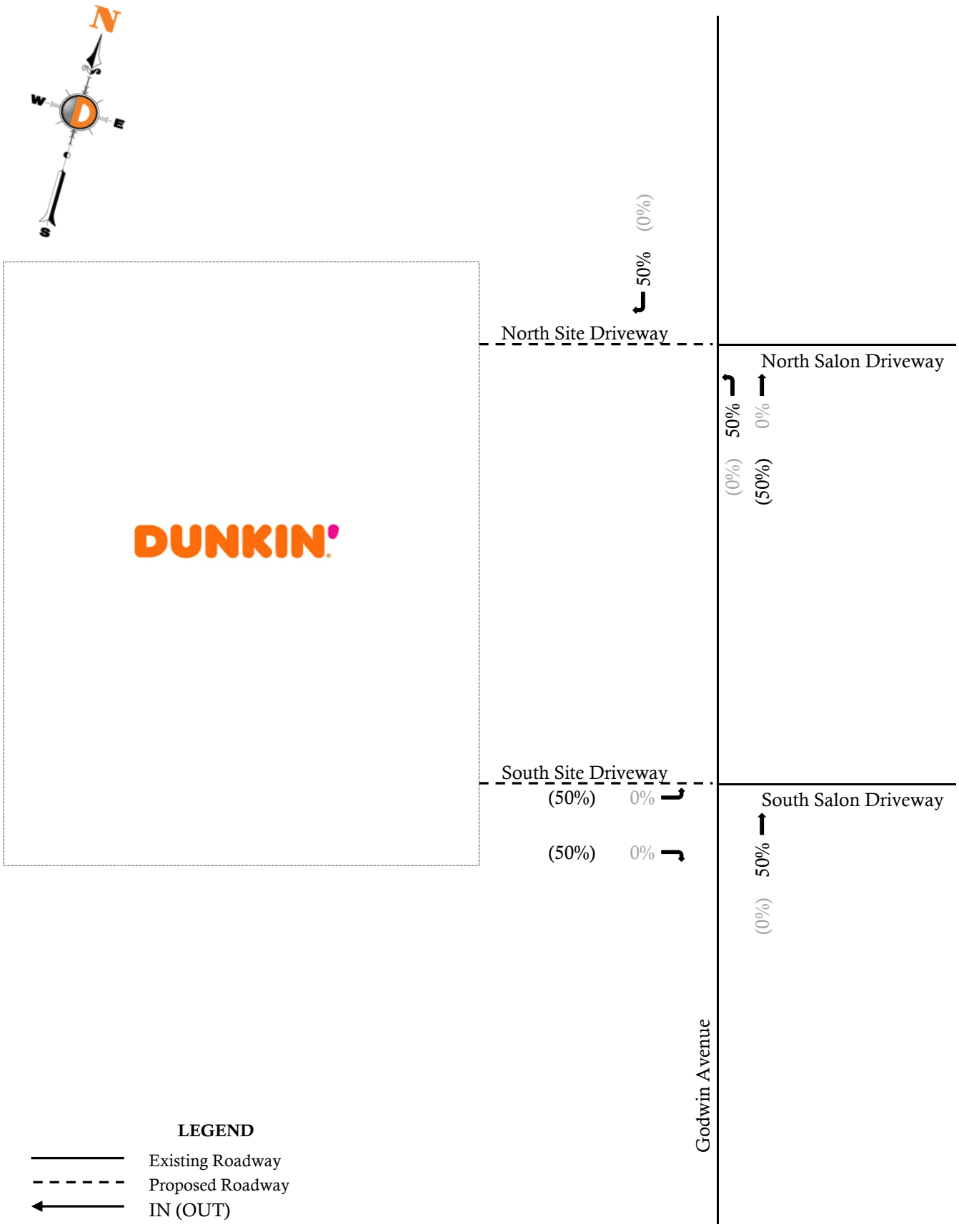

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Figure 5

Percent Distribution (Primary Trips)

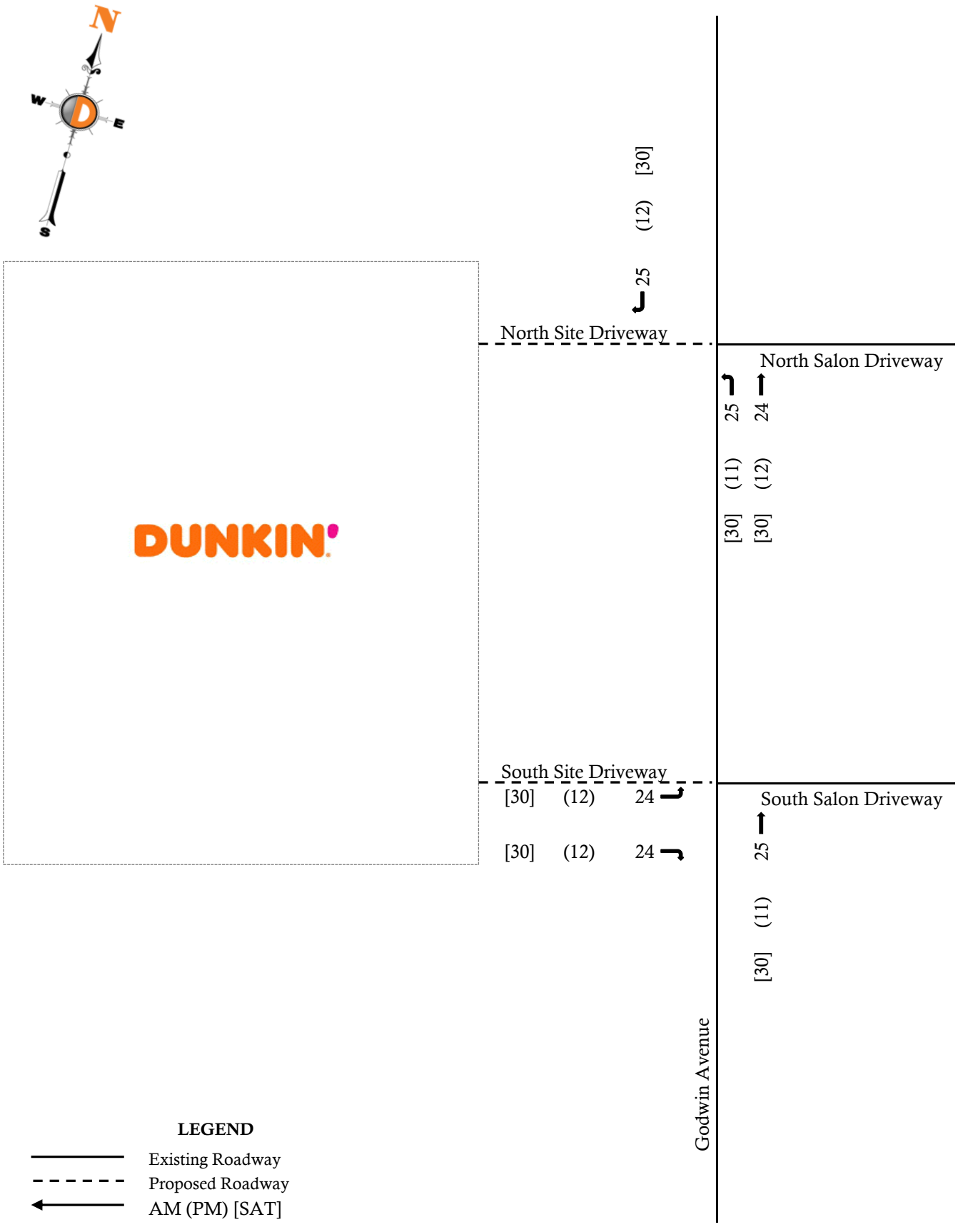

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Figure 6

Primary Site Generated Trips

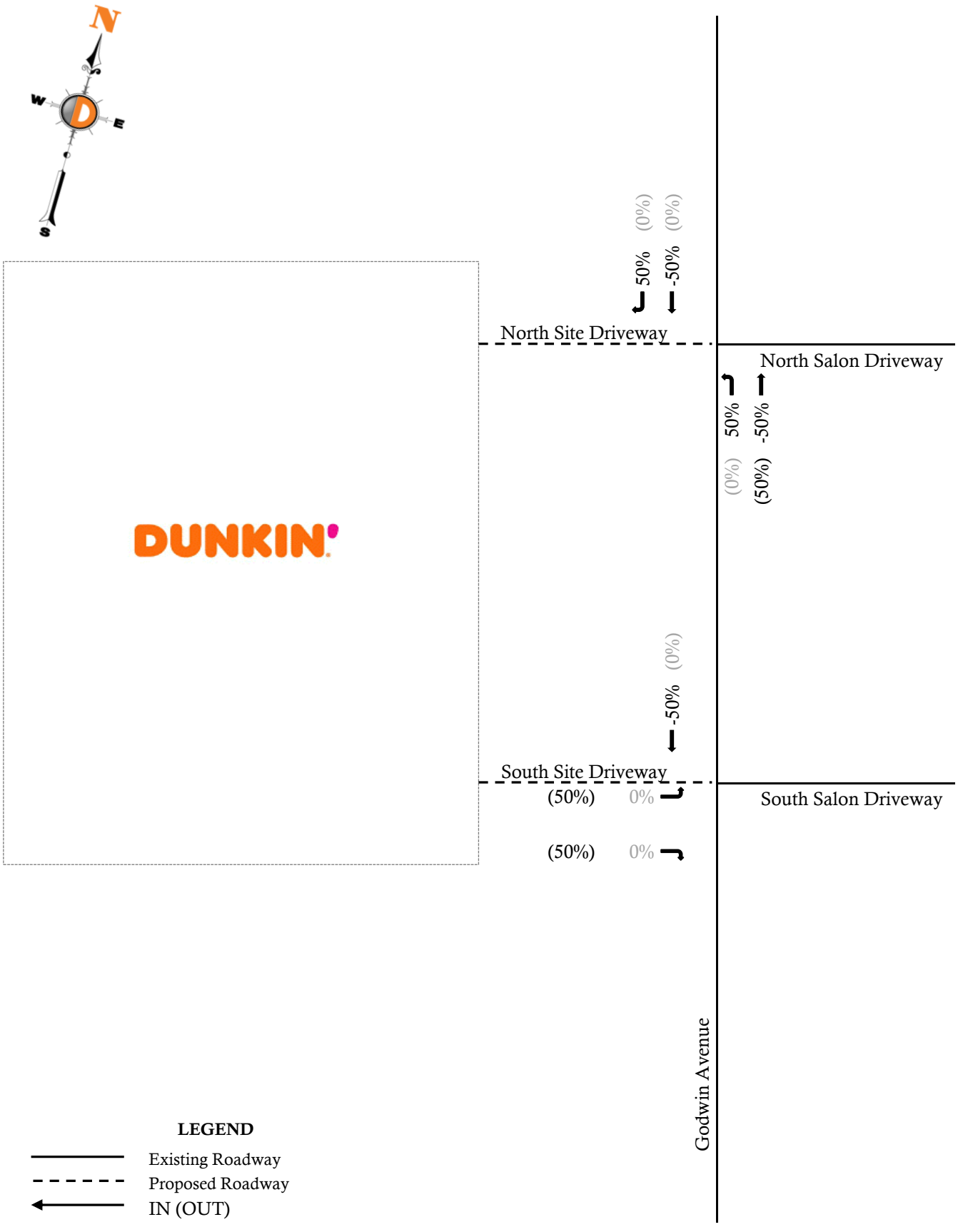

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Figure 7

Percent Distribution (Passby Trips)

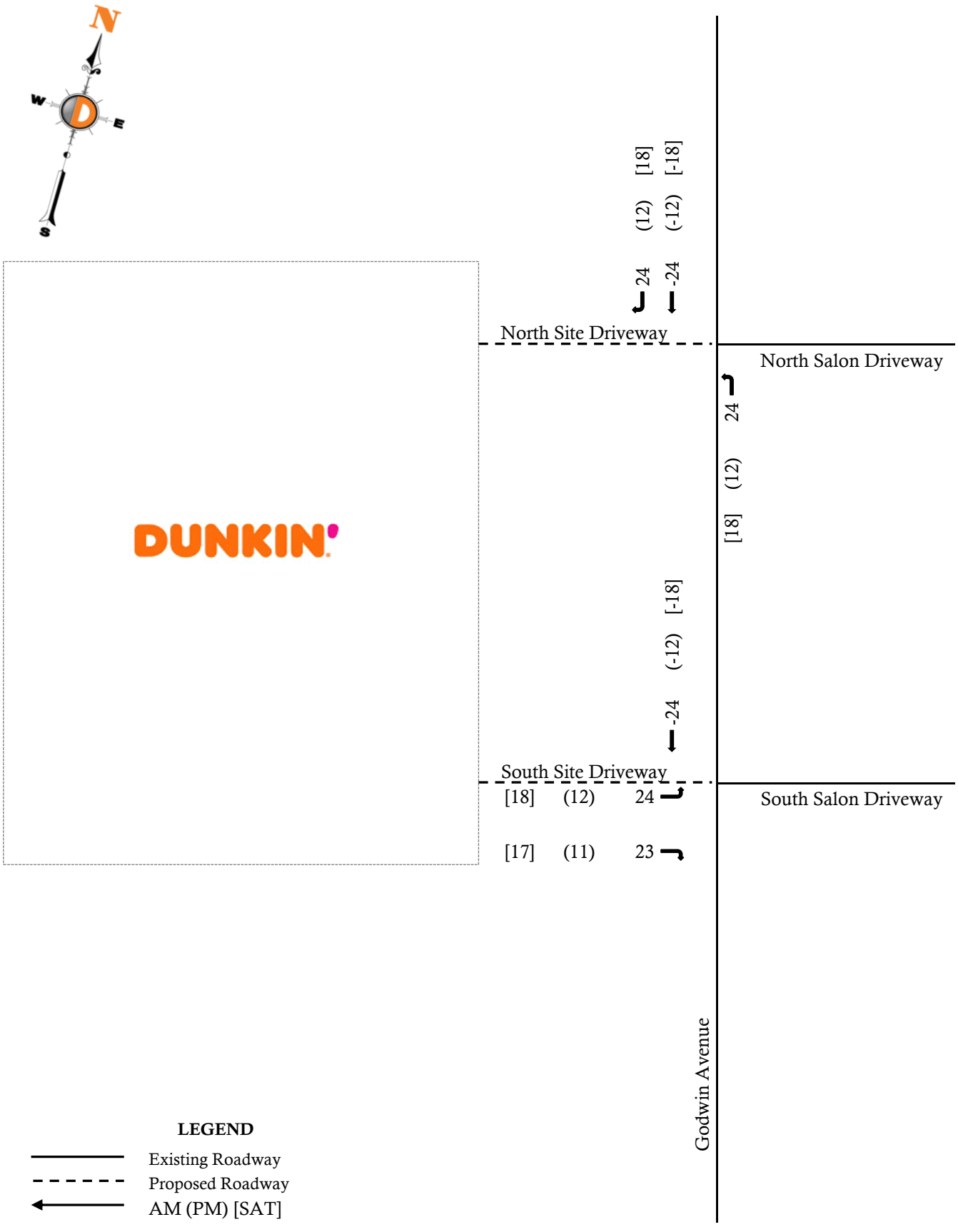

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Figure 8

Passby Site Generated Trips

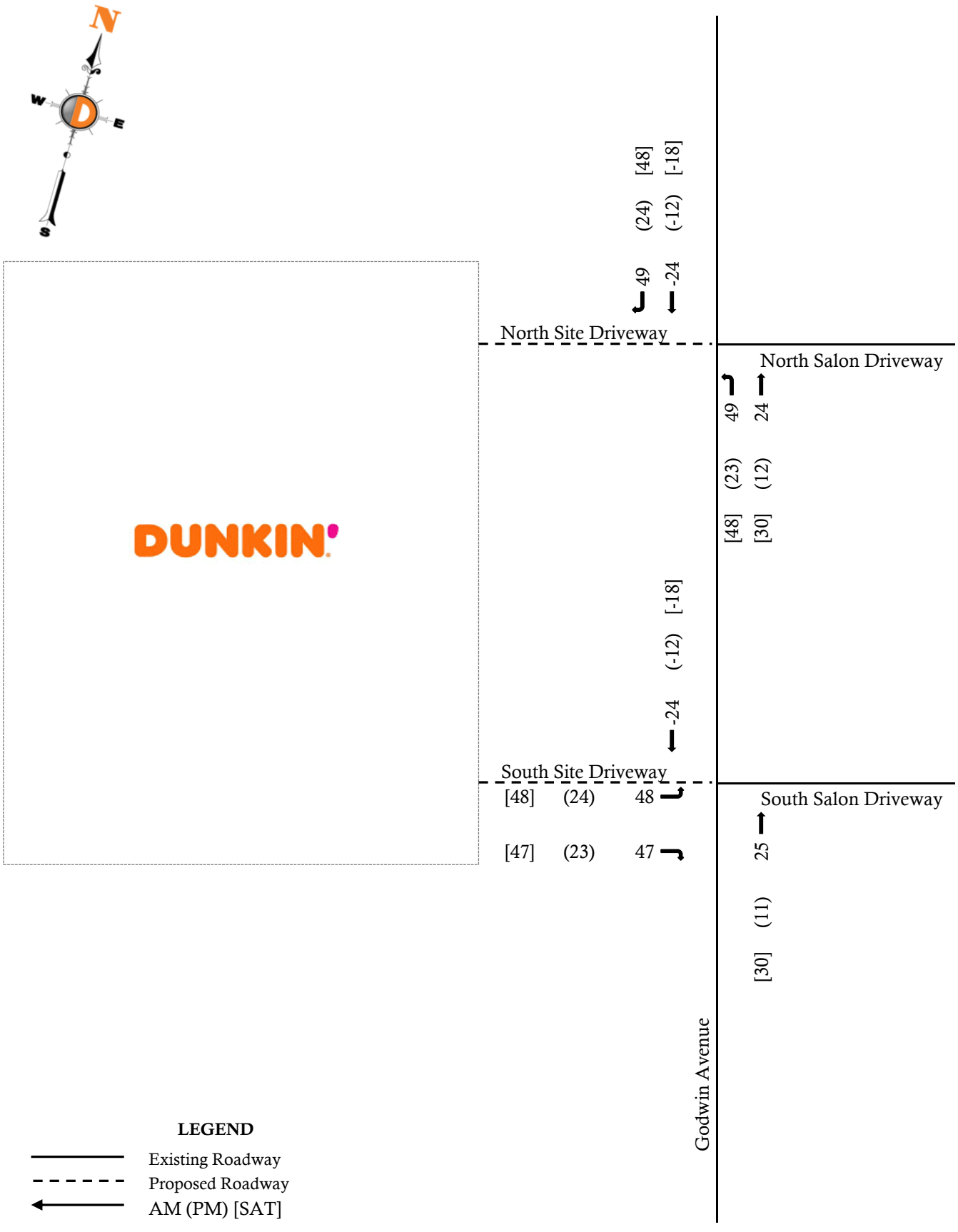

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Figure 9

Total Site Generated Trips

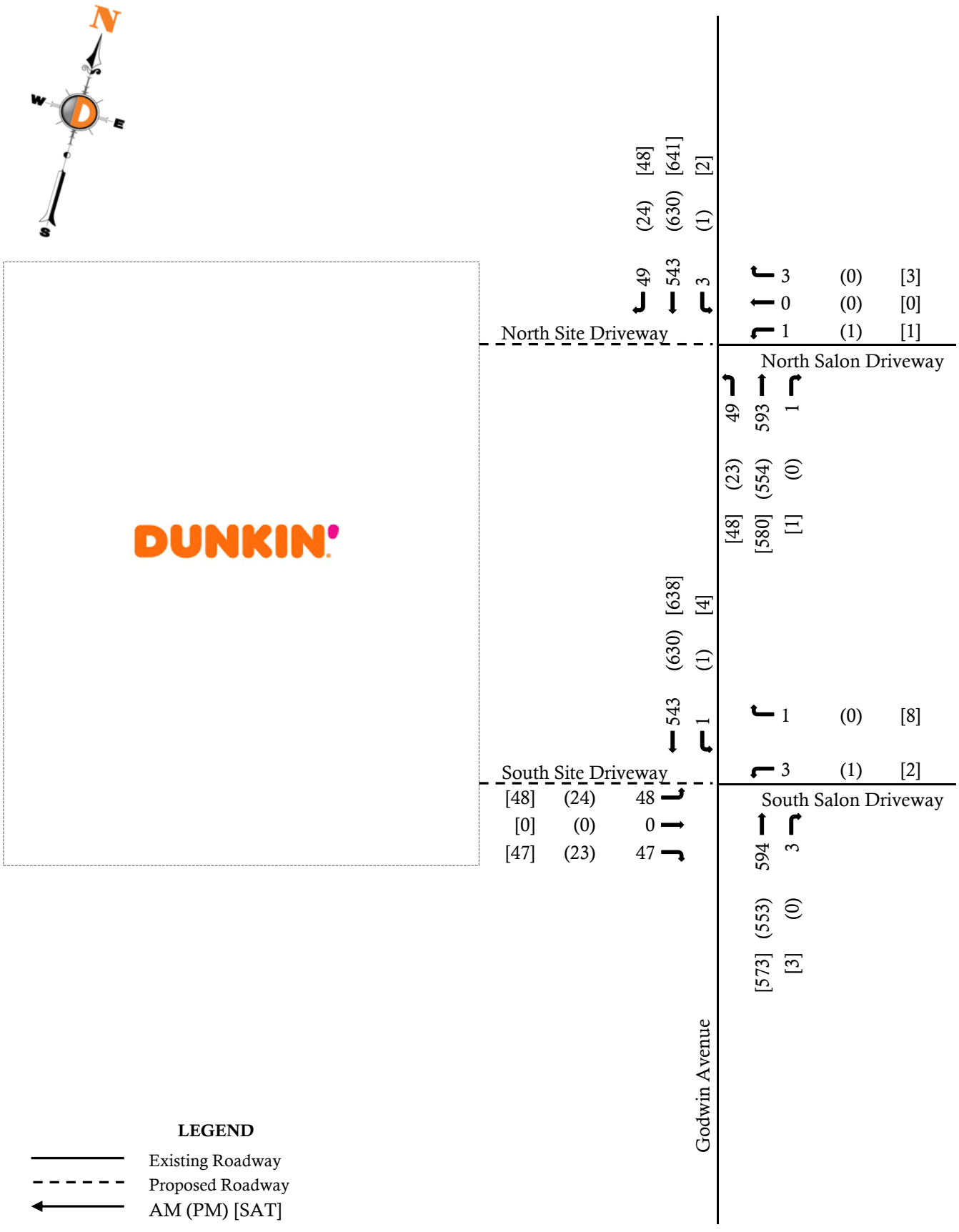

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Figure 10

Build Traffic Volumes

Appendix B
Traffic Counts

Dynamic Traffic, LLC

1904 Main Street, Lake Como, NJ 07719
245 Main Street - Suite 110, Chester, NJ 07930
732-681-0760

E/W: Salon ID Driveways
N/S: Godwin Ave
Town/County: Midland Park/Bergen
Job #: 3486-99-001T

File Name : Godwin Ave & Commercial Driveways - AM
Site Code : 00000000
Start Date : 10/21/2020
Page No : 1

Groups Printed- Cars - Trucks (SU) - Trucks (TT)

	Salon Southern Driveway Eastbound						Salon Northern Driveway Westbound					Godwin Ave Northbound					Godwin Ave Southbound					
Start Time	Left In	Right In	Left Out	Right Out	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	1	0	0	0	1	0	0	0	0	0	0	65	0	0	65	1	61	0	0	62	128
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	77	0	0	77	0	80	0	0	80	157
07:30 AM	0	0	1	0	0	1	0	0	0	0	0	0	116	0	1	117	0	74	0	0	74	192
07:45 AM	0	0	2	0	0	2	0	0	1	0	1	0	113	0	0	113	2	93	0	0	95	211
Total	0	1	3	0	0	4	0	0	1	0	1	0	371	0	1	372	3	308	0	0	311	688
08:00 AM	0	2	0	0	0	2	1	0	0	0	1	0	82	0	1	83	0	91	0	0	91	177
08:15 AM	0	1	1	1	0	3	0	0	0	0	0	0	94	0	0	94	1	103	0	0	104	201
08:30 AM	1	0	0	0	0	1	0	0	2	0	2	0	100	1	0	101	0	100	0	0	100	204
08:45 AM	0	1	1	0	0	2	0	0	0	0	0	0	87	0	0	87	1	101	0	0	102	191
Total	1	4	2	1	0	8	1	0	2	0	3	0	363	1	1	365	2	395	0	0	397	773
Grand Total	1	5	5	1	0	12	1	0	3	0	4	0	734	1	2	737	5	703	0	0	708	1461
Apprch %	8.3	41.7	41.7	8.3	0		25	0	75	0		0	99.6	0.1	0.3		0.7	99.3	0	0		
Total %	0.1	0.3	0.3	0.1	0	0.8	0.1	0	0.2	0	0.3	0	50.2	0.1	0.1	50.4	0.3	48.1	0	0	48.5	
Cars	1	5	5	1	0	12	1	0	3	0	4	0	706	1	2	709	5	673	0	0	678	1403
% Cars	100	100	100	100	0	100	100	0	100	0	100	0	96.2	100	100	96.2	100	95.7	0	0	95.8	96
Trucks (SU)	0	0	0	0	0	0	0	0	0	0	0	0	28	0	0	28	0	30	0	0	30	58
% Trucks (SU)	0	0	0	0	0	0	0	0	0	0	0	0	3.8	0	0	3.8	0	4.3	0	0	4.2	4
Trucks (TT)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks (TT)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Dynamic Traffic, LLC

1904 Main Street, Lake Como, NJ 07719
245 Main Street - Suite 110, Chester, NJ 07930
732-681-0760

E/W: Salon ID Driveways
N/S: Godwin Ave
Town/County: Midland Park/Bergen
Job #: 3486-99-001T

File Name : Godwin Ave & Commercial Driveways - PM
Site Code : 00000000
Start Date : 3/16/2021
Page No : 1

Groups Printed- Cars - Trucks (SU) - Trucks (TT)

	Salon Southern Driveway Eastbound						Salon Northern Driveway Westbound					Godwin Ave Northbound					Godwin Ave Southbound					
Start Time	Left In	Right In	Left Out	Right Out	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	50	0	3	53	0	44	0	0	44	97
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	96	0	0	96	0	138	0	0	138	234
Total	0	0	0	0	0	0	0	0	0	0	0	0	146	0	3	149	0	182	0	0	182	331
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	122	0	2	124	1	116	0	0	117	241
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	110	0	0	110	0	137	0	0	137	247
05:30 PM	1	0	0	0	0	1	0	0	0	0	0	0	80	0	0	80	0	92	0	0	92	173
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	87	0	1	88	0	74	0	0	74	162
Total	1	0	0	0	0	1	0	0	0	0	0	0	399	0	3	402	1	419	0	0	420	823
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	65	0	0	65	0	109	0	0	109	174
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	101	0	0	101	0	95	0	0	95	196
Grand Total	1	0	0	0	0	1	0	0	0	0	0	0	711	0	6	717	1	805	0	0	806	1524
Apprch %	100	0	0	0	0		0	0	0	0		0	99.2	0	0.8		0.1	99.9	0	0		
Total %	0.1	0	0	0	0	0.1	0	0	0	0	0	0	46.7	0	0.4	47	0.1	52.8	0	0	52.9	
Cars	1	0	0	0	0	1	0	0	0	0	0	0	703	0	6	709	1	796	0	0	797	1507
% Cars	100	0	0	0	0	100	0	0	0	0	0	0	98.9	0	100	98.9	100	98.9	0	0	98.9	98.9
Trucks (SU)	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	4	0	0	4	8
% Trucks (SU)	0	0	0	0	0	0	0	0	0	0	0	0	0.6	0	0	0.6	0	0.5	0	0	0.5	0.5
Trucks (TT)	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	5	0	0	5	9
% Trucks (TT)	0	0	0	0	0	0	0	0	0	0	0	0	0.6	0	0	0.6	0	0.6	0	0	0.6	0.6

Dynamic Traffic, LLC

1904 Main Street, Lake Como, NJ 07719
245 Main Street - Suite 110, Chester, NJ 07930
732-681-0760

E/W: Salon ID Driveways
N/S: Godwin Ave
Town/County: Midland Park/Bergen
Job #: 3486-99-001T

File Name : Godwin Ave & Commercial Driveways - SAT
Site Code : 00000000
Start Date : 10/24/2020
Page No : 1

Groups Printed- Cars - Trucks (SU) - Trucks (TT)

	Salon Southern Driveway Eastbound						Salon Northern Driveway Westbound					Godwin Ave Northbound					Godwin Ave Southbound					
Start Time	Left In	Right In	Left Out	Right Out	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	0	0	0	1	0	1	0	0	0	0	0	0	94	7	2	103	0	107	0	0	107	211
11:15 AM	0	1	2	1	0	4	0	0	0	0	0	0	113	0	3	116	1	102	0	0	103	223
11:30 AM	0	1	1	2	0	4	0	0	1	0	1	0	97	1	0	98	0	127	0	0	127	230
11:45 AM	1	1	0	2	0	4	1	0	0	0	1	0	101	0	2	103	0	132	0	0	132	240
Total	1	3	3	6	0	13	1	0	1	0	2	0	405	8	7	420	1	468	0	0	469	904
12:00 PM	2	0	0	0	0	2	0	0	1	0	1	0	118	0	0	118	1	119	0	0	120	241
12:15 PM	2	1	1	4	0	8	0	0	1	0	1	0	123	0	0	123	1	148	0	0	149	281
12:30 PM	1	1	2	2	0	6	0	0	0	0	0	0	107	0	0	107	0	111	0	0	111	224
12:45 PM	0	3	2	1	0	6	0	0	0	0	0	0	119	1	0	120	0	109	0	0	109	235
Total	5	5	5	7	0	22	0	0	2	0	2	0	467	1	0	468	2	487	0	0	489	981
01:00 PM	1	1	1	0	0	3	0	0	1	0	1	0	117	0	0	117	1	119	0	0	120	241
01:15 PM	2	1	2	0	0	5	0	0	0	0	0	0	131	0	2	133	0	144	0	0	144	282
01:30 PM	2	0	0	1	0	3	0	0	0	0	0	0	107	0	2	109	0	107	0	0	107	219
01:45 PM	1	0	0	0	0	1	0	0	0	0	0	0	132	0	0	132	0	107	0	0	107	240
Total	6	2	3	1	0	12	0	0	1	0	1	0	487	0	4	491	1	477	0	0	478	982
Grand Total	12	10	11	14	0	47	1	0	4	0	5	0	1359	9	11	1379	4	1432	0	0	1436	2867
Apprch %	25.5	21.3	23.4	29.8	0		20	0	80	0		0	98.5	0.7	0.8		0.3	99.7	0	0		
Total %	0.4	0.3	0.4	0.5	0	1.6	0	0	0.1	0	0.2	0	47.4	0.3	0.4	48.1	0.1	49.9	0	0	50.1	
Cars	12	10	11	14	0	47	1	0	4	0	5	0	1339	9	11	1359	4	1416	0	0	1420	2831
% Cars	100	100	100	100	0	100	100	0	100	0	100	0	98.5	100	100	98.5	100	98.9	0	0	98.9	98.7
Trucks (SU)	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	20	0	14	0	0	14	34
% Trucks (SU)	0	0	0	0	0	0	0	0	0	0	0	0	1.5	0	0	1.5	0	1	0	0	1	1.2
Trucks (TT)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
% Trucks (TT)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1	0.1

Dynamic Traffic, LLC

1904 Main Street, Lake Como, NJ 07719
245 Main Street - Suite #110, Chester, NJ 07930
732-681-0760

Locations: Godwin Ave EB
Cross Street: E of Erie Ave
Town/County: Midland Park/Bergen
Job #: 3486-99-001T

Site Code: 2102
Station ID:

Latitude: 0' 0.0000 Undefined

Start Time	Mon 19-Oct-20	Tue 20-Oct-20	Wed 21-Oct-20	Thu 22-Oct-20	Fri 23-Oct-20	Average Day	Sat 24-Oct-20	Sun 25-Oct-20	Week Average
12:00 AM	*	*	*	22	29	26	40	*	30
01:00	*	*	*	9	11	10	14	*	11
02:00	*	*	*	6	4	5	15	*	8
03:00	*	*	*	0	1	0	2	*	1
04:00	*	*	*	3	5	4	6	*	5
05:00	*	*	*	39	45	42	17	*	34
06:00	*	*	*	104	98	101	37	*	80
07:00	*	*	*	235	230	232	106	*	190
08:00	*	*	*	317	324	320	184	*	275
09:00	*	*	*	252	274	263	221	*	249
10:00	*	*	*	251	293	272	287	*	277
11:00	*	*	*	**357**	**345**	**351**	**336**	*	**346**
12:00 PM	*	*	**428**	405	439	**424**	**432**	*	**426**
01:00	*	*	398	391	**451**	413	389	*	407
02:00	*	*	407	359	372	379	*	*	379
03:00	*	*	352	**422**	341	372	*	*	372
04:00	*	*	394	369	391	385	*	*	385
05:00	*	*	416	399	381	399	*	*	399
06:00	*	*	295	279	344	306	*	*	306
07:00	*	*	194	209	257	220	*	*	220
08:00	*	*	134	153	160	149	*	*	149
09:00	*	*	84	103	137	108	*	*	108
10:00	*	*	66	61	116	81	*	*	81
11:00	*	*	35	44	49	43	*	*	43
Total	0	0	3203	4789	5097	4905	2086	0	4781
AM Peak	-	-	-	11:00	11:00	- 11:00	- 11:00	-	- 11:00	-	-
Vol.	-	-	-	357	345	- 351	- 336	-	- 346	-	-
PM Peak	-	-	12:00	15:00	13:00	- 12:00	- 12:00	-	- 12:00	-	-
Vol.	-	-	428	422	451	- 424	- 432	-	- 426	-	-
Total	0	0	3203	4789	5097	4905	2086	0	4781
ADT		ADT 4,746		AADT 4,746					

Dynamic Traffic, LLC

1904 Main Street, Lake Como, NJ 07719
245 Main Street - Suite #110, Chester, NJ 07930
732-681-0760

Locations: Godwin Ave (CR 84) WB
Cross Street: E of Erie Ave
Town/County: Midland Park/Bergen
Job #: 3486-99-001T

Site Code: 2101
Station ID:

Latitude: 0' 0.0000 Undefined

Start Time	Mon 19-Oct-20	Tue 20-Oct-20	Wed 21-Oct-20	Thu 22-Oct-20	Fri 23-Oct-20	Average Day	Sat 24-Oct-20	Sun 25-Oct-20	Week Average
12:00 AM	*	*	*	32	30	31	43	*	35
01:00	*	*	*	11	18	14	22	*	17
02:00	*	*	*	7	3	5	17	*	9
03:00	*	*	*	9	8	8	4	*	7
04:00	*	*	*	6	7	6	9	*	7
05:00	*	*	*	36	39	38	11	*	29
06:00	*	*	*	119	126	122	67	*	104
07:00	*	*	*	277	277	277	128	*	227
08:00	*	*	*	320	349	334	225	*	298
09:00	*	*	*	335	300	318	288	*	308
10:00	*	*	*	301	382	342	386	*	356
11:00	*	*	*	**396**	**399**	**398**	**428**	*	**408**
12:00 PM	*	*	463	455	**526**	481	**491**	*	**484**
01:00	*	*	**475**	470	502	482	488	*	484
02:00	*	*	473	429	503	468	*	*	468
03:00	*	*	462	**486**	500	**483**	*	*	483
04:00	*	*	460	472	482	471	*	*	471
05:00	*	*	462	436	462	453	*	*	453
06:00	*	*	347	387	409	381	*	*	381
07:00	*	*	254	275	311	280	*	*	280
08:00	*	*	201	189	221	204	*	*	204
09:00	*	*	99	107	184	130	*	*	130
10:00	*	*	73	77	119	90	*	*	90
11:00	*	*	42	57	80	60	*	*	60
Total	0	0	3811	5689	6237	5876	2607	0	5793
AM Peak	-	-	-	11:00	11:00	- 11:00	- 11:00	-	- 11:00	-	-
Vol.	-	-	-	396	399	- 398	- 428	-	- 408	-	-
PM Peak	-	-	13:00	15:00	12:00	- 15:00	- 12:00	-	- 12:00	-	-
Vol.	-	-	475	486	526	- 483	- 491	-	- 484	-	-
Total	0	0	3811	5689	6237	5876	2607	0	5793
ADT		ADT 5,771		AADT 5,771					

Location: Godwin Ave EB
Cross Street: E of Erie Ave
Town/County: Midland Park/ Bergen
Job #: 0469-11-022T

Dynamic Traffic, LLC

1904 Main Street, Lake Como, NJ 07719
245 Main Street - Suite #110, Chester, NJ 07930
732-681-0760

Site Code: 1202
Station ID:

Latitude: 0' 0.0000 Undefined

Start Time	Mon 10-Oct-16	Tue 11-Oct-16	Wed 12-Oct-16	Thu 13-Oct-16	Fri 14-Oct-16	Average Day	Sat 15-Oct-16	Sun 16-Oct-16	Week Average
12:00 AM	*	*	23	30	28	27	42	45	34
01:00	*	*	14	15	15	15	38	24	21
02:00	*	*	5	6	4	5	13	9	7
03:00	*	*	2	1	2	2	3	2	2
04:00	*	*	16	19	16	17	6	10	13
05:00	*	*	45	50	43	46	20	13	34
06:00	*	*	128	128	120	125	42	28	89
07:00	*	*	352	341	370	354	114	56	247
08:00	*	*	**430**	**436**	**456**	**441**	253	115	338
09:00	*	*	341	328	396	355	306	202	315
10:00	*	*	368	334	414	372	368	262	349
11:00	*	*	302	382	406	363	**419**	**294**	**361**
12:00 PM	*	*	**475**	478	492	482	460	334	**448**
01:00	*	*	395	393	382	390	**484**	**336**	398
02:00	*	*	432	406	428	422	366	255	377
03:00	*	*	395	460	440	432	380	300	395
04:00	*	*	442	448	430	440	368	272	392
05:00	*	*	439	**524**	**496**	**486**	296	242	399
06:00	*	*	338	354	405	366	290	222	322
07:00	*	*	230	278	270	259	234	168	236
08:00	*	*	190	187	197	191	142	123	168
09:00	*	*	127	150	158	145	136	80	130
10:00	*	*	76	92	128	99	109	54	92
11:00	*	*	48	54	87	63	62	34	57
Total	0	0	5613	5894	6183	5897	4951	3480	5224
AM Peak	-	-	08:00	08:00	08:00	08:00	11:00	11:00	11:00
Vol.	-	-	430	436	456	441	419	294	361
PM Peak	-	-	12:00	17:00	17:00	17:00	13:00	13:00	12:00
Vol.	-	-	475	524	496	486	484	336	448

Location: Godwin Ave EB
Cross Street: E of Erie Ave
Town/County: Midland Park/ Bergen
Job #: 0469-11-022T

Dynamic Traffic, LLC

1904 Main Street, Lake Como, NJ 07719
245 Main Street - Suite #110, Chester, NJ 07930
732-681-0760

Site Code: 1202
Station ID:

Latitude: 0' 0.0000 Undefined

Start Time	Mon 17-Oct-16	Tue 18-Oct-16	Wed 19-Oct-16	Thu 20-Oct-16	Fri 21-Oct-16	Average Day	Sat 22-Oct-16	Sun 23-Oct-16	Week Average
12:00 AM	13	20	*	*	*	16	*	*	16
01:00	10	16	*	*	*	13	*	*	13
02:00	5	6	*	*	*	6	*	*	6
03:00	2	4	*	*	*	3	*	*	3
04:00	13	17	*	*	*	15	*	*	15
05:00	42	46	*	*	*	44	*	*	44
06:00	132	132	*	*	*	132	*	*	132
07:00	342	354	*	*	*	348	*	*	348
08:00	**390**	**436**	*	*	*	**413**	*	*	**413**
09:00	310	328	*	*	*	319	*	*	319
10:00	352	373	*	*	*	362	*	*	362
11:00	348	302	*	*	*	325	*	*	325
12:00 PM	456	475	*	*	*	466	*	*	466
01:00	398	395	*	*	*	396	*	*	396
02:00	362	407	*	*	*	384	*	*	384
03:00	415	428	*	*	*	422	*	*	422
04:00	432	438	*	*	*	435	*	*	435
05:00	**484**	**486**	*	*	*	**485**	*	*	**485**
06:00	355	363	*	*	*	359	*	*	359
07:00	230	252	*	*	*	241	*	*	241
08:00	172	187	*	*	*	180	*	*	180
09:00	120	139	*	*	*	130	*	*	130
10:00	68	91	*	*	*	80	*	*	80
11:00	37	57	*	*	*	47	*	*	47
Total	5488	5752	0	0	0	5621	0	0	5621
AM Peak	08:00	08:00	-	-	-	08:00	-	-	08:00
Vol.	390	436	-	-	-	413	-	-	413
PM Peak	17:00	17:00	-	-	-	17:00	-	-	17:00
Vol.	484	486	-	-	-	485	-	-	485
Total	5488	5752	5613	5894	6183	11518	4951	3480	10845
ADT		ADT 5,337		AADT 5,337					

Location: Godwin Ave WB
Cross Street: E of Erie Ave
Town/County: Midland Park/ Bergen
Job #: 0469-11-022T

Dynamic Traffic, LLC

1904 Main Street, Lake Como, NJ 07719
245 Main Street - Suite #110, Chester, NJ 07930
732-681-0760

Site Code: 1201
Station ID:

Latitude: 0' 0.0000 Undefined

Start Time	Mon 10-Oct-16	Tue 11-Oct-16	Wed 12-Oct-16	Thu 13-Oct-16	Fri 14-Oct-16	Average Day	Sat 15-Oct-16	Sun 16-Oct-16	Week Average
12:00 AM	*	*	25	34	26	28	60	44	38
01:00	*	*	17	12	24	18	38	24	23
02:00	*	*	10	8	15	11	16	16	13
03:00	*	*	5	6	3	5	4	8	5
04:00	*	*	15	15	15	15	6	3	11
05:00	*	*	44	46	42	44	27	14	35
06:00	*	*	147	132	133	137	64	34	102
07:00	*	*	351	354	374	360	204	103	277
08:00	*	*	**409**	**428**	431	423	278	182	346
09:00	*	*	367	370	357	365	378	300	354
10:00	*	*	389	380	408	392	429	310	383
11:00	*	*	354	425	**512**	**430**	**518**	**363**	**434**
12:00 PM	*	*	526	508	578	537	**533**	**404**	**510**
01:00	*	*	486	476	504	489	527	390	477
02:00	*	*	488	489	556	511	468	374	475
03:00	*	*	544	560	**582**	562	464	314	493
04:00	*	*	**547**	555	560	554	411	322	479
05:00	*	*	538	**586**	574	**566**	364	332	479
06:00	*	*	434	450	464	449	336	259	389
07:00	*	*	320	362	395	359	270	222	314
08:00	*	*	243	274	282	266	216	170	237
09:00	*	*	156	180	194	177	184	98	162
10:00	*	*	99	110	164	124	124	50	109
11:00	*	*	46	54	90	63	58	36	57
Total	0	0	6560	6814	7283	6885	5977	4372	6202
AM Peak	-	-	08:00	08:00	11:00	11:00	11:00	11:00	11:00
Vol.	-	-	409	428	512	430	518	363	434
PM Peak	-	-	16:00	17:00	15:00	17:00	12:00	12:00	12:00
Vol.	-	-	547	586	582	566	533	404	510

Location: Godwin Ave WB
Cross Street: E of Erie Ave
Town/County: Midland Park/ Bergen
Job #: 0469-11-022T

Dynamic Traffic, LLC

1904 Main Street, Lake Como, NJ 07719
245 Main Street - Suite #110, Chester, NJ 07930
732-681-0760

Site Code: 1201
Station ID:

Latitude: 0' 0.0000 Undefined

Start Time	Mon 17-Oct-16	Tue 18-Oct-16	Wed 19-Oct-16	Thu 20-Oct-16	Fri 21-Oct-16	Average Day	Sat 22-Oct-16	Sun 23-Oct-16	Week Average
12:00 AM	14	24	*	*	*	19	*	*	19
01:00	17	14	*	*	*	16	*	*	16
02:00	8	8	*	*	*	8	*	*	8
03:00	6	5	*	*	*	6	*	*	6
04:00	11	20	*	*	*	16	*	*	16
05:00	40	48	*	*	*	44	*	*	44
06:00	162	162	*	*	*	162	*	*	162
07:00	332	344	*	*	*	338	*	*	338
08:00	388	389	*	*	*	388	*	*	388
09:00	326	**414**	*	*	*	370	*	*	370
10:00	397	369	*	*	*	383	*	*	383
11:00	**447**	354	*	*	*	**400**	*	*	**400**
12:00 PM	491	526	*	*	*	508	*	*	508
01:00	473	486	*	*	*	480	*	*	480
02:00	480	503	*	*	*	492	*	*	492
03:00	523	552	*	*	*	538	*	*	538
04:00	520	546	*	*	*	533	*	*	533
05:00	**543**	**560**	*	*	*	**552**	*	*	**552**
06:00	483	458	*	*	*	470	*	*	470
07:00	336	353	*	*	*	344	*	*	344
08:00	219	255	*	*	*	237	*	*	237
09:00	149	170	*	*	*	160	*	*	160
10:00	90	116	*	*	*	103	*	*	103
11:00	50	60	*	*	*	55	*	*	55
Total	6505	6736	0	0	0	6622	0	0	6622
AM Peak	11:00	09:00	-	-	-	11:00	-	-	11:00
Vol.	447	414	-	-	-	400	-	-	400
PM Peak	17:00	17:00	-	-	-	17:00	-	-	17:00
Vol.	543	560	-	-	-	552	-	-	552
Total	6505	6736	6560	6814	7283	13507	5977	4372	12824
ADT		ADT 6,321		AADT 6,321					

Appendix C
Capacity Analysis

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	3	552	1	3	550
Future Vol, veh/h	1	3	552	1	3	550
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-3	-	4	-	-	-2
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	5	0	0	3
Mvmt Flow	1	3	587	1	3	585

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1179	588	0	0	588	0
Stage 1	588	-	-	-	-	-
Stage 2	591	-	-	-	-	-
Critical Hdwy	5.8	5.9	-	-	4.1	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	259	538	-	-	997	-
Stage 1	617	-	-	-	-	-
Stage 2	615	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	258	538	-	-	997	-
Mov Cap-2 Maneuver	258	-	-	-	-	-
Stage 1	617	-	-	-	-	-
Stage 2	613	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	423	997	-
HCM Lane V/C Ratio	-	-	0.01	0.003	-
HCM Control Delay (s)	-	-	13.6	8.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	3	0	1	0	552	3	1	550	0
Future Vol, veh/h	0	0	0	3	0	1	0	552	3	1	550	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-3	-	-	4	-	-	-3	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	0	2	0	0	0	0	5	0	0	3	0
Mvmt Flow	0	0	0	3	0	1	0	587	3	1	585	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1176	1177	585	1176	1176	589	-	0	0	590	0	0
Stage 1	587	587	-	589	589	-	-	-	-	-	-	-
Stage 2	589	590	-	587	587	-	-	-	-	-	-	-
Critical Hdwy	6.92	6.3	6.12	6.5	5.9	5.9	-	-	-	4.1	-	-
Critical Hdwy Stg 1	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	180	206	519	207	235	538	0	-	-	995	-	0
Stage 1	512	516	-	549	550	-	0	-	-	-	-	0
Stage 2	511	515	-	551	551	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	179	206	519	207	235	538	-	-	-	995	-	-
Mov Cap-2 Maneuver	179	206	-	207	235	-	-	-	-	-	-	-
Stage 1	512	515	-	549	550	-	-	-	-	-	-	-
Stage 2	510	515	-	550	550	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	20	0	0
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	245	995	-
HCM Lane V/C Ratio	-	-	-	0.017	0.001	-
HCM Control Delay (s)	-	-	0	20	8.6	0
HCM Lane LOS	-	-	A	C	A	A
HCM 95th %tile Q(veh)	-	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	0	526	0	1	623
Future Vol, veh/h	1	0	526	0	1	623
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-3	-	4	-	-	-2
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	1	0	578	0	1	685

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1265	578	0	0	578	0
Stage 1	578	-	-	-	-	-
Stage 2	687	-	-	-	-	-
Critical Hdwy	5.8	5.9	-	-	4.1	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	233	545	-	-	1006	-
Stage 1	622	-	-	-	-	-
Stage 2	564	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	233	545	-	-	1006	-
Mov Cap-2 Maneuver	233	-	-	-	-	-
Stage 1	622	-	-	-	-	-
Stage 2	563	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	233	1006	-
HCM Lane V/C Ratio	-	-	0.005	0.001	-
HCM Control Delay (s)	-	-	20.5	8.6	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	1	0	0	0	526	0	1	623	0
Future Vol, veh/h	0	0	0	1	0	0	0	526	0	1	623	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-3	-	-	4	-	-	-3	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	0	2	0	0	0	0	1	0	0	1	0
Mvmt Flow	0	0	0	1	0	0	0	578	0	1	685	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1265	1265	685	1265	1265	578	-	0	0	578	0	0
Stage 1	687	687	-	578	578	-	-	-	-	-	-	-
Stage 2	578	578	-	687	687	-	-	-	-	-	-	-
Critical Hdwy	6.92	6.3	6.12	6.5	5.9	5.9	-	-	-	4.1	-	-
Critical Hdwy Stg 1	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	157	183	457	182	211	545	0	-	-	1006	-	0
Stage 1	454	468	-	556	555	-	0	-	-	-	-	0
Stage 2	518	521	-	494	505	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	157	183	457	182	211	545	-	-	-	1006	-	-
Mov Cap-2 Maneuver	157	183	-	182	211	-	-	-	-	-	-	-
Stage 1	454	467	-	556	555	-	-	-	-	-	-	-
Stage 2	518	521	-	493	504	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	24.9	0	0
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	182	1006	-
HCM Lane V/C Ratio	-	-	-	0.006	0.001	-
HCM Control Delay (s)	-	-	0	24.9	8.6	0
HCM Lane LOS	-	-	A	C	A	A
HCM 95th %tile Q(veh)	-	-	-	0	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	3	534	1	2	640
Future Vol, veh/h	1	3	534	1	2	640
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-3	-	4	-	-	-2
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	1	3	607	1	2	727

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1339	608	0	0	608	0
Stage 1	608	-	-	-	-	-
Stage 2	731	-	-	-	-	-
Critical Hdwy	5.8	5.9	-	-	4.1	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	213	525	-	-	980	-
Stage 1	606	-	-	-	-	-
Stage 2	542	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	212	525	-	-	980	-
Mov Cap-2 Maneuver	212	-	-	-	-	-
Stage 1	606	-	-	-	-	-
Stage 2	540	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	383	980	-
HCM Lane V/C Ratio	-	-	0.012	0.002	-
HCM Control Delay (s)	-	-	14.5	8.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	2	0	8	0	527	3	4	637	0
Future Vol, veh/h	0	0	0	2	0	8	0	527	3	4	637	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-3	-	-	4	-	-	-3	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	0	2	0	0	0	0	1	0	0	1	0
Mvmt Flow	0	0	0	2	0	9	0	599	3	5	724	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1339	1336	724	1335	1335	601	-	0	0	602	0	0
Stage 1	734	734	-	601	601	-	-	-	-	-	-	-
Stage 2	605	602	-	734	734	-	-	-	-	-	-	-
Critical Hdwy	6.92	6.3	6.12	6.5	5.9	5.9	-	-	-	4.1	-	-
Critical Hdwy Stg 1	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	140	167	434	165	194	530	0	-	-	985	-	0
Stage 1	429	447	-	542	544	-	0	-	-	-	-	0
Stage 2	501	509	-	469	485	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	137	166	434	164	192	530	-	-	-	985	-	-
Mov Cap-2 Maneuver	137	166	-	164	192	-	-	-	-	-	-	-
Stage 1	429	443	-	542	544	-	-	-	-	-	-	-
Stage 2	492	509	-	465	481	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	15.2	0	0.1
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	366	985	-
HCM Lane V/C Ratio	-	-	-	0.031	0.005	-
HCM Control Delay (s)	-	-	0	15.2	8.7	0
HCM Lane LOS	-	-	A	C	A	A
HCM 95th %tile Q(veh)	-	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	3	575	1	3	574
Future Vol, veh/h	1	3	575	1	3	574
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-3	-	4	-	-	-2
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	5	0	0	3
Mvmt Flow	1	3	612	1	3	611

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1230	613	0	0	613	0
Stage 1	613	-	-	-	-	-
Stage 2	617	-	-	-	-	-
Critical Hdwy	5.8	5.9	-	-	4.1	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	243	522	-	-	976	-
Stage 1	603	-	-	-	-	-
Stage 2	601	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	242	522	-	-	976	-
Mov Cap-2 Maneuver	242	-	-	-	-	-
Stage 1	603	-	-	-	-	-
Stage 2	598	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	405	976	-
HCM Lane V/C Ratio	-	-	0.011	0.003	-
HCM Control Delay (s)	-	-	14	8.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	0	5	3	0	1	7	569	3	1	567	7
Future Vol, veh/h	6	0	5	3	0	1	7	569	3	1	567	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-3	-	-	4	-	-	-3	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	0	2	0	0	0	0	5	0	0	3	0
Mvmt Flow	6	0	5	3	0	1	7	605	3	1	603	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1230	1231	607	1232	1233	607	610	0	0	608	0	0
Stage 1	609	609	-	621	621	-	-	-	-	-	-	-
Stage 2	621	622	-	611	612	-	-	-	-	-	-	-
Critical Hdwy	6.92	6.3	6.12	6.5	5.9	5.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	165	192	505	191	219	526	979	-	-	980	-	-
Stage 1	499	505	-	531	535	-	-	-	-	-	-	-
Stage 2	492	499	-	536	539	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	163	190	505	187	216	526	979	-	-	980	-	-
Mov Cap-2 Maneuver	163	190	-	187	216	-	-	-	-	-	-	-
Stage 1	494	504	-	525	529	-	-	-	-	-	-	-
Stage 2	486	494	-	529	538	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.1	21.5	0.1	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	979	-	-	235	223	980	-	-
HCM Lane V/C Ratio	0.008	-	-	0.05	0.019	0.001	-	-
HCM Control Delay (s)	8.7	-	-	21.1	21.5	8.7	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	0	544	0	1	647
Future Vol, veh/h	1	0	544	0	1	647
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-3	-	4	-	-	-2
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	1	0	598	0	1	711

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1311	598	0	0	598	0
Stage 1	598	-	-	-	-	-
Stage 2	713	-	-	-	-	-
Critical Hdwy	5.8	5.9	-	-	4.1	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	220	532	-	-	989	-
Stage 1	611	-	-	-	-	-
Stage 2	551	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	220	532	-	-	989	-
Mov Cap-2 Maneuver	220	-	-	-	-	-
Stage 1	611	-	-	-	-	-
Stage 2	550	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	220	989	-
HCM Lane V/C Ratio	-	-	0.005	0.001	-
HCM Control Delay (s)	-	-	21.4	8.6	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	4	1	0	0	7	539	0	1	638	9
Future Vol, veh/h	5	0	4	1	0	0	7	539	0	1	638	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-3	-	-	4	-	-	-3	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	0	2	0	0	0	0	1	0	0	1	0
Mvmt Flow	5	0	4	1	0	0	8	592	0	1	701	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1316	1316	706	1318	1321	592	711	0	0	592	0	0
Stage 1	708	708	-	608	608	-	-	-	-	-	-	-
Stage 2	608	608	-	710	713	-	-	-	-	-	-	-
Critical Hdwy	6.92	6.3	6.12	6.5	5.9	5.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	145	171	444	169	197	536	898	-	-	994	-	-
Stage 1	443	458	-	538	541	-	-	-	-	-	-	-
Stage 2	499	506	-	481	494	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	143	168	444	165	194	536	898	-	-	994	-	-
Mov Cap-2 Maneuver	143	168	-	165	194	-	-	-	-	-	-	-
Stage 1	437	457	-	531	534	-	-	-	-	-	-	-
Stage 2	493	499	-	475	493	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.4	27	0.1	0
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	898	-	-	205	165	994	-	-
HCM Lane V/C Ratio	0.009	-	-	0.048	0.007	0.001	-	-
HCM Control Delay (s)	9	-	-	23.4	27	8.6	0	-
HCM Lane LOS	A	-	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	3	557	1	2	666
Future Vol, veh/h	1	3	557	1	2	666
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-3	-	4	-	-	-2
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	1	3	633	1	2	757

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1395	634	0	0	634	0
Stage 1	634	-	-	-	-	-
Stage 2	761	-	-	-	-	-
Critical Hdwy	5.8	5.9	-	-	4.1	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	199	509	-	-	959	-
Stage 1	592	-	-	-	-	-
Stage 2	528	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	198	509	-	-	959	-
Mov Cap-2 Maneuver	198	-	-	-	-	-
Stage 1	592	-	-	-	-	-
Stage 2	526	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	365	959	-
HCM Lane V/C Ratio	-	-	0.012	0.002	-
HCM Control Delay (s)	-	-	15	8.8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	0	7	2	0	8	7	543	3	4	656	7
Future Vol, veh/h	7	0	7	2	0	8	7	543	3	4	656	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-3	-	-	4	-	-	-3	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	0	2	0	0	0	0	1	0	0	1	0
Mvmt Flow	8	0	8	2	0	9	8	617	3	5	745	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1398	1395	749	1398	1398	619	753	0	0	620	0	0
Stage 1	759	759	-	635	635	-	-	-	-	-	-	-
Stage 2	639	636	-	763	763	-	-	-	-	-	-	-
Critical Hdwy	6.92	6.3	6.12	6.5	5.9	5.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	128	154	420	151	179	518	866	-	-	970	-	-
Stage 1	416	436	-	523	529	-	-	-	-	-	-	-
Stage 2	481	492	-	454	472	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	124	150	420	146	175	518	866	-	-	970	-	-
Mov Cap-2 Maneuver	124	150	-	146	175	-	-	-	-	-	-	-
Stage 1	410	432	-	516	522	-	-	-	-	-	-	-
Stage 2	466	485	-	441	468	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.6	15.9	0.1	0.1
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	866	-	-	191	343	970	-	-
HCM Lane V/C Ratio	0.009	-	-	0.083	0.033	0.005	-	-
HCM Control Delay (s)	9.2	-	-	25.6	15.9	8.7	0	-
HCM Lane LOS	A	-	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Traffic Vol, veh/h	0	0	0	1	0	3	49	593	1	3	543	49
Future Vol, veh/h	0	0	0	1	0	3	49	593	1	3	543	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-3	-	-	4	-	-	-2	-
Peak Hour Factor	25	25	25	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	2	5	0	0	3	2
Mvmt Flow	0	0	0	1	0	3	52	631	1	3	578	52

Major/Minor	Minor1			Major1			Major2		
Conflicting Flow All	1346	1372	632	630	0	0	632	0	0
Stage 1	736	736	-	-	-	-	-	-	-
Stage 2	610	636	-	-	-	-	-	-	-
Critical Hdwy	5.8	5.9	5.9	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	4.8	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.8	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	211	185	510	952	-	-	960	-	-
Stage 1	540	484	-	-	-	-	-	-	-
Stage 2	605	528	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	192	0	510	952	-	-	960	-	-
Mov Cap-2 Maneuver	192	0	-	-	-	-	-	-	-
Stage 1	495	0	-	-	-	-	-	-	-
Stage 2	602	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.1	0.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	952	-	-	361	960	-	-
HCM Lane V/C Ratio	0.055	-	-	0.012	0.003	-	-
HCM Control Delay (s)	9	0	-	15.1	8.8	0	-
HCM Lane LOS	A	A	-	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	0	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	0	47	3	0	1	0	594	3	1	543	0
Future Vol, veh/h	48	0	47	3	0	1	0	594	3	1	543	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-3	-	-	4	-	-	-3	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	0	2	0	0	0	0	5	0	0	3	0
Mvmt Flow	51	0	50	3	0	1	0	632	3	1	578	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1214	1215	578	1239	1214	634	-	0	0	635	0	0
Stage 1	580	580	-	634	634	-	-	-	-	-	-	-
Stage 2	634	635	-	605	580	-	-	-	-	-	-	-
Critical Hdwy	6.92	6.3	6.12	6.5	5.9	5.9	-	-	-	4.1	-	-
Critical Hdwy Stg 1	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	169	196	524	189	224	509	0	-	-	958	-	0
Stage 1	516	520	-	523	529	-	0	-	-	-	-	0
Stage 2	484	493	-	540	554	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	168	196	524	171	224	509	-	-	-	958	-	-
Mov Cap-2 Maneuver	168	196	-	171	224	-	-	-	-	-	-	-
Stage 1	516	519	-	523	529	-	-	-	-	-	-	-
Stage 2	483	493	-	487	553	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28.4	22.9	0	0
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	253	205	958	-
HCM Lane V/C Ratio	-	-	0.399	0.021	0.001	-
HCM Control Delay (s)	-	-	28.4	22.9	8.8	0
HCM Lane LOS	-	-	D	C	A	A
HCM 95th %tile Q(veh)	-	-	1.8	0.1	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	1	0	0	23	554	0	1	630	24
Future Vol, veh/h	0	0	0	1	0	0	23	554	0	1	630	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-3	-	-	4	-	-	-2	-
Peak Hour Factor	25	25	25	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	2	1	0	0	1	2
Mvmt Flow	0	0	0	1	0	0	25	609	0	1	692	26

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	1366	1379	609	718	0	0	609	0	0
Stage 1	659	659	-	-	-	-	-	-	-
Stage 2	707	720	-	-	-	-	-	-	-
Critical Hdwy	5.8	5.9	5.9	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	4.8	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.8	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	206	184	525	883	-	-	979	-	-
Stage 1	579	518	-	-	-	-	-	-	-
Stage 2	554	491	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	197	0	525	883	-	-	979	-	-
Mov Cap-2 Maneuver	197	0	-	-	-	-	-	-	-
Stage 1	554	0	-	-	-	-	-	-	-
Stage 2	553	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.4	0.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	883	-	-	197	979	-	-
HCM Lane V/C Ratio	0.029	-	-	0.006	0.001	-	-
HCM Control Delay (s)	9.2	0	-	23.4	8.7	0	-
HCM Lane LOS	A	A	-	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	0	23	1	0	0	0	553	0	1	630	0
Future Vol, veh/h	24	0	23	1	0	0	0	553	0	1	630	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-3	-	-	4	-	-	-3	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	0	2	0	0	0	0	1	0	0	1	0
Mvmt Flow	26	0	25	1	0	0	0	608	0	1	692	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1302	1302	692	1315	1302	608	-	0	0	608	0	0
Stage 1	694	694	-	608	608	-	-	-	-	-	-	-
Stage 2	608	608	-	707	694	-	-	-	-	-	-	-
Critical Hdwy	6.92	6.3	6.12	6.5	5.9	5.9	-	-	-	4.1	-	-
Critical Hdwy Stg 1	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	148	174	453	170	202	525	0	-	-	980	-	0
Stage 1	450	465	-	538	541	-	0	-	-	-	-	0
Stage 2	499	506	-	483	502	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	148	174	453	160	202	525	-	-	-	980	-	-
Mov Cap-2 Maneuver	148	174	-	160	202	-	-	-	-	-	-	-
Stage 1	450	464	-	538	541	-	-	-	-	-	-	-
Stage 2	499	506	-	455	501	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.2	27.7	0	0
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	221	160	980	-
HCM Lane V/C Ratio	-	-	0.234	0.007	0.001	-
HCM Control Delay (s)	-	-	26.2	27.7	8.7	0
HCM Lane LOS	-	-	D	D	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Traffic Vol, veh/h	0	0	0	1	0	3	48	580	1	2	641	48
Future Vol, veh/h	0	0	0	1	0	3	48	580	1	2	641	48
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-3	-	-	4	-	-	-2	-
Peak Hour Factor	25	25	25	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	2	1	0	0	1	2
Mvmt Flow	0	0	0	1	0	3	55	659	1	2	728	55

Major/Minor	Minor1		Major1				Major2		
Conflicting Flow All	1530	1557	660	783	0	0	660	0	0
Stage 1	770	770	-	-	-	-	-	-	-
Stage 2	760	787	-	-	-	-	-	-	-
Critical Hdwy	5.8	5.9	5.9	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	4.8	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.8	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	168	148	493	835	-	-	938	-	-
Stage 1	523	470	-	-	-	-	-	-	-
Stage 2	528	463	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	150	0	493	835	-	-	938	-	-
Mov Cap-2 Maneuver	150	0	-	-	-	-	-	-	-
Stage 1	469	0	-	-	-	-	-	-	-
Stage 2	526	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.6	0.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	835	-	-	314	938	-	-
HCM Lane V/C Ratio	0.065	-	-	0.014	0.002	-	-
HCM Control Delay (s)	9.6	0	-	16.6	8.8	0	-
HCM Lane LOS	A	A	-	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	0	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	0	47	2	0	8	0	573	3	4	638	0
Future Vol, veh/h	48	0	47	2	0	8	0	573	3	4	638	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-3	-	-	4	-	-	-3	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	0	2	0	0	0	0	1	0	0	1	0
Mvmt Flow	55	0	53	2	0	9	0	651	3	5	725	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1392	1389	725	1415	1388	653	-	0	0	654	0	0
Stage 1	735	735	-	653	653	-	-	-	-	-	-	-
Stage 2	657	654	-	762	735	-	-	-	-	-	-	-
Critical Hdwy	6.92	6.3	6.12	6.5	5.9	5.9	-	-	-	4.1	-	-
Critical Hdwy Stg 1	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.92	5.3	-	5.5	4.9	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.318	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	129	155	434	147	182	497	0	-	-	943	-	0
Stage 1	428	446	-	512	520	-	0	-	-	-	-	0
Stage 2	471	483	-	455	484	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	126	154	434	128	180	497	-	-	-	943	-	-
Mov Cap-2 Maneuver	126	154	-	128	180	-	-	-	-	-	-	-
Stage 1	428	442	-	512	520	-	-	-	-	-	-	-
Stage 2	462	483	-	395	480	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	44.6	16.9	0	0.1
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	194	315	943	-
HCM Lane V/C Ratio	-	-	0.556	0.036	0.005	-
HCM Control Delay (s)	-	-	44.6	16.9	8.8	0
HCM Lane LOS	-	-	E	C	A	A
HCM 95th %tile Q(veh)	-	-	3	0.1	0	-

Dynamic Engineering Consultants, PC
40 Main Street, 3rd Floor
Toms River, NJ 08753
T. 732-974-0198

May 24, 2021

Preliminary Cut/Fill Report:

The preliminary cut/fill calculations, provided below, are approximate and are based on a comparison of the site's existing grade to the proposed grade, as shown on the Grading Plan, prepared by our office, dated November 12, 2020, last revised May 24, 2021.

Approximate Proposed Cut On-Site = 1,352.940 Cu. Yd.

Approximate Proposed Fill On-Site = 3.432 Cu. Yd.

Approximate Net Cut/Fill On-Site = **1,349.508 Cu. Yd. (Fill)**

DRAINAGE STATEMENT

For

ABDD Capital, LLC

Proposed Dunkin' Drive-Thru Restaurant

Block 20.10, Lot 5.01
195 Godwin Avenue (CR 84)
Borough of Midland Park, Bergen County, New Jersey

Prepared by:

DYNAMIC ENGINEERING

1904 Main Street
Lake Como, NJ 07719
(732) 974-0198

Joshua M. Sewald, PE, PP
NJ Professional Engineer License #52908

November 2020
DEC # 3486-99-001

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APPENDIX

I. Drainage Summary

This Drainage Statement has been prepared to define and analyze the stormwater drainage conditions that would occur as a result of the redevelopment of Block 20.01, Lot 5.01 in the Borough of Midland Park, Bergen County, New Jersey.

The subject site consists of 0.50 acres (21,968 SF) and is located at 195 Godwin Avenue (CR 84) and is presently developed with a 2,534 SF Friendly's Restaurant. The site is bordered to the north by the Borough of Midland Park Post Office, to the east by Godwin Avenue with commercial uses beyond, to the south by the Midland Park Christian Reformed Church and to the west by residential uses with Van Blarcom Avenue beyond.

The existing conditions of the tract have been verified by the Boundary and Topographic Survey, prepared by Dynamic Survey, dated 08/10/2020, last revised 11/10/2020.

The proposed site improvements consist of demolishing the existing building for the construction of a 2,119 SF Dunkin' Drive-Thru Restaurant. Associated improvements include parking and access, lighting, landscaping and associated site features. It is important to note that the development will result in a net reduction in impervious area of approximately 5.5% (1,206 SF).

Based on the fact that the proposed development will not result in more than one (1) acre of land disturbance, and will not result in an increase of impervious coverage on-site by ¼ acre or more, the project is not classified as a "major development" and is not subject to the NJDEP Stormwater Management Rules (NJAC 7:8). Further, the proposed development decreases the area of impervious surfaces on-site. Therefore, the proposed project is not subject to the New Jersey Standards for Soil Erosion and Sediment Control runoff rate reduction requirements. It should be noted that due to the decrease in impervious coverage on-site, the peak runoff rates will be reduced under proposed conditions.

II. Existing Site Conditions

The subject site has been evaluated with the following drainage sub-watershed areas as depicted on the Existing Drainage Area Map included within the Appendix of this report:

Existing Study Area Godwin: This area consists of the majority of the subject site including the existing building, parking and access, and open space areas along the Godwin Avenue frontage. Stormwater runoff from this area is tributary to the existing stormwater conveyance system within Godwin Avenue via the existing on-site stormwater management facilities and overland flow.

Existing Study Area West: This area consists of open space located adjacent to the westerly property line. Stormwater runoff from this area drains to the west via overland flow.

Based upon the Bergen County Soil Survey, the soil types native to the site include:

SOIL TYPE	SOIL TYPE NAME	HYDROLOGIC SOIL GROUP
DuuB	Dunellen-Urban land complex, 3 to 8 percent slopes	A
DuuC	Dunellen-Urban land complex, 8 to 15 percent slopes	A

III. Proposed Site Conditions

The proposed site conditions have been evaluated using the following drainage sub-watershed area as depicted on the Proposed Drainage Area Map included within the Appendix of this report:

Proposed Study Area Godwin: This area consists of the majority of the subject site including the proposed building, parking and access, and open space areas along the Godwin Avenue frontage. The majority of the stormwater runoff from this area will be collected by onsite stormwater conveyance system and routed to the existing stormwater conveyance system within Godwin Avenue and overland flow.

Existing Study Area West: This area consists of open space located at the western side of the site. Stormwater runoff from this area will drain to the west of via overland flow as it does in the existing condition.

IV. Runoff Rate Reduction Performance

As noted previously, based on the fact that the project does not meet the definition of a major development under NJAC 7:8, the project is not subject to the stormwater runoff quantity, and groundwater recharge standards set forth by the NJDEP Stormwater Management Rules (NJAC 7:8). Additionally, the project will result in a reduction of impervious coverage on-site.

The following is a comparison of the pre and post-development runoff rates for the subject site.

Pre-Development and Post Development Peak Runoff Results Summary – Study Area Godwin

	EXISTING RUNOFF RATE (CFS)	PROPOSED RUNOFF RATE (CFS)	REDUCTION IN RUNOFF RATE (CFS)
2-Year	1.036	0.959	0.077
10-Year	1.584	1.465	0.119
100-Year	2.732	2.589	0.174

Pre-Development and Post Development Peak Runoff Results Summary – Study Area West

	EXISTING RUNOFF RATE (CFS)	PROPOSED RUNOFF RATE (CFS)	REDUCTION IN RUNOFF RATE (CFS)
2-Year	0.000	0.000	0.000
10-Year	0.001	0.000	0.001
100-Year	0.020	0.010	0.010

Pre-Development and Post Development Peak Runoff Results Summary - Overall

	EXISTING RUNOFF RATE (CFS)	PROPOSED RUNOFF RATE (CFS)	REDUCTION IN RUNOFF RATE (CFS)
2-Year	1.036	0.959	0.077
10-Year	1.584	1.465	0.119
100-Year	2.749	2.567	0.182

V. Conclusion

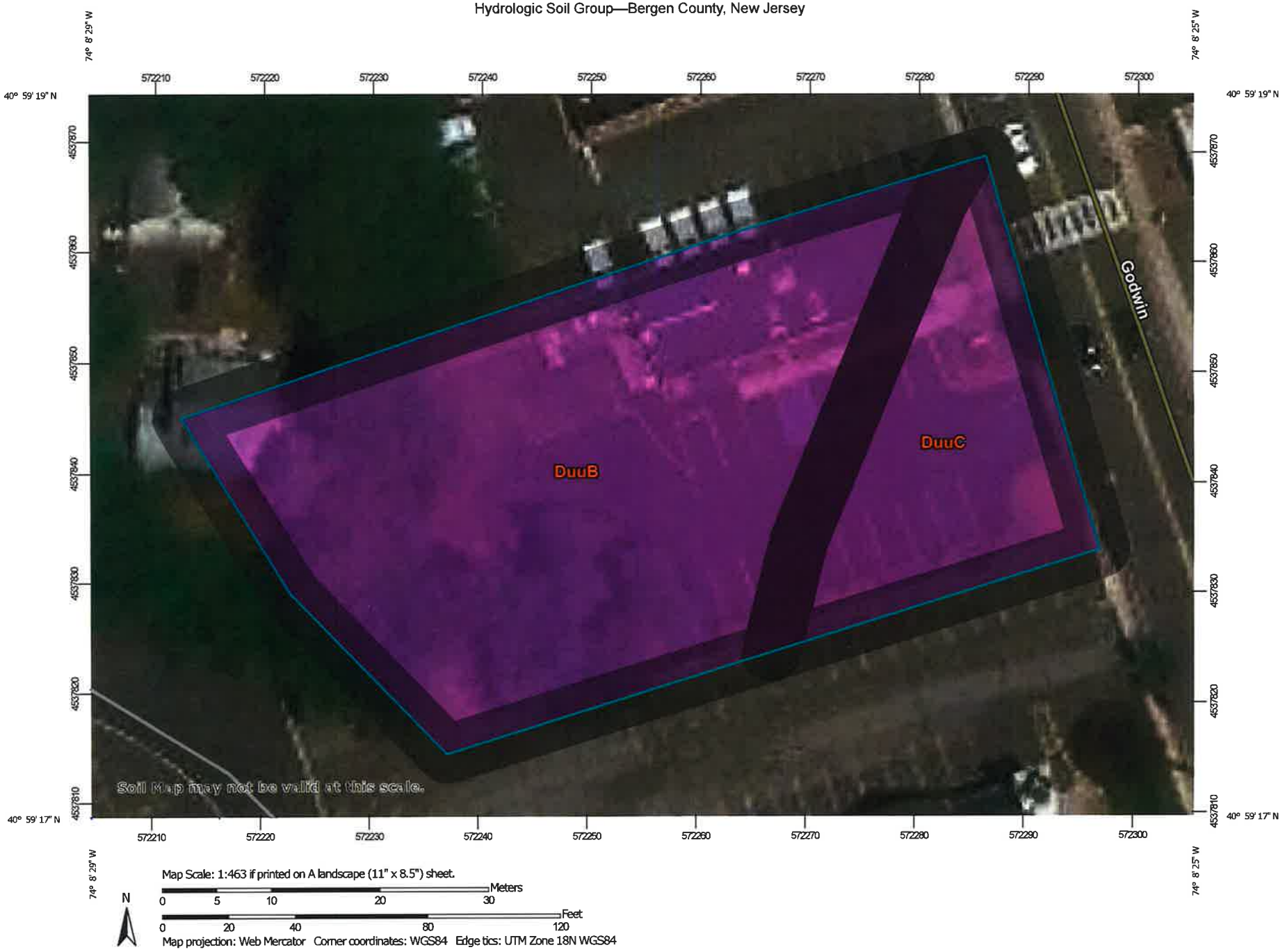
The proposed development has been designed with provisions for the safe and efficient control of stormwater runoff in a manner that will not adversely impact the existing drainage patterns, adjacent roadways, or adjacent parcels.

Although the project is exempt from the water quality requirements set forth by NJAC 7:8, the proposed development will result in a net reduction of impervious coverage thereby providing a benefit to the water quality of the stormwater leaving the site. Additionally, the project will promote groundwater recharge by reducing the amount of onsite impervious coverage.

Furthermore, the proposed redevelopment reduces the overall impervious coverage and therefore, reduces the stormwater runoff volume and runoff flow rates for the 2, 10, and 100-year storm events. With this stated, it is evident that the proposed development will not have a negative impact on the existing drainage pattern, water quality, or groundwater recharge on site or within the vicinity of the subject parcel.

APPENDIX

NRCS WEB SOIL SURVEY



Map Scale: 1:463 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 20 40 80 120

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bergen County, New Jersey
Survey Area Data: Version 17, Jun 1, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 7, 2013—Feb 26, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
DuuB	Dunellen-Urban land complex, 3 to 8 percent slopes	A	0.5	74.5%
DuuC	Dunellen-Urban land complex, 8 to 15 percent slopes	A	0.2	25.5%
Totals for Area of Interest			**0.7**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

RUNOFF CURVE NUMBER (CN) CALCULATIONS – EXISTING

DYNAMIC ENGINEERING

EXISTING DRAINAGE AREA SUMMARY AND AVERAGE CURVE NUMBER (CN) CALCULATIONS

Project: Proposed Dunkin Donuts w/ drive thru
Job #: 3486-99-001
Location: Midland Park

Computed By: JM
Checked By: MSA
Date: 11/5/2020

Drainage Area	Impervious Area (acre)	Impervious Area (sf)	Curve Number (CN) Used	HSG A - Open Space Area (acre)	HSG A - Open Space Area (sf)	Curve Number (CN) Used	Avg. Perv. Curve Number	Total Pervious Area (acres)	Total Area (acres)	TC (Min.)
SA West	0.00	-	98	0.02	815	39	39	0.02	0.02	10
SA Godwin Ave	0.40	17,312	98	0.09	3,841	39	39	0.09	0.49	10
Total	**0.40**	**17312**		**0.11**	**4656**			**0.11**	**0.50**	

Per County Soil Survey -	DuuB	HSG	A	Soil	Dunellen-Urban land complex, 3 to 8 percent slopes
Per County Soil Survey -	DuuC	HSG	A	Soil	Dunellen-Urban land complex, 8 to 15 percent slopes

Description	Runoff Curve Number (CN) (HSG A)
Impervious Surface	98
Open Space (lawn) (good)	39
Woods (good)	30

RUNOFF CURVE NUMBER (CN) CALCULATIONS – PROPOSED

DYNAMIC ENGINEERING

PROPOSED DRAINAGE AREA SUMMARY AND AVERAGE CURVE NUMBER (CN) CALCULATIONS

Project: Proposed Dunkin Donuts w/ drive thru
Job #: 3486-99-001
Location: Midland Park

Computed By: JM
Checked By: MSA
Date: 11/5/2020

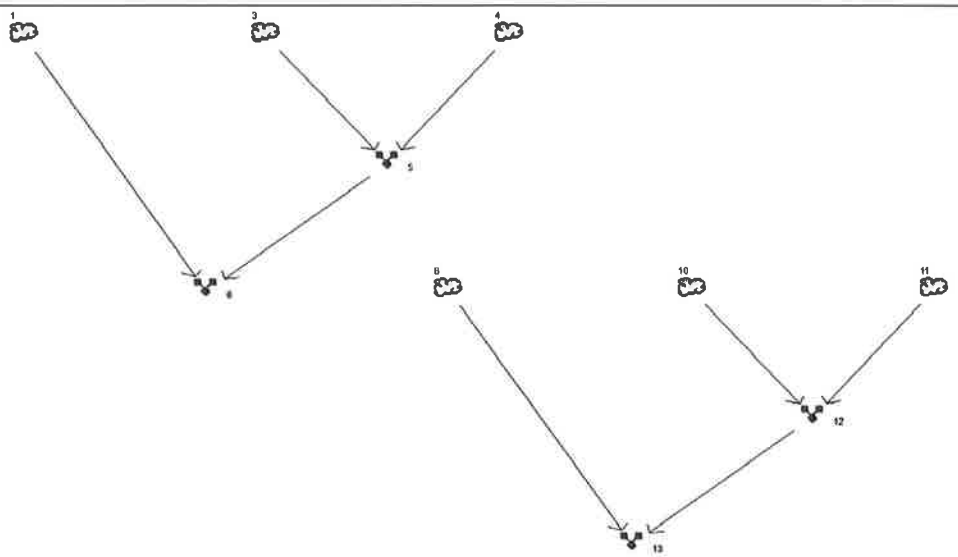
Drainage Area	Impervious Area (acre)	Impervious Area (sf)	Curve Number (CN) Used	HSG A - Open Space Area (acre)	HSG A - Open Space Area (sf)	Curve Number (CN) Used	Avg. Perv. Curve Number	Total Pervious Area (acres)	Total Area (acres)	TC (Min.)
SA West	0.00	-	98	0.01	609	39	39	0.01	0.01	10
SA Godwin Ave	0.37	16,106	98	0.12	5,253	39	39	0.12	0.49	10
Total	**0.37**	**16106**		**0.13**	**5862**			**0.13**	**0.50**	

Per County Soil Survey -	DuuB	HSG	A	Soil	Dunellen-Urban land complex, 3 to 8 percent slopes
Per County Soil Survey -	DuuC	HSG	A	Soil	Dunellen-Urban land complex, 8 to 15 percent slopes

Description	Runoff Curve Number (CN) (HSG A)
Impervious Surface	98
Open Space (lawn) (good)	39
Woods (good)	30

HYDROGRAPH SUMMARY REPORTS – EXISTING & PROPOSED CONDITIONS, 2, 10 & 100 YEAR STORM EVENTS

Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	SCS Runoff	Ex. Study Area West (Perv)
3	SCS Runoff	Ex. Study Area Godwin (Imp)
4	SCS Runoff	Ex. Study Area Godwin (Perv)
5	Combine	Ex. SA Godwin Total
6	Combine	Ex. Total
8	SCS Runoff	Prop. Study Area West (Perv)
10	SCS Runoff	Prop. Study Area Godwin (Imp)
11	SCS Runoff	Prop. Study Area Godwin (Perv)
12	Combine	Prop SA Godwin Total
13	Combine	Prop. Total

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-------	-------	0.000	-------	-------	0.001	-------	-------	0.020	Ex. Study Area West (Perv)
3	SCS Runoff	-------	-------	1.036	-------	-------	1.584	-------	-------	2.656	Ex. Study Area Godwin (Imp)
4	SCS Runoff	-------	-------	0.000	-------	-------	0.003	-------	-------	0.089	Ex. Study Area Godwin (Perv)
5	Combine	3, 4	-------	1.036	-------	-------	1.584	-------	-------	2.732	Ex. SA Godwin Total
6	Combine	1, 5	-------	1.036	-------	-------	1.584	-------	-------	2.749	Ex. Total
8	SCS Runoff	-------	-------	0.000	-------	-------	0.000	-------	-------	0.010	Prop. Study Area West (Perv)
10	SCS Runoff	-------	-------	0.959	-------	-------	1.465	-------	-------	2.457	Prop. Study Area Godwin (Imp)
11	SCS Runoff	-------	-------	0.000	-------	-------	0.004	-------	-------	0.119	Prop. Study Area Godwin (Perv)
12	Combine	10, 11	-------	0.959	-------	-------	1.465	-------	-------	2.558	Prop SA Godwin Total
13	Combine	8, 12	-------	0.959	-------	-------	1.465	-------	-------	2.567	Prop. Total

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

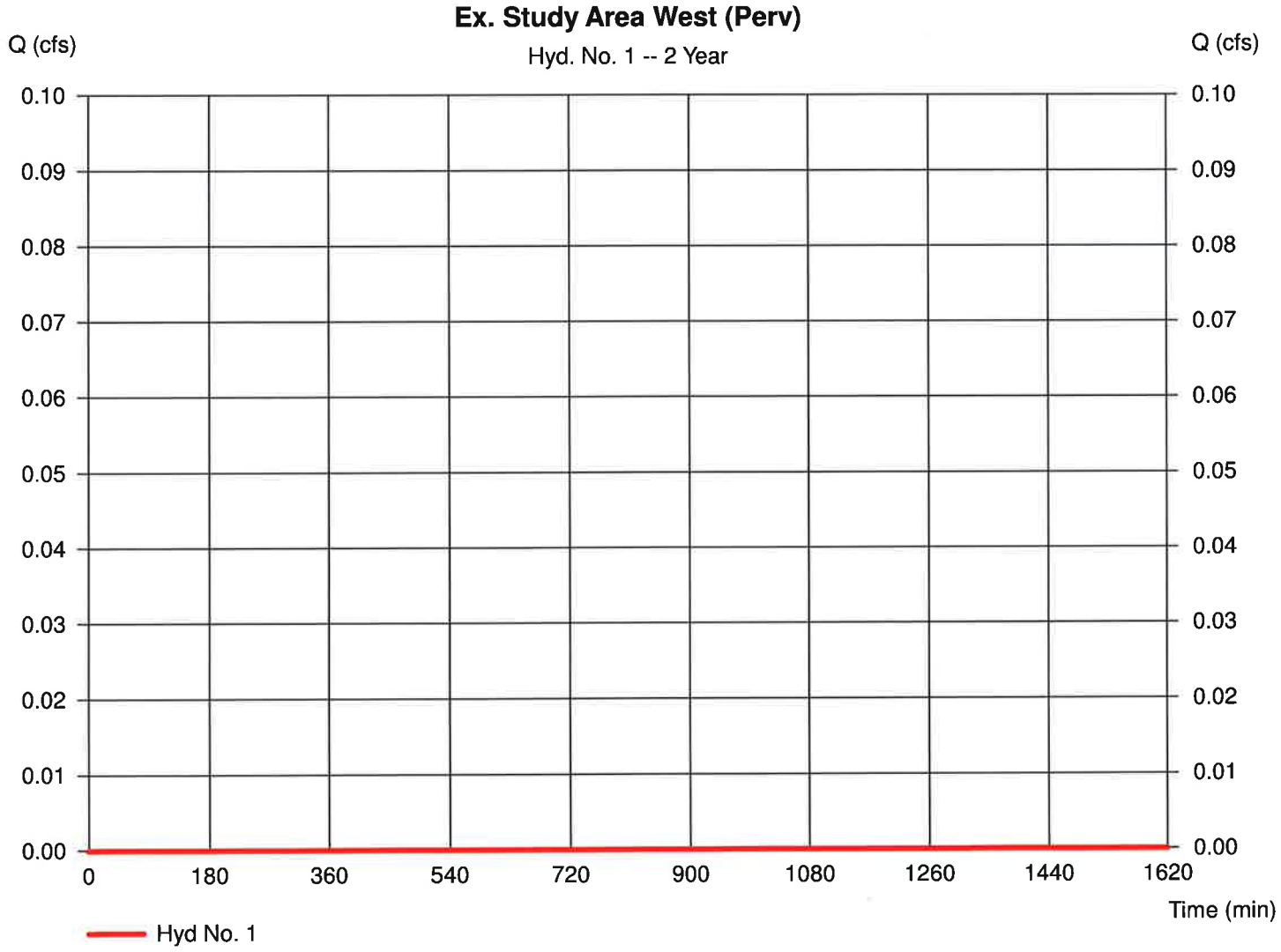
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.000	3	1440	0	----	------	------	Ex. Study Area West (Perv)
3	SCS Runoff	1.036	3	726	4,229	----	------	------	Ex. Study Area Godwin (Imp)
4	SCS Runoff	0.000	3	1440	1	----	------	------	Ex. Study Area Godwin (Perv)
5	Combine	1.036	3	726	4,230	3, 4	------	------	Ex. SA Godwin Total
6	Combine	1.036	3	726	4,230	1, 5	------	------	Ex. Total
8	SCS Runoff	0.000	3	1440	0	----	------	------	Prop. Study Area West (Perv)
10	SCS Runoff	0.959	3	726	3,912	----	------	------	Prop. Study Area Godwin (Imp)
11	SCS Runoff	0.000	3	1440	1	----	------	------	Prop. Study Area Godwin (Perv)
12	Combine	0.959	3	726	3,913	10, 11	------	------	Prop SA Godwin Total
13	Combine	0.959	3	726	3,913	8, 12	------	------	Prop. Total

Hydrograph Report

Hyd. No. 1

Ex. Study Area West (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 1440 min
Time interval	= 3 min	Hyd. volume	= 0 cuft
Drainage area	= 0.020 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.34 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484

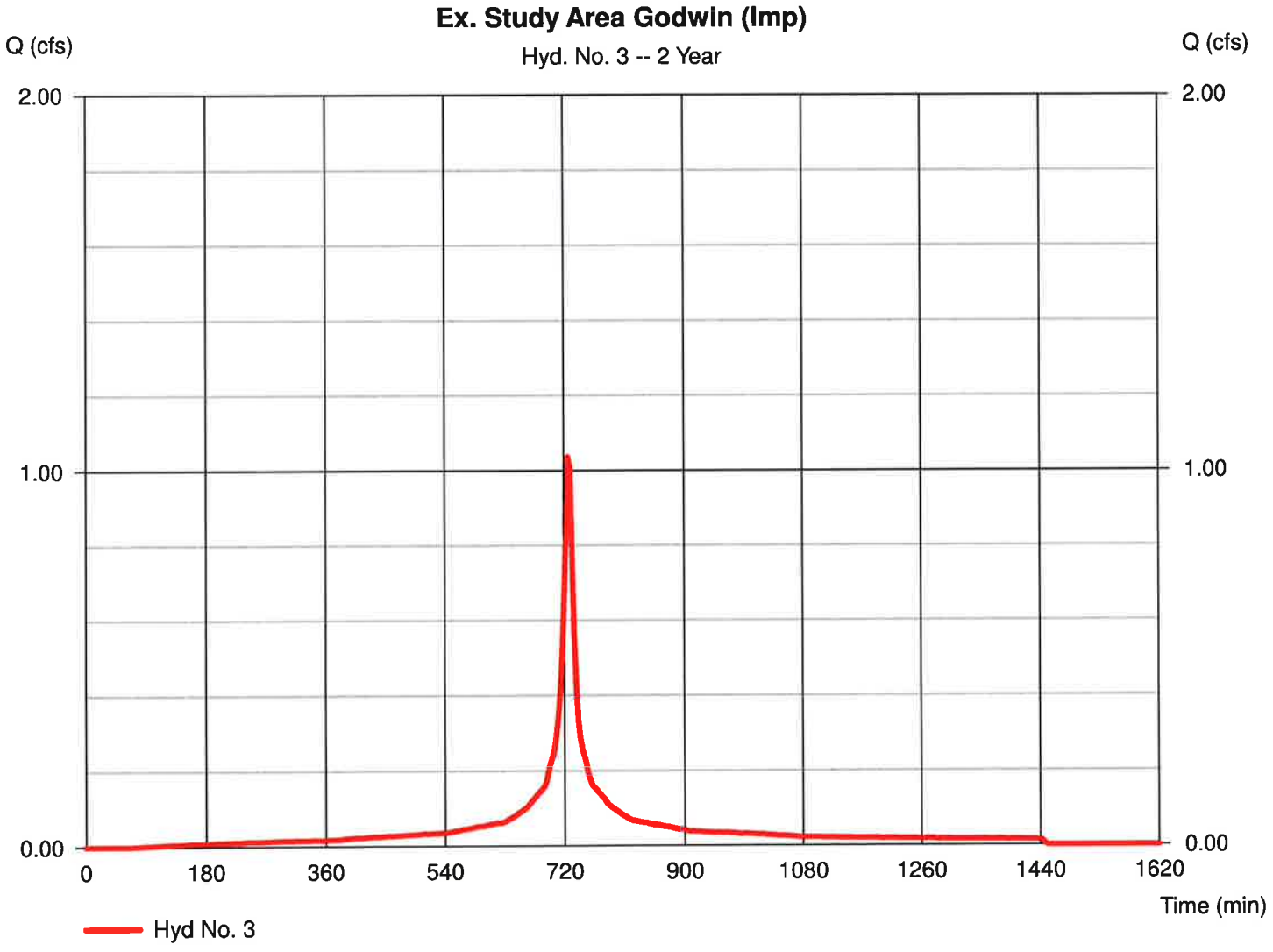


Hydrograph Report

Hyd. No. 3

Ex. Study Area Godwin (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.036 cfs
Storm frequency	= 2 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 4,229 cuft
Drainage area	= 0.400 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.34 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484

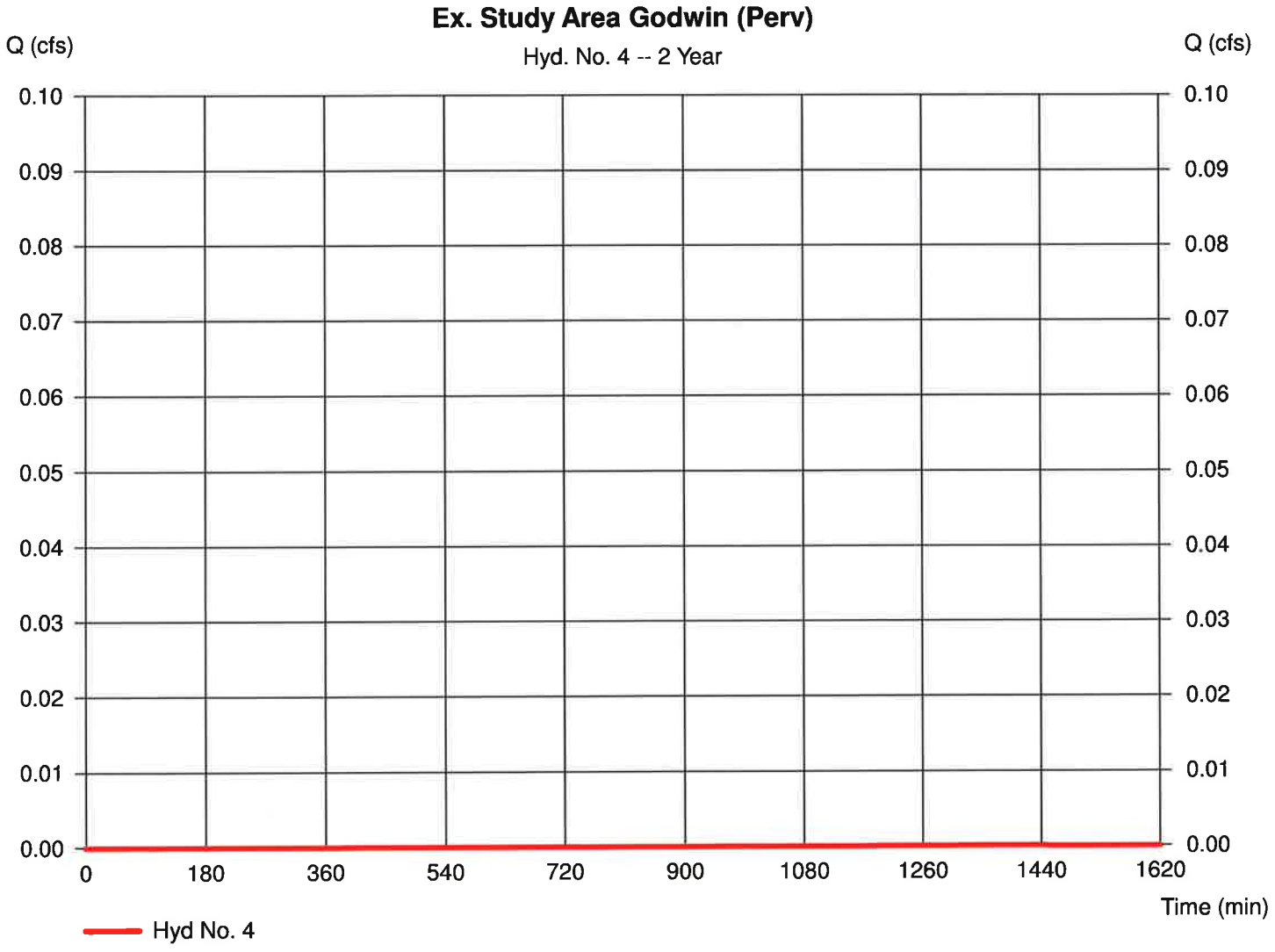


Hydrograph Report

Hyd. No. 4

Ex. Study Area Godwin (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 1440 min
Time interval	= 3 min	Hyd. volume	= 1 cuft
Drainage area	= 0.090 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.34 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484

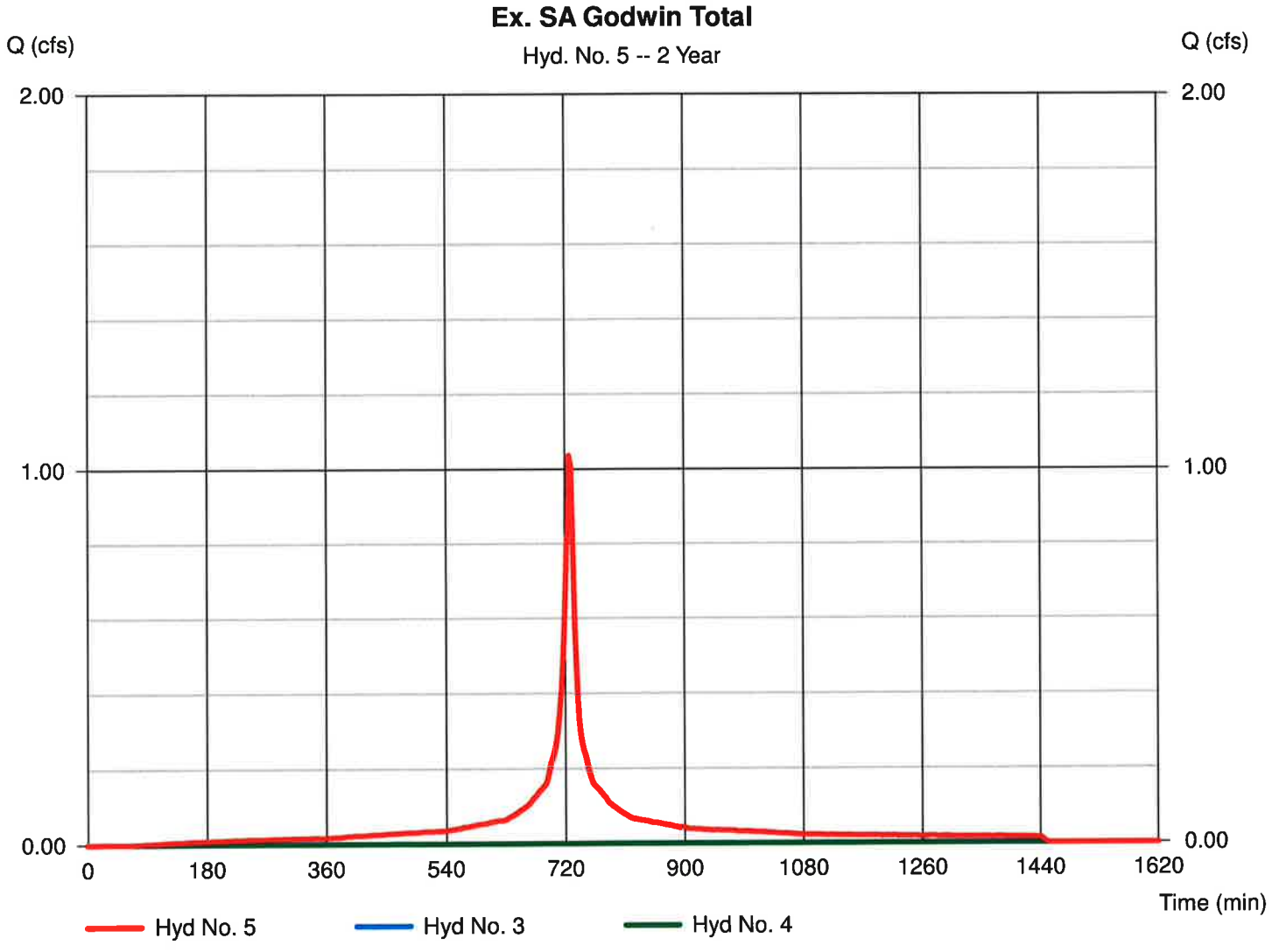


Hydrograph Report

Hyd. No. 5

Ex. SA Godwin Total

Hydrograph type	= Combine	Peak discharge	= 1.036 cfs
Storm frequency	= 2 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 4,230 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.490 ac

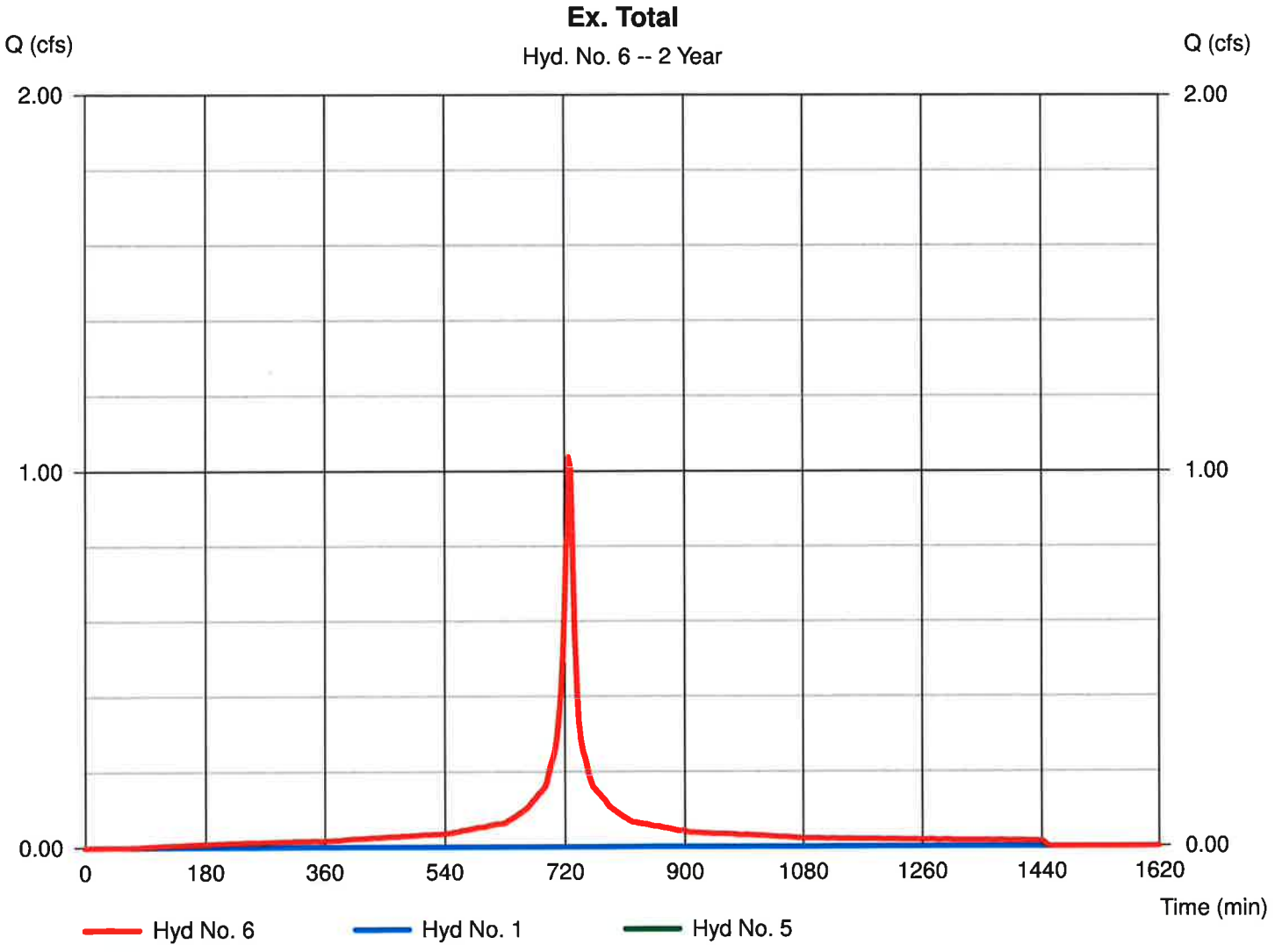


Hydrograph Report

Hyd. No. 6

Ex. Total

Hydrograph type	= Combine	Peak discharge	= 1.036 cfs
Storm frequency	= 2 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 4,230 cuft
Inflow hyds.	= 1, 5	Contrib. drain. area	= 0.020 ac

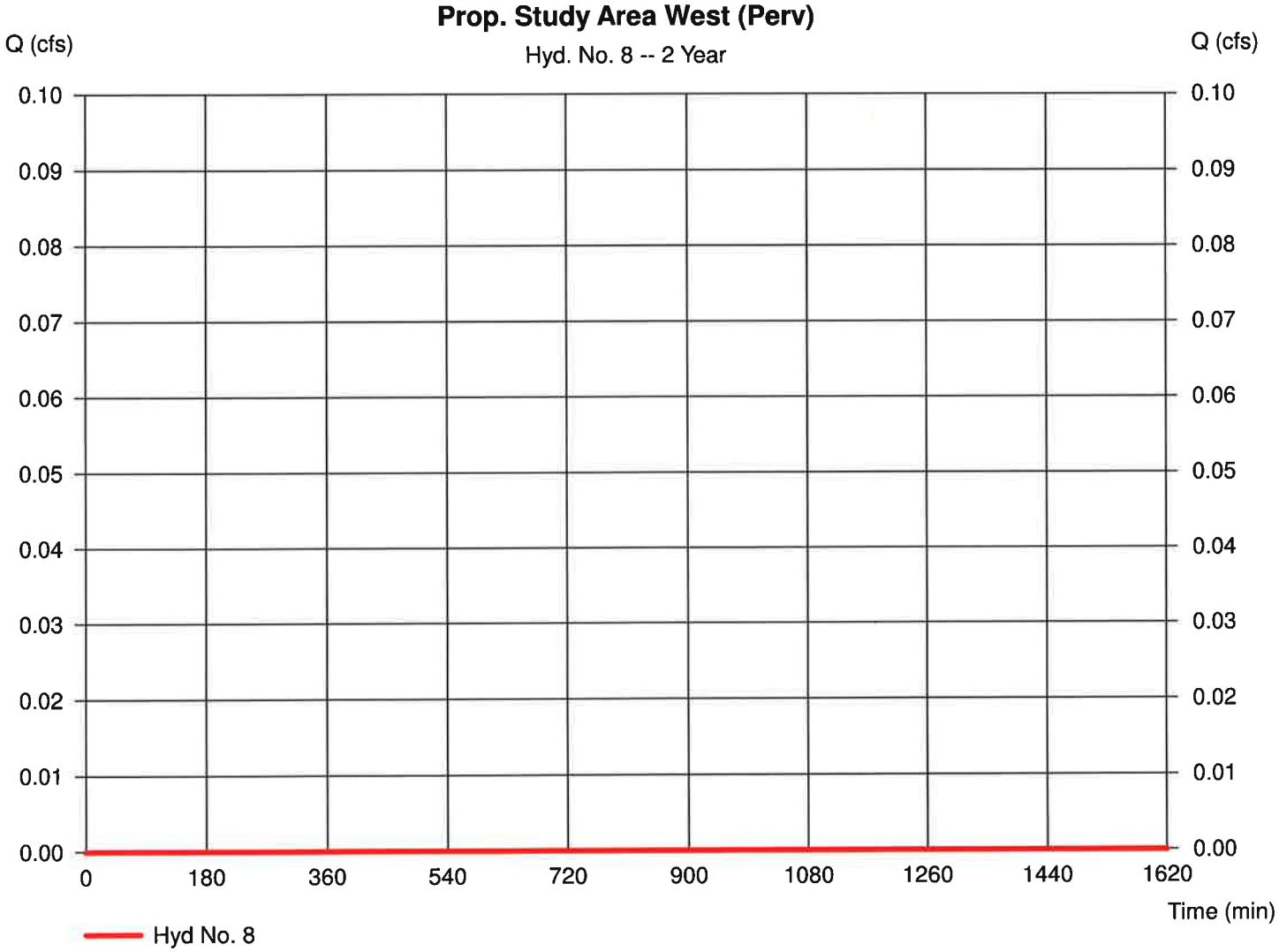


Hydrograph Report

Hyd. No. 8

Prop. Study Area West (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 1440 min
Time interval	= 3 min	Hyd. volume	= 0 cuft
Drainage area	= 0.010 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.34 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484

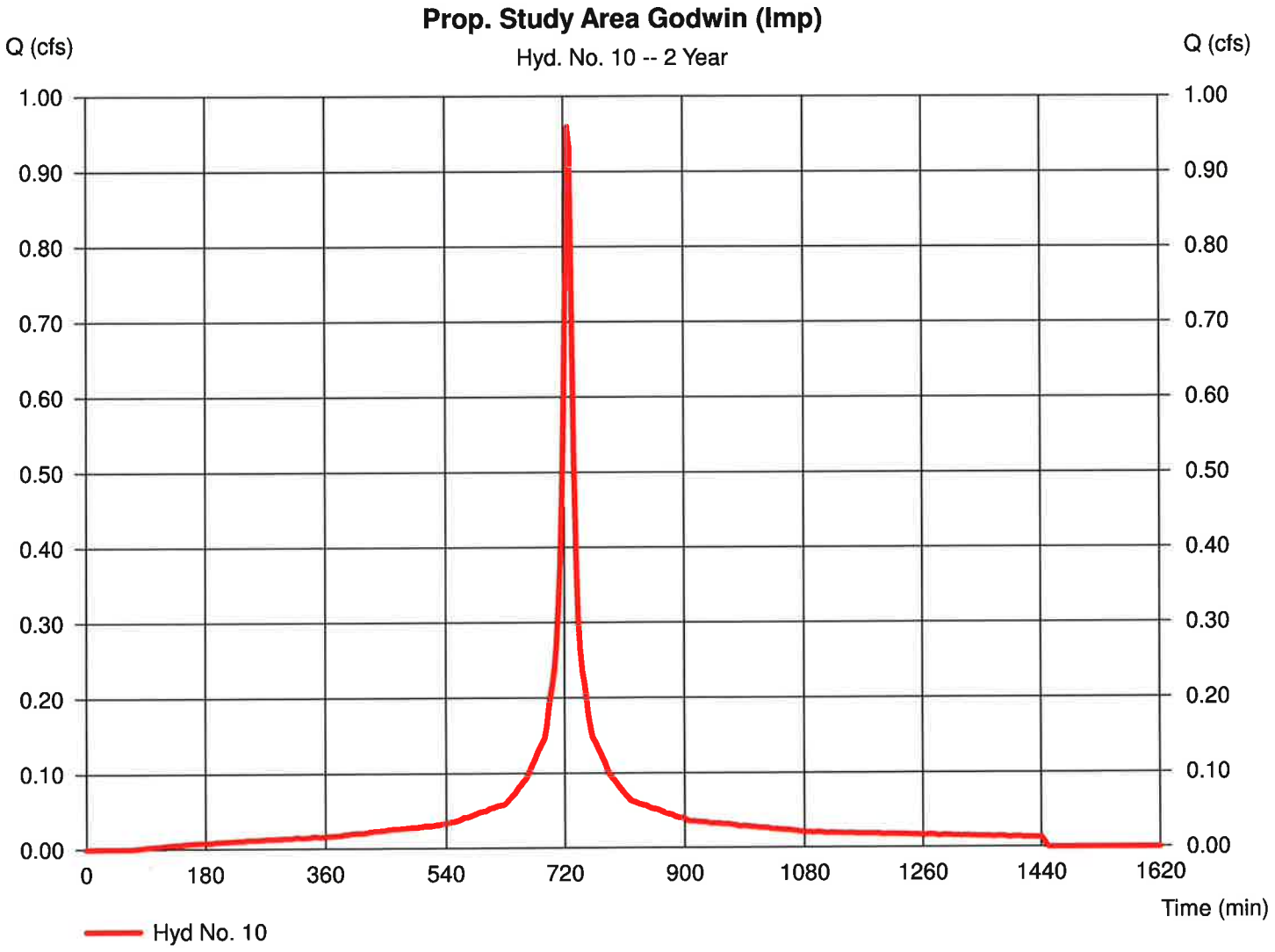


Hydrograph Report

Hyd. No. 10

Prop. Study Area Godwin (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.959 cfs
Storm frequency	= 2 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 3,912 cuft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.34 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484

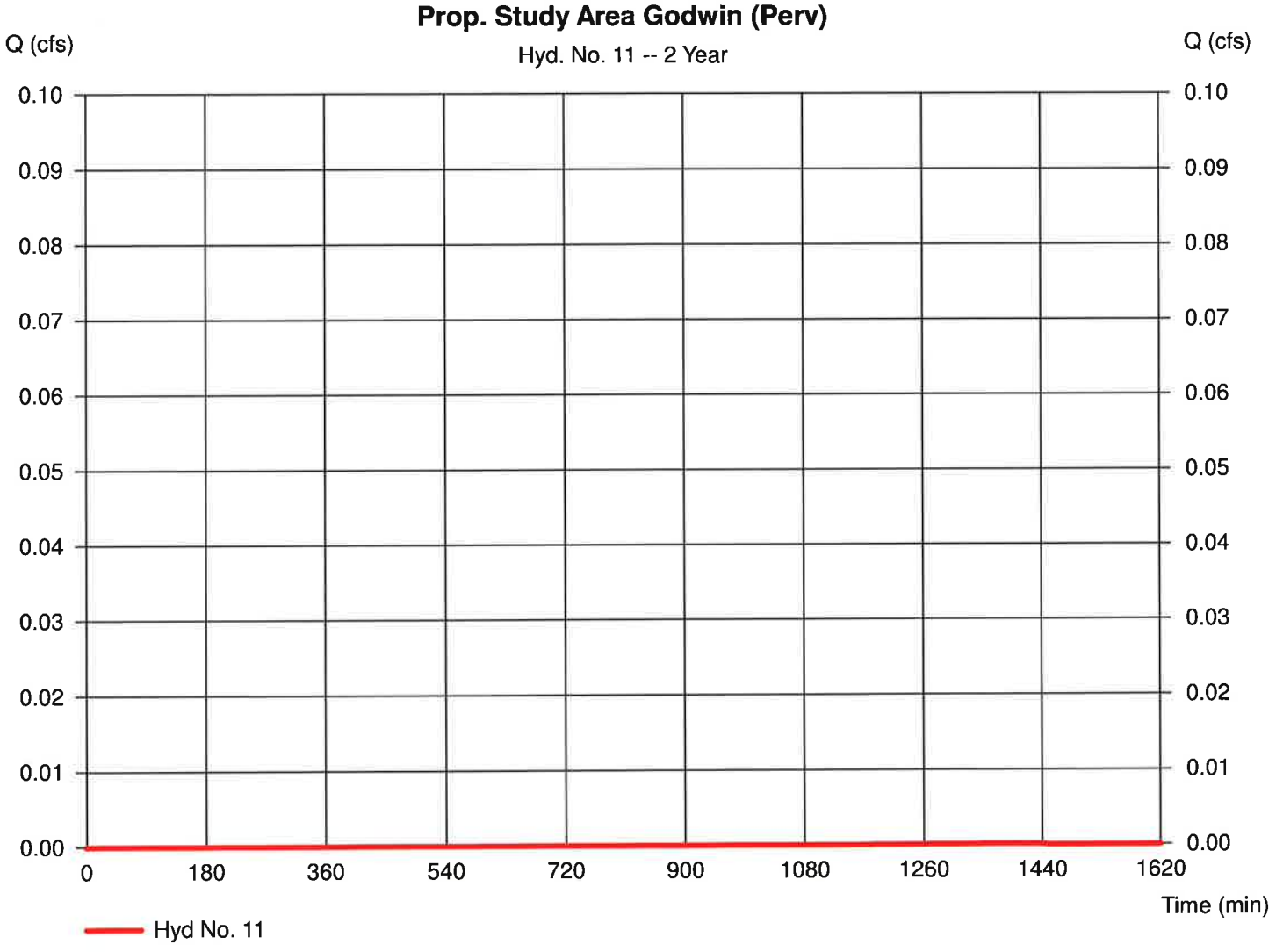


Hydrograph Report

Hyd. No. 11

Prop. Study Area Godwin (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 1440 min
Time interval	= 3 min	Hyd. volume	= 1 cuft
Drainage area	= 0.120 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.34 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484

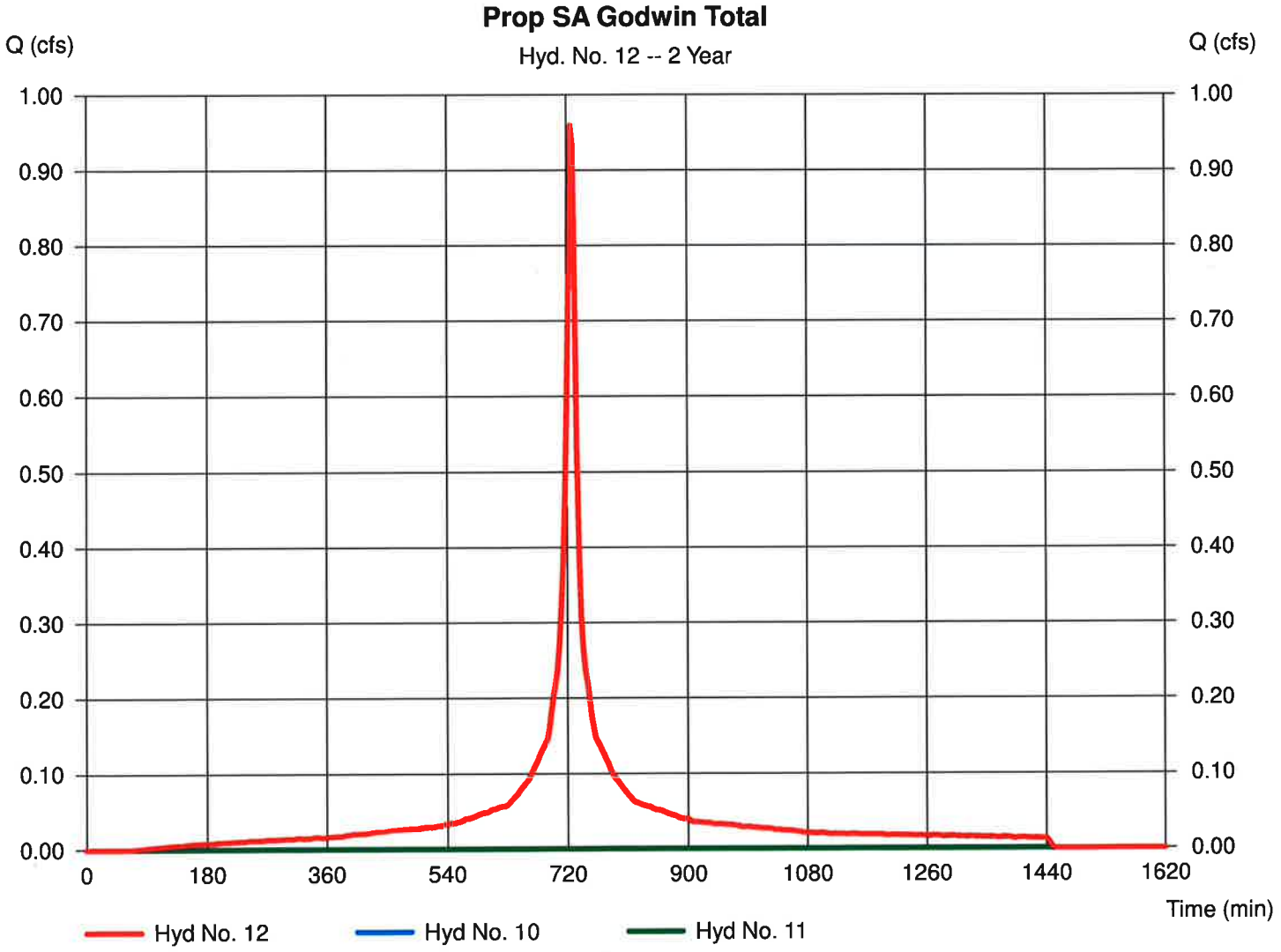


Hydrograph Report

Hyd. No. 12

Prop SA Godwin Total

Hydrograph type	= Combine	Peak discharge	= 0.959 cfs
Storm frequency	= 2 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 3,913 cuft
Inflow hyds.	= 10, 11	Contrib. drain. area	= 0.490 ac

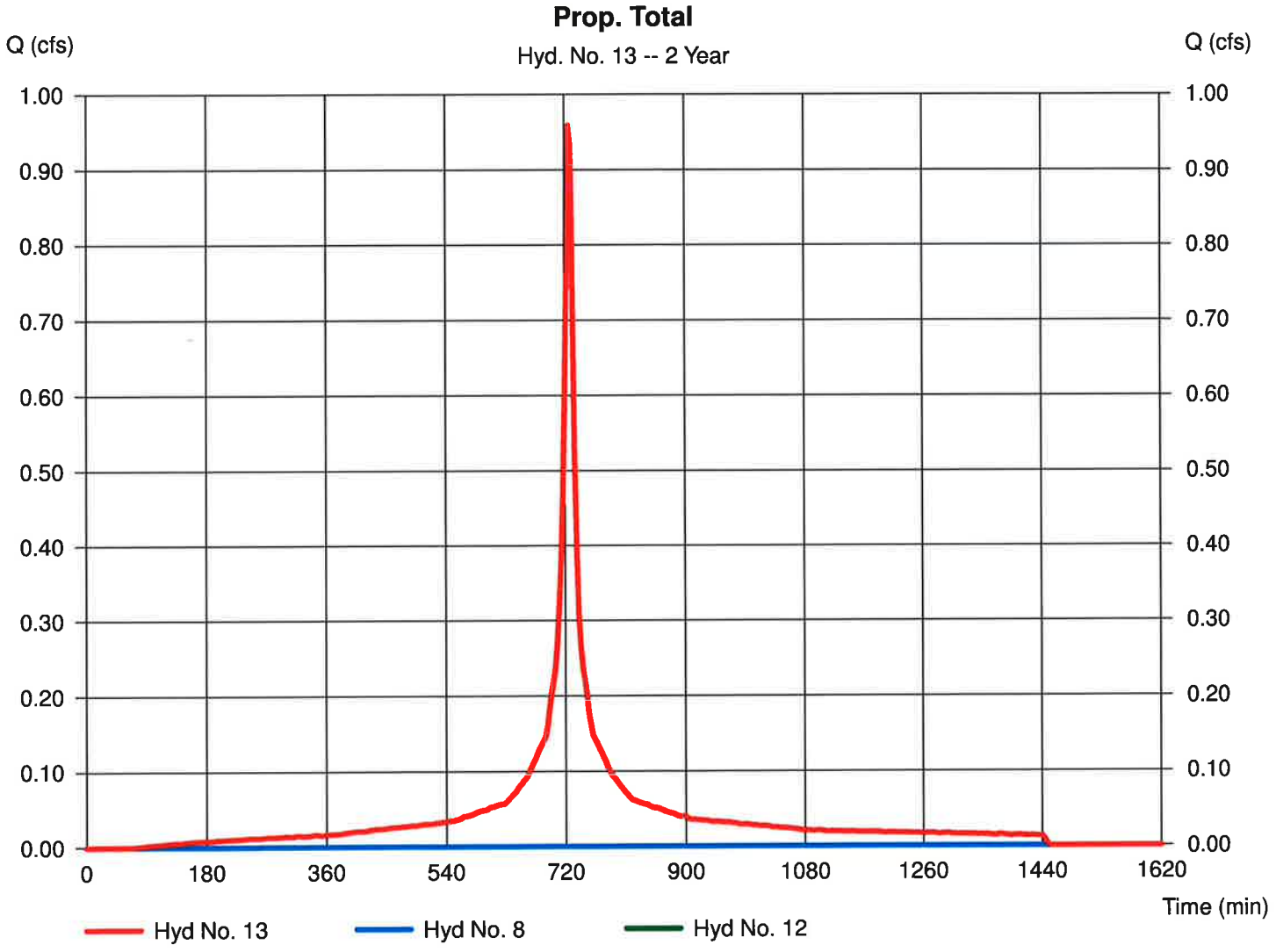


Hydrograph Report

Hyd. No. 13

Prop. Total

Hydrograph type	= Combine	Peak discharge	= 0.959 cfs
Storm frequency	= 2 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 3,913 cuft
Inflow hyds.	= 8, 12	Contrib. drain. area	= 0.010 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

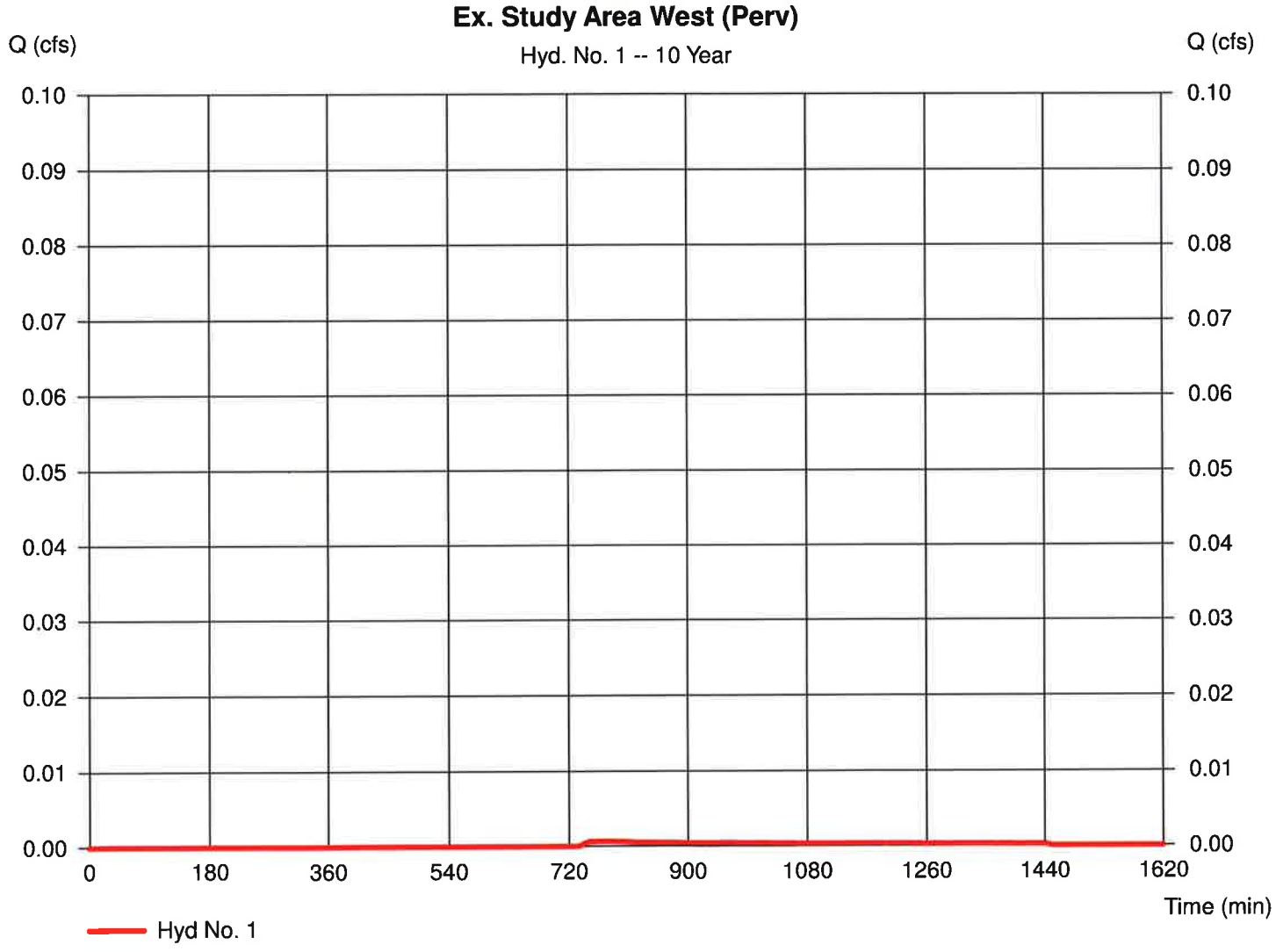
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.001	3	774	15	----	------	------	Ex. Study Area West (Perv)
3	SCS Runoff	1.584	3	726	6,579	----	------	------	Ex. Study Area Godwin (Imp)
4	SCS Runoff	0.003	3	774	66	----	------	------	Ex. Study Area Godwin (Perv)
5	Combine	1.584	3	726	6,645	3, 4	------	------	Ex. SA Godwin Total
6	Combine	1.584	3	726	6,659	1, 5	------	------	Ex. Total
8	SCS Runoff	0.000	3	774	7	----	------	------	Prop. Study Area West (Perv)
10	SCS Runoff	1.465	3	726	6,086	----	------	------	Prop. Study Area Godwin (Imp)
11	SCS Runoff	0.004	3	774	88	----	------	------	Prop. Study Area Godwin (Perv)
12	Combine	1.465	3	726	6,173	10, 11	------	------	Prop SA Godwin Total
13	Combine	1.465	3	726	6,180	8, 12	------	------	Prop. Total

Hydrograph Report

Hyd. No. 1

Ex. Study Area West (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 10 yrs	Time to peak	= 774 min
Time interval	= 3 min	Hyd. volume	= 15 cuft
Drainage area	= 0.020 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.07 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484

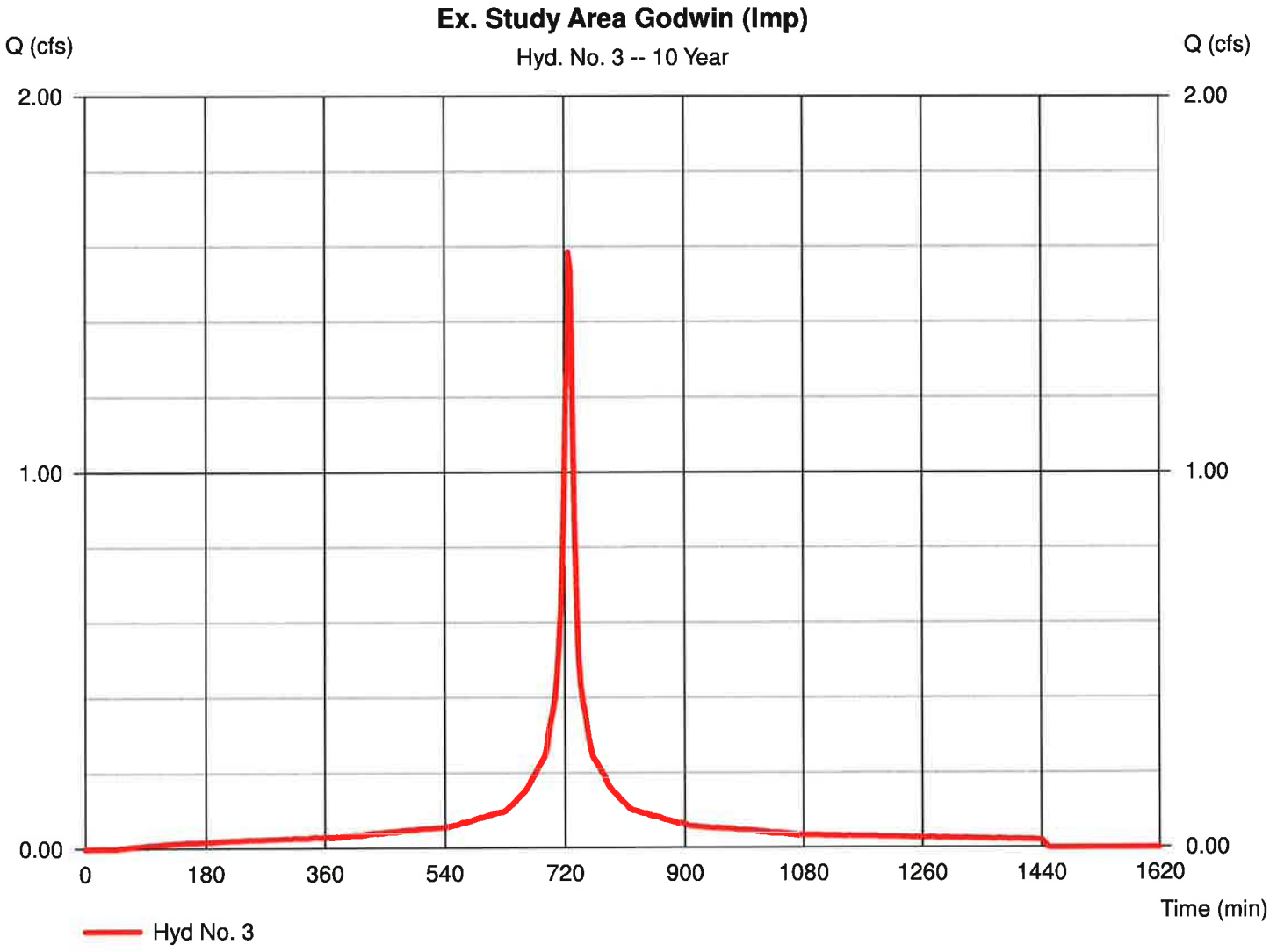


Hydrograph Report

Hyd. No. 3

Ex. Study Area Godwin (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.584 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 6,579 cuft
Drainage area	= 0.400 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.07 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484



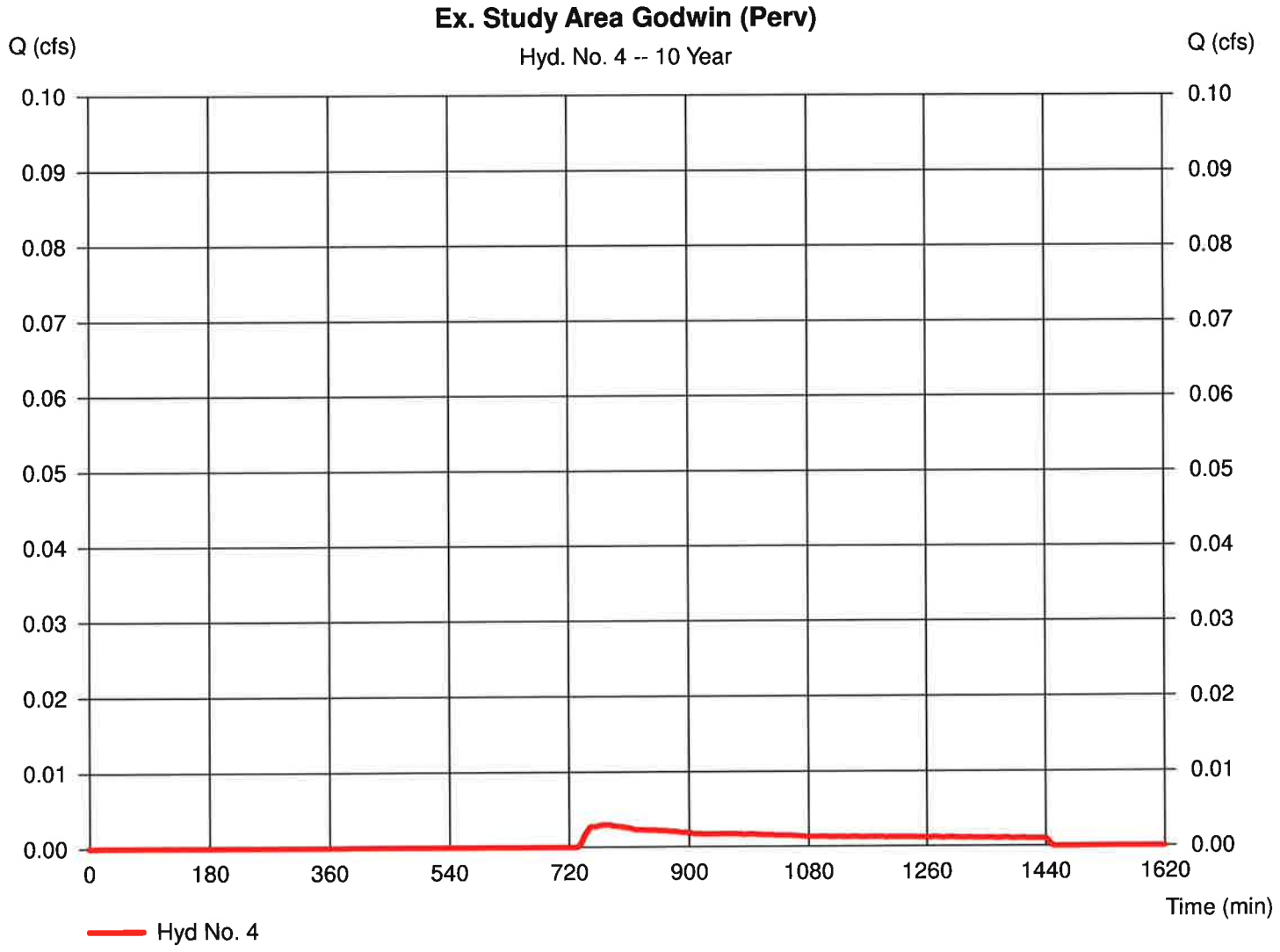
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Tuesday, Nov 17, 2020

Hyd. No. 4

Ex. Study Area Godwin (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.003 cfs
Storm frequency	= 10 yrs	Time to peak	= 774 min
Time interval	= 3 min	Hyd. volume	= 66 cuft
Drainage area	= 0.090 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.07 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484

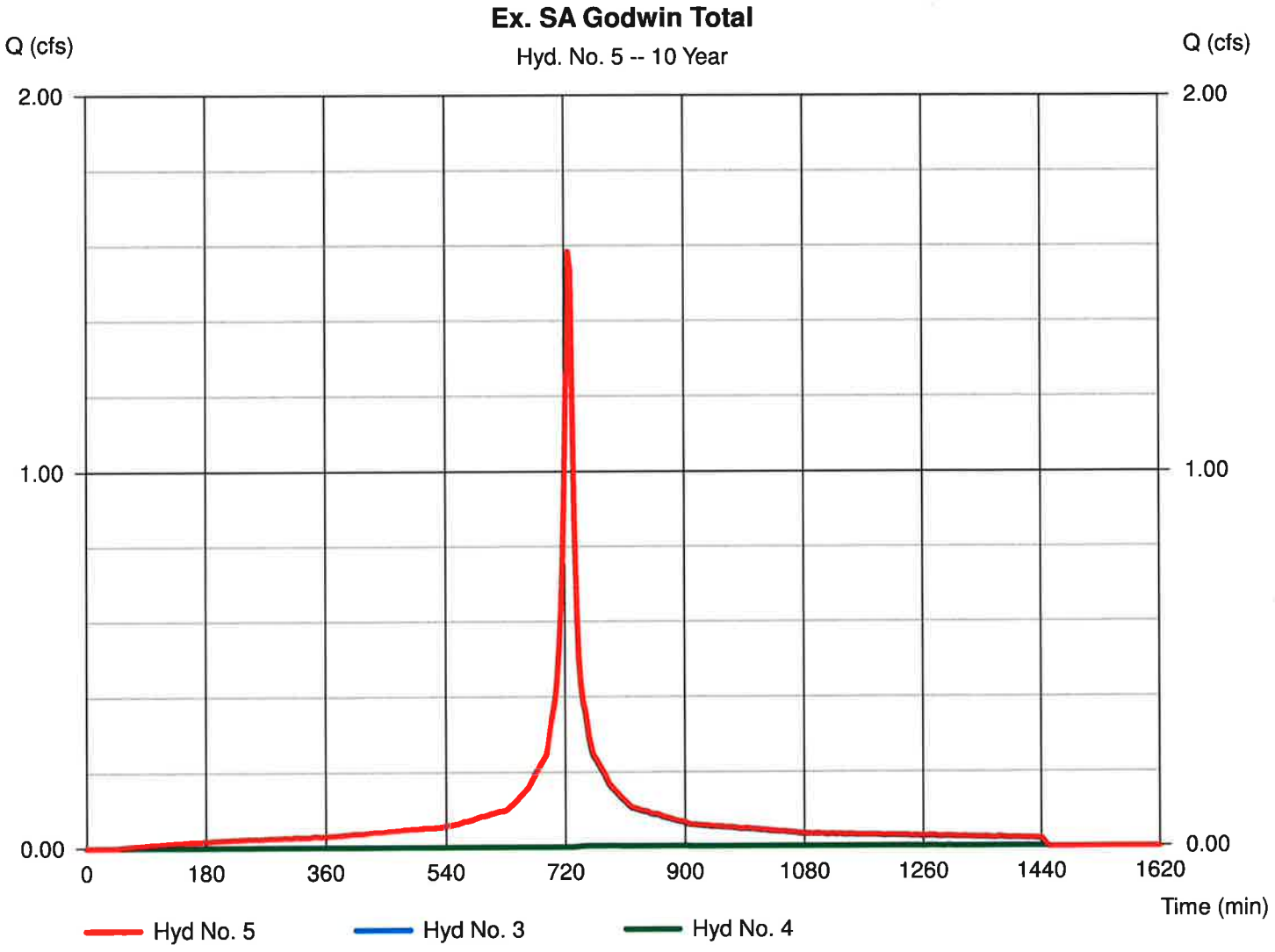


Hydrograph Report

Hyd. No. 5

Ex. SA Godwin Total

Hydrograph type	= Combine	Peak discharge	= 1.584 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 6,645 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.490 ac

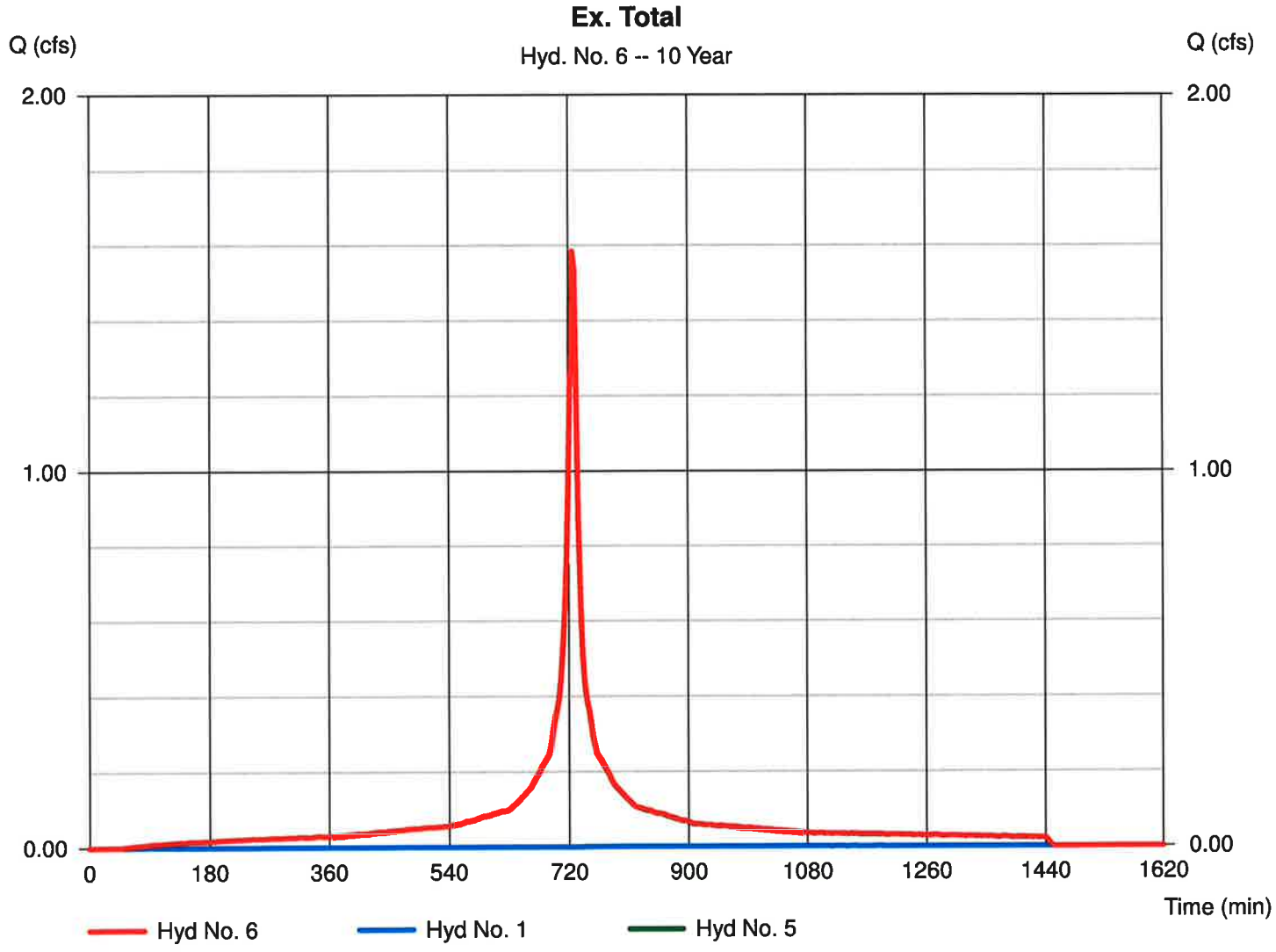


Hydrograph Report

Hyd. No. 6

Ex. Total

Hydrograph type	= Combine	Peak discharge	= 1.584 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 6,659 cuft
Inflow hyds.	= 1, 5	Contrib. drain. area	= 0.020 ac

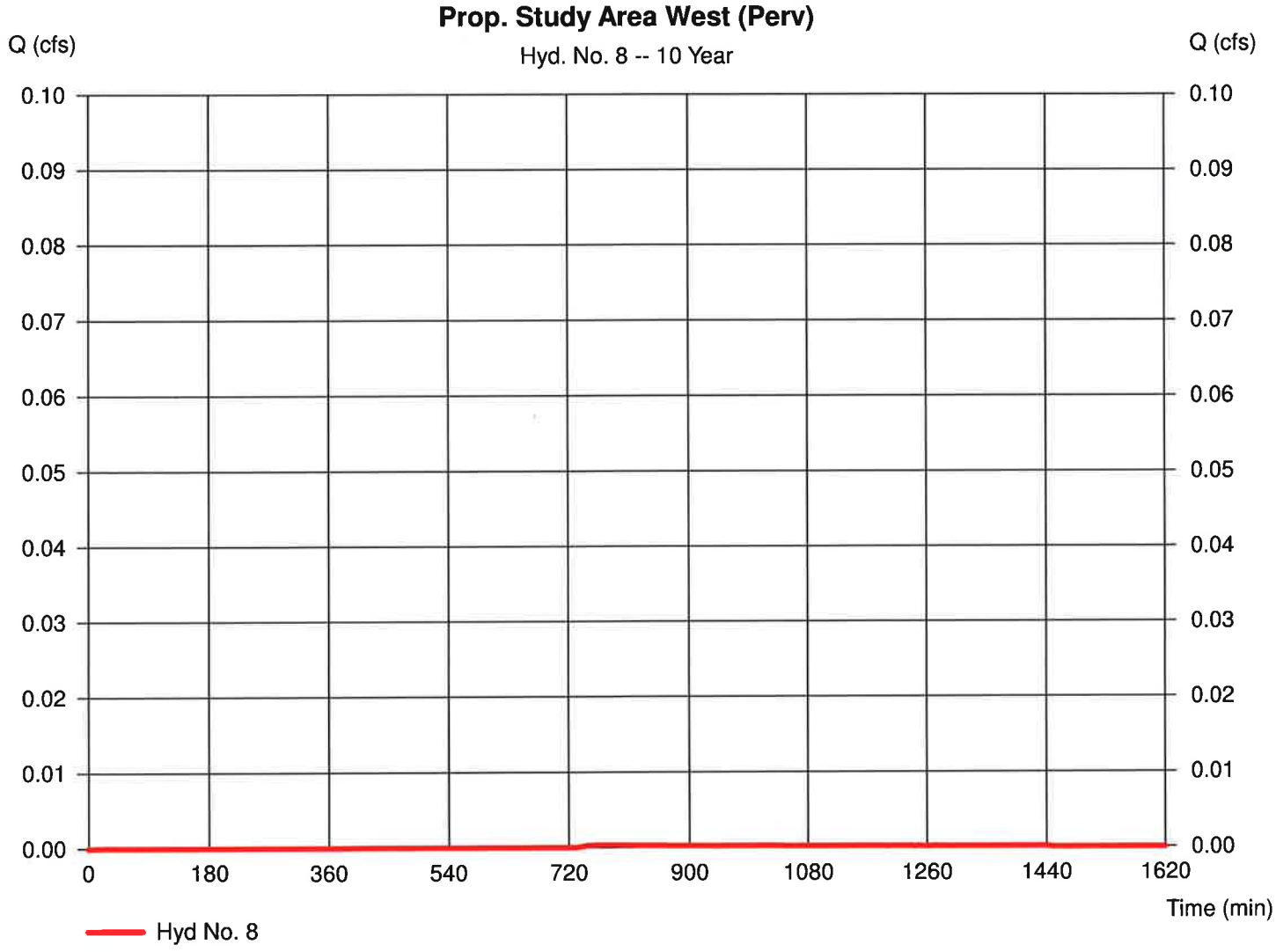


Hydrograph Report

Hyd. No. 8

Prop. Study Area West (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 774 min
Time interval	= 3 min	Hyd. volume	= 7 cuft
Drainage area	= 0.010 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.07 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484



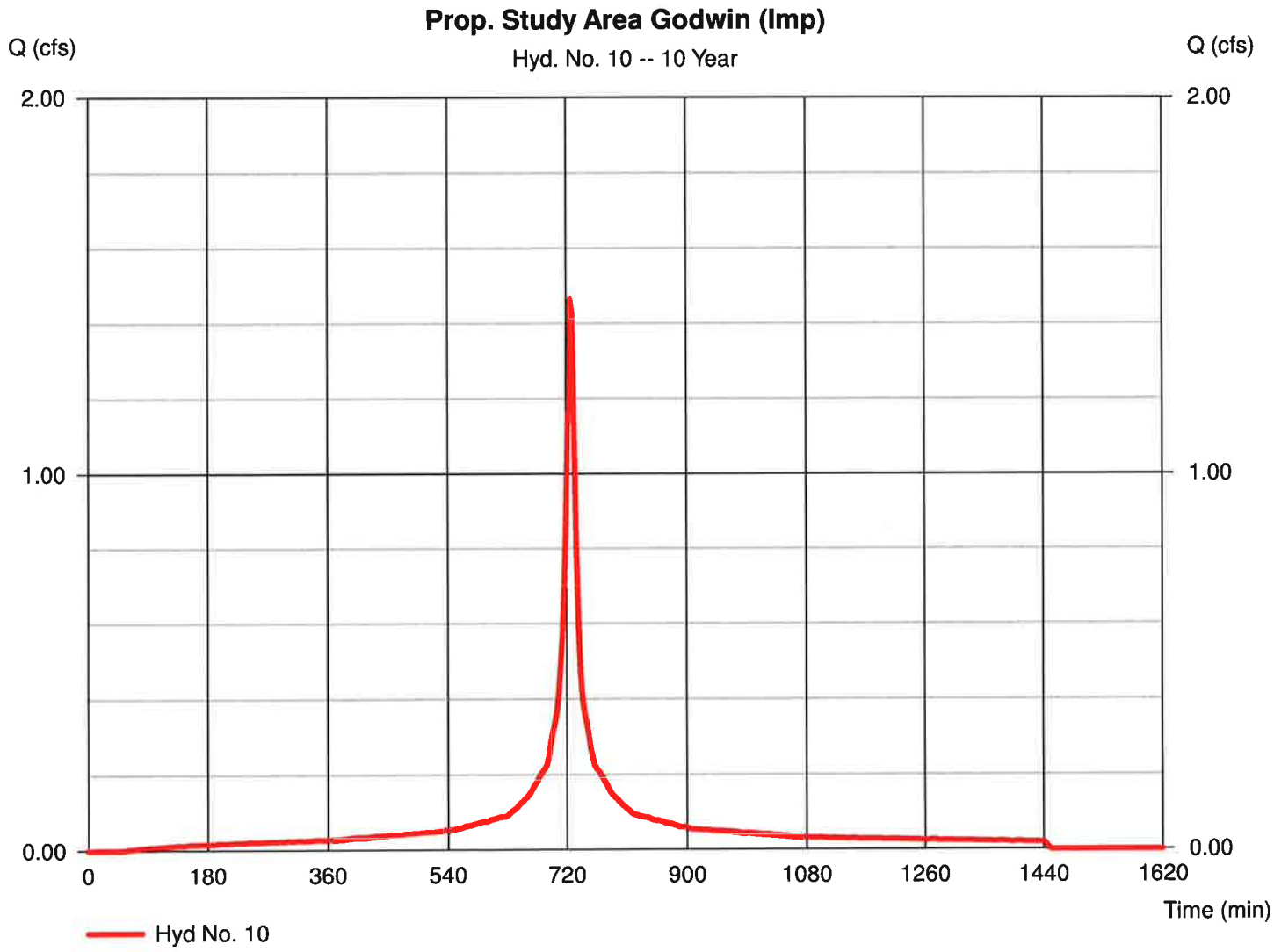
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Tuesday, Nov 17, 2020

Hyd. No. 10

Prop. Study Area Godwin (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.465 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 6,086 cuft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.07 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484

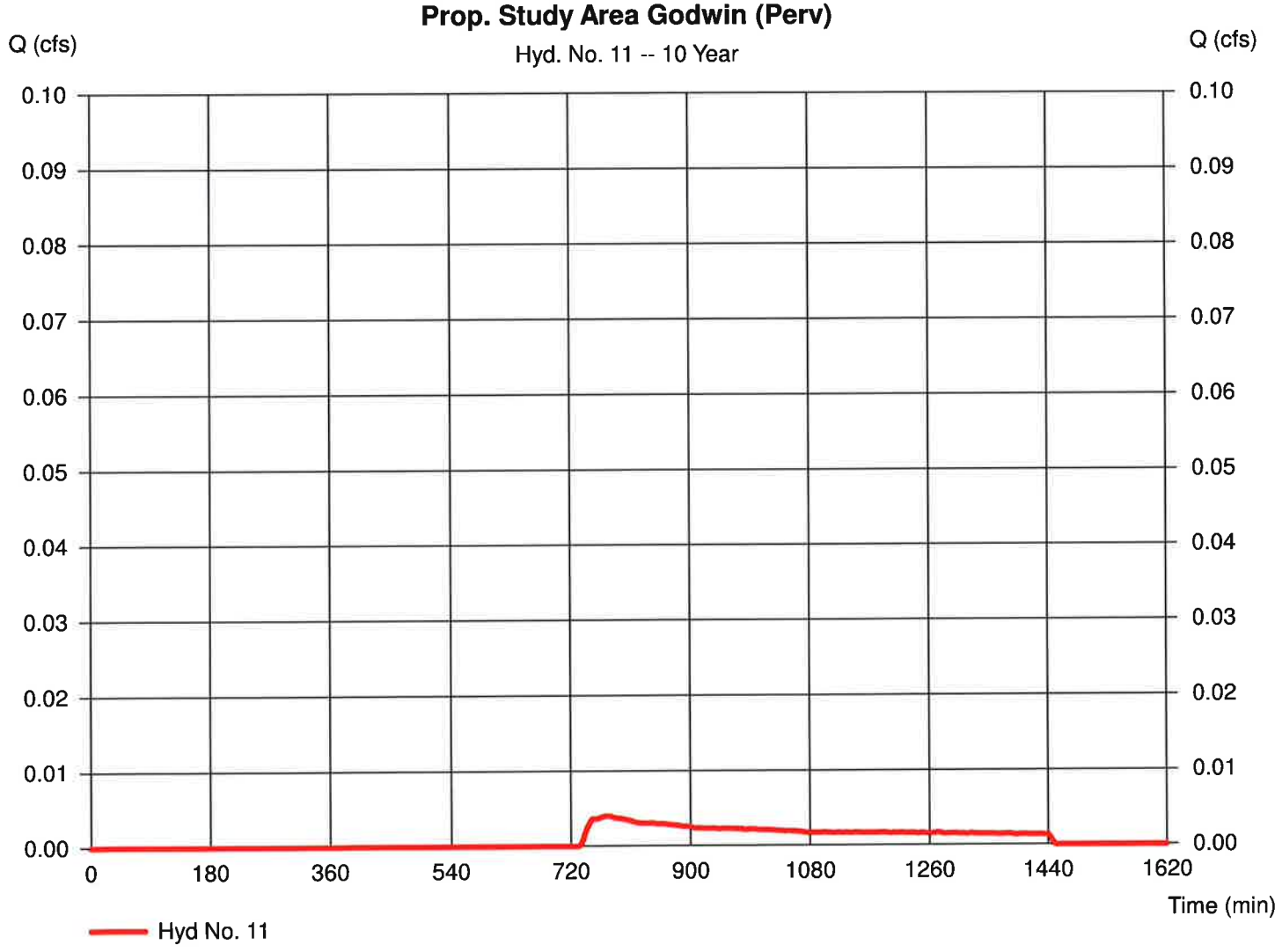


Hydrograph Report

Hyd. No. 11

Prop. Study Area Godwin (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.004 cfs
Storm frequency	= 10 yrs	Time to peak	= 774 min
Time interval	= 3 min	Hyd. volume	= 88 cuft
Drainage area	= 0.120 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.07 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484

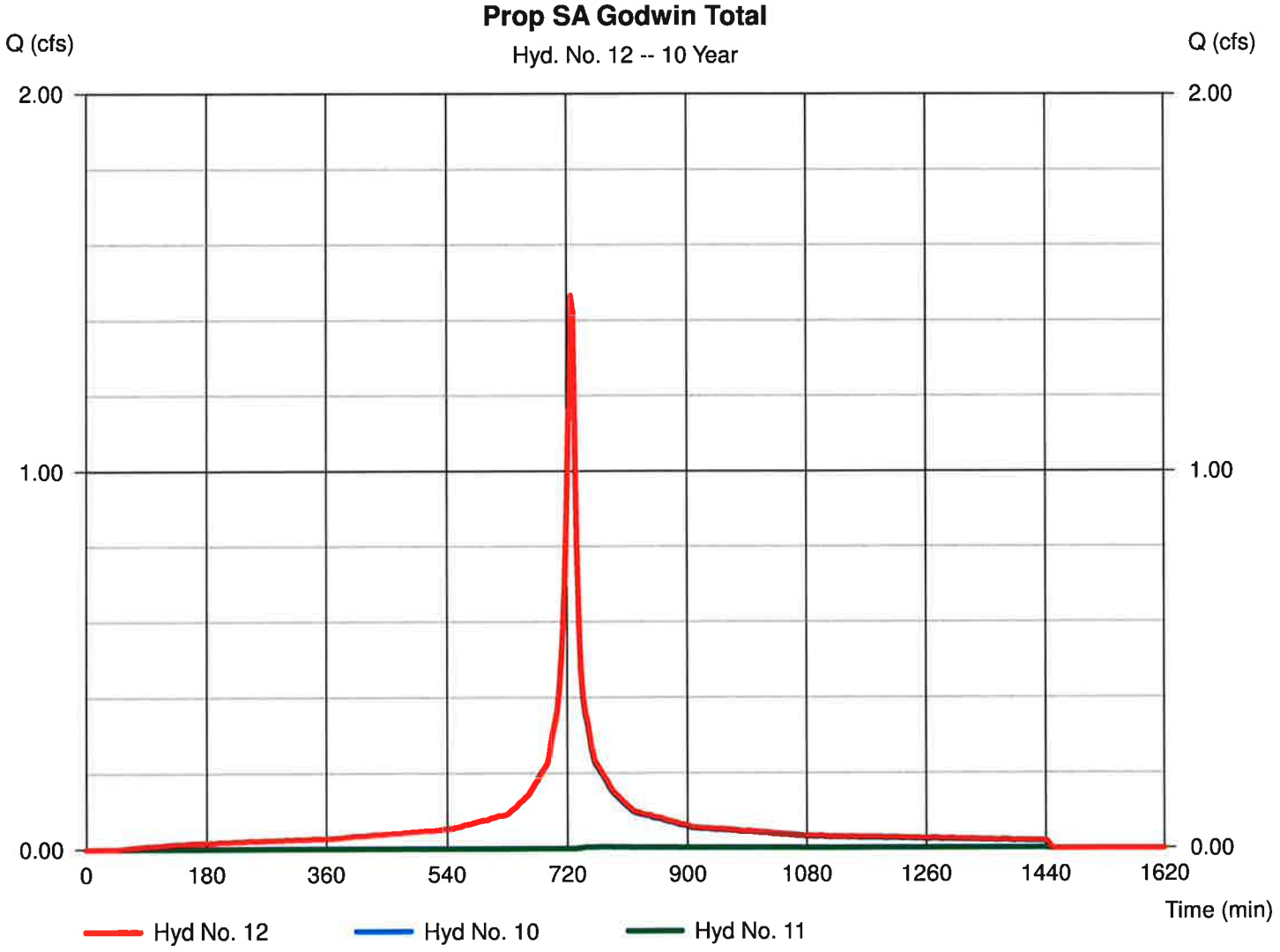


Hydrograph Report

Hyd. No. 12

Prop SA Godwin Total

Hydrograph type	= Combine	Peak discharge	= 1.465 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 6,173 cuft
Inflow hyds.	= 10, 11	Contrib. drain. area	= 0.490 ac

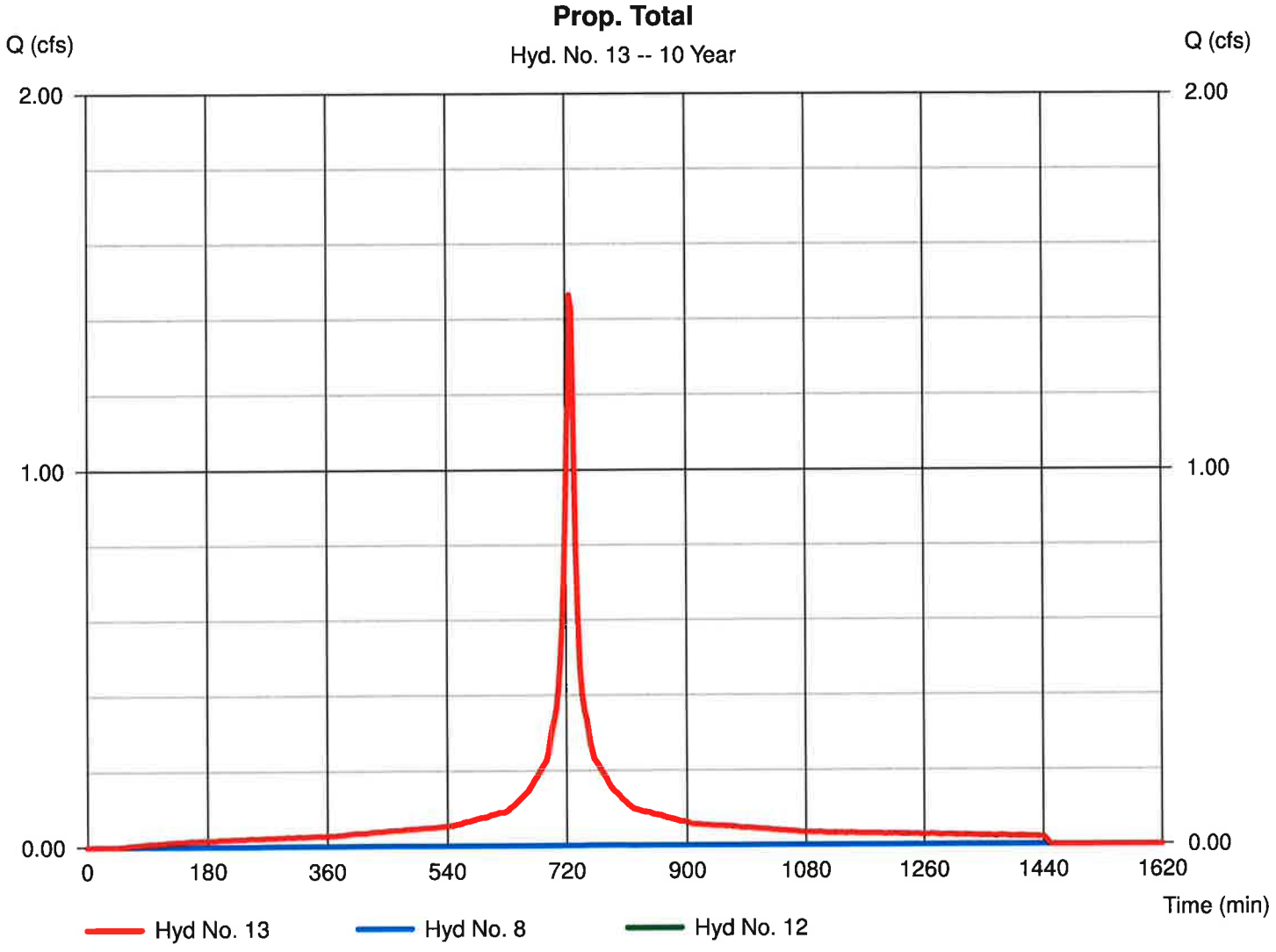


Hydrograph Report

Hyd. No. 13

Prop. Total

Hydrograph type	= Combine	Peak discharge	= 1.465 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 6,180 cuft
Inflow hyds.	= 8, 12	Contrib. drain. area	= 0.010 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

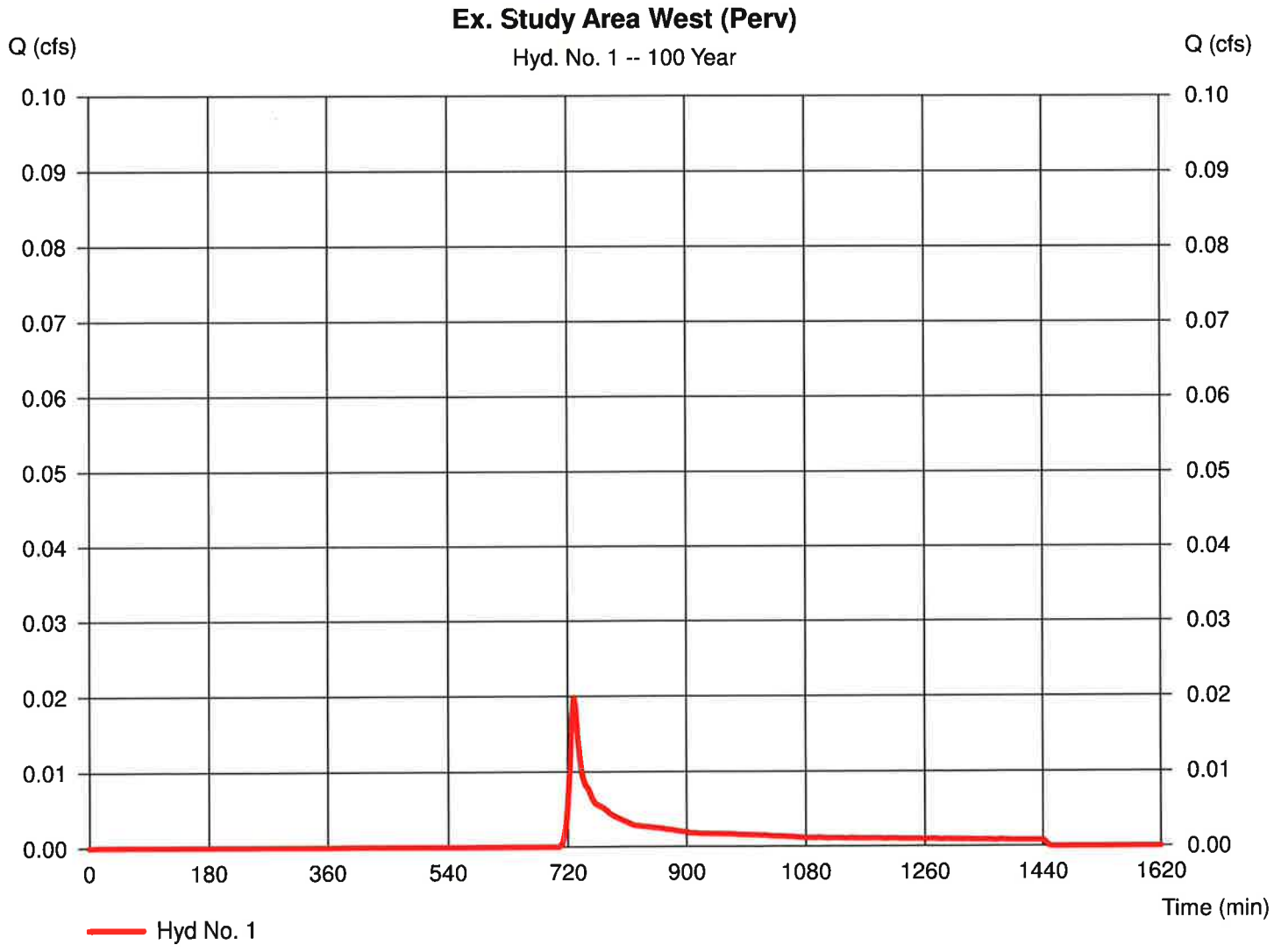
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.020	3	729	93	----	------	------	Ex. Study Area West (Perv)
3	SCS Runoff	2.656	3	726	11,203	----	------	------	Ex. Study Area Godwin (Imp)
4	SCS Runoff	0.089	3	729	417	----	------	------	Ex. Study Area Godwin (Perv)
5	Combine	2.732	3	726	11,619	3, 4	------	------	Ex. SA Godwin Total
6	Combine	2.749	3	726	11,712	1, 5	------	------	Ex. Total
8	SCS Runoff	0.010	3	729	46	----	------	------	Prop. Study Area West (Perv)
10	SCS Runoff	2.457	3	726	10,363	----	------	------	Prop. Study Area Godwin (Imp)
11	SCS Runoff	0.119	3	729	555	----	------	------	Prop. Study Area Godwin (Perv)
12	Combine	2.558	3	726	10,918	10, 11	------	------	Prop SA Godwin Total
13	Combine	2.567	3	726	10,964	8, 12	------	------	Prop. Total

Hydrograph Report

Hyd. No. 1

Ex. Study Area West (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.020 cfs
Storm frequency	= 100 yrs	Time to peak	= 729 min
Time interval	= 3 min	Hyd. volume	= 93 cuft
Drainage area	= 0.020 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.47 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484



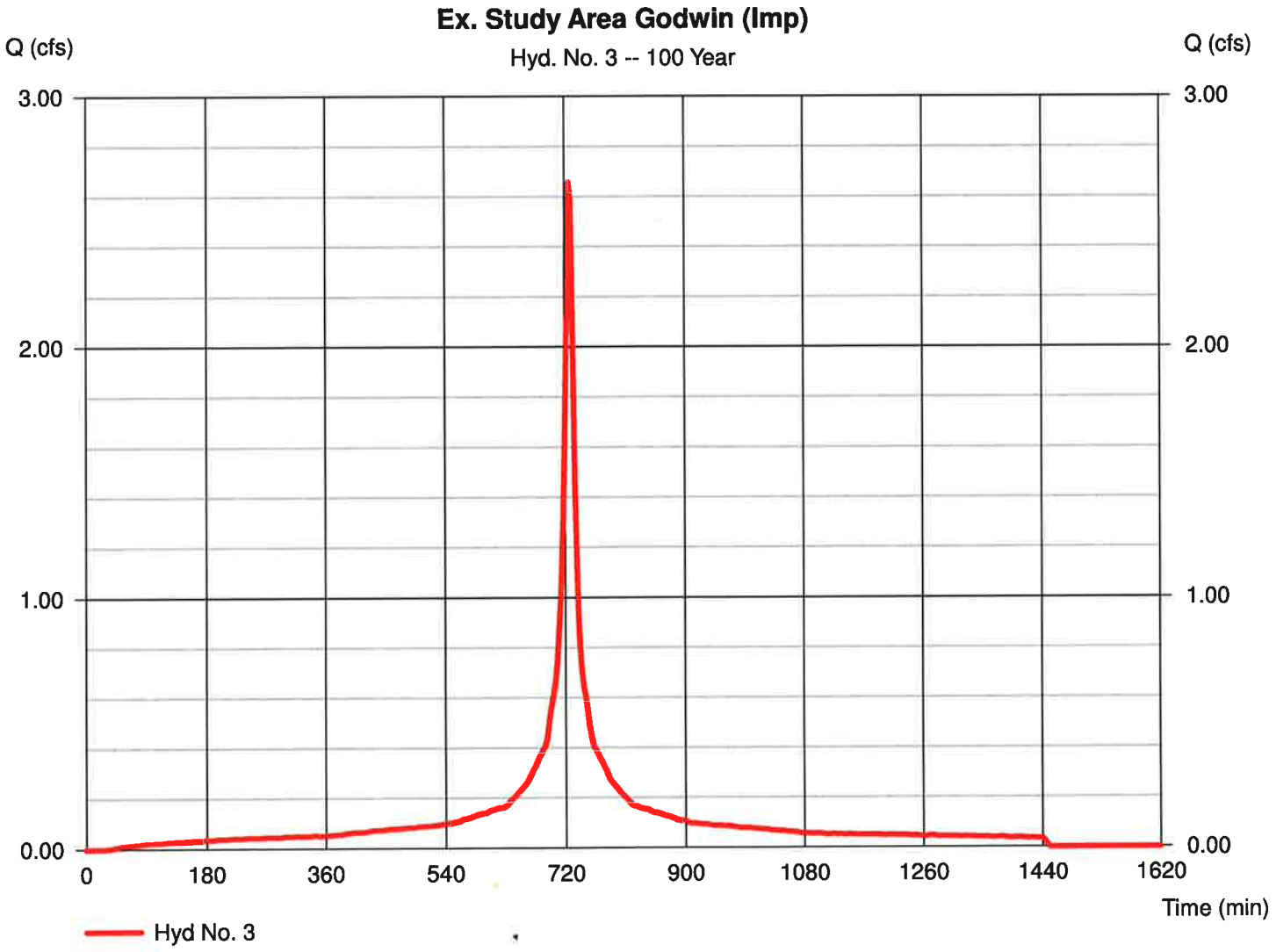
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Tuesday, Nov 17, 2020

Hyd. No. 3

Ex. Study Area Godwin (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.656 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 11,203 cuft
Drainage area	= 0.400 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.47 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484

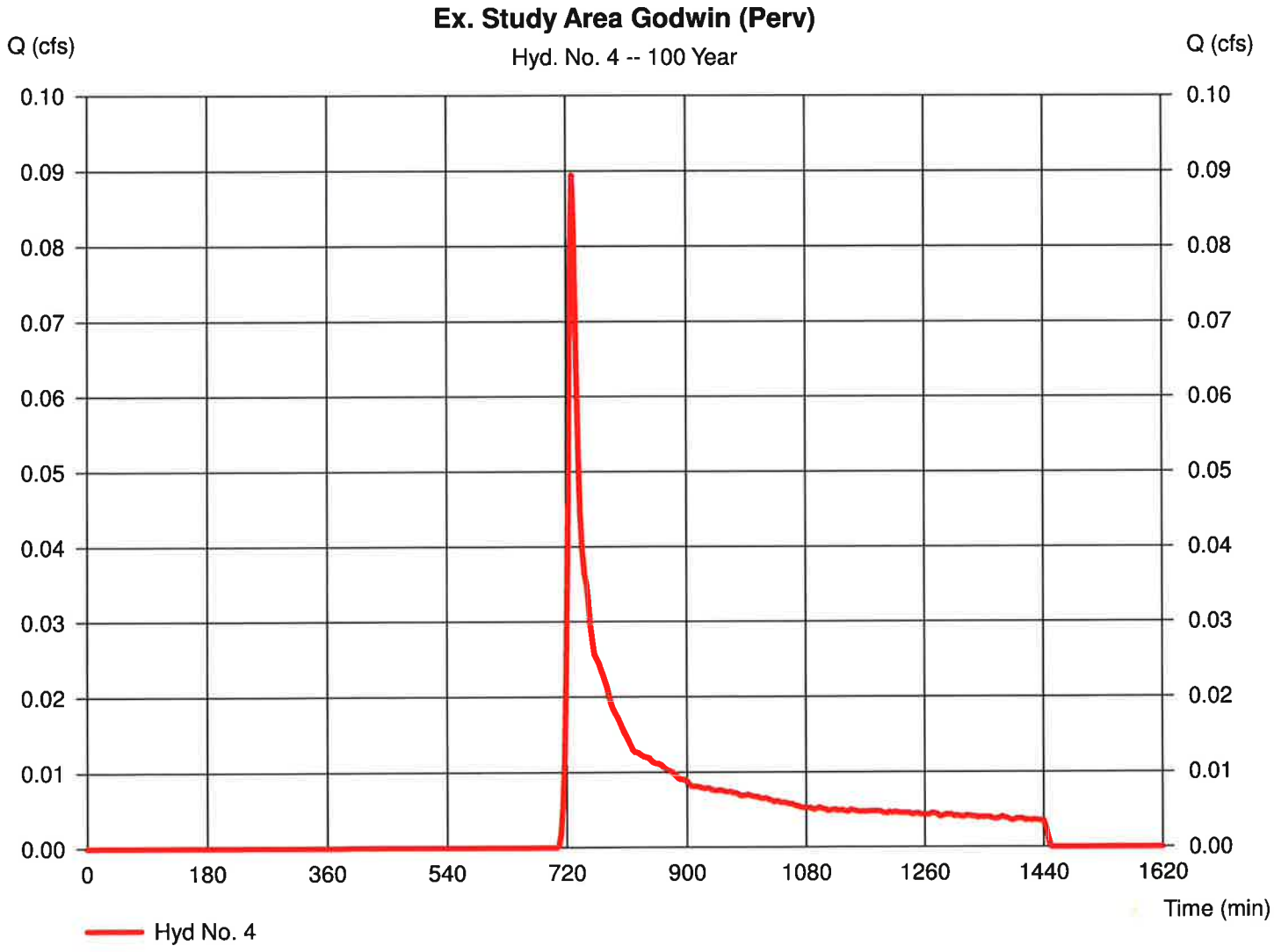


Hydrograph Report

Hyd. No. 4

Ex. Study Area Godwin (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.089 cfs
Storm frequency	= 100 yrs	Time to peak	= 729 min
Time interval	= 3 min	Hyd. volume	= 417 cuft
Drainage area	= 0.090 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.47 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484

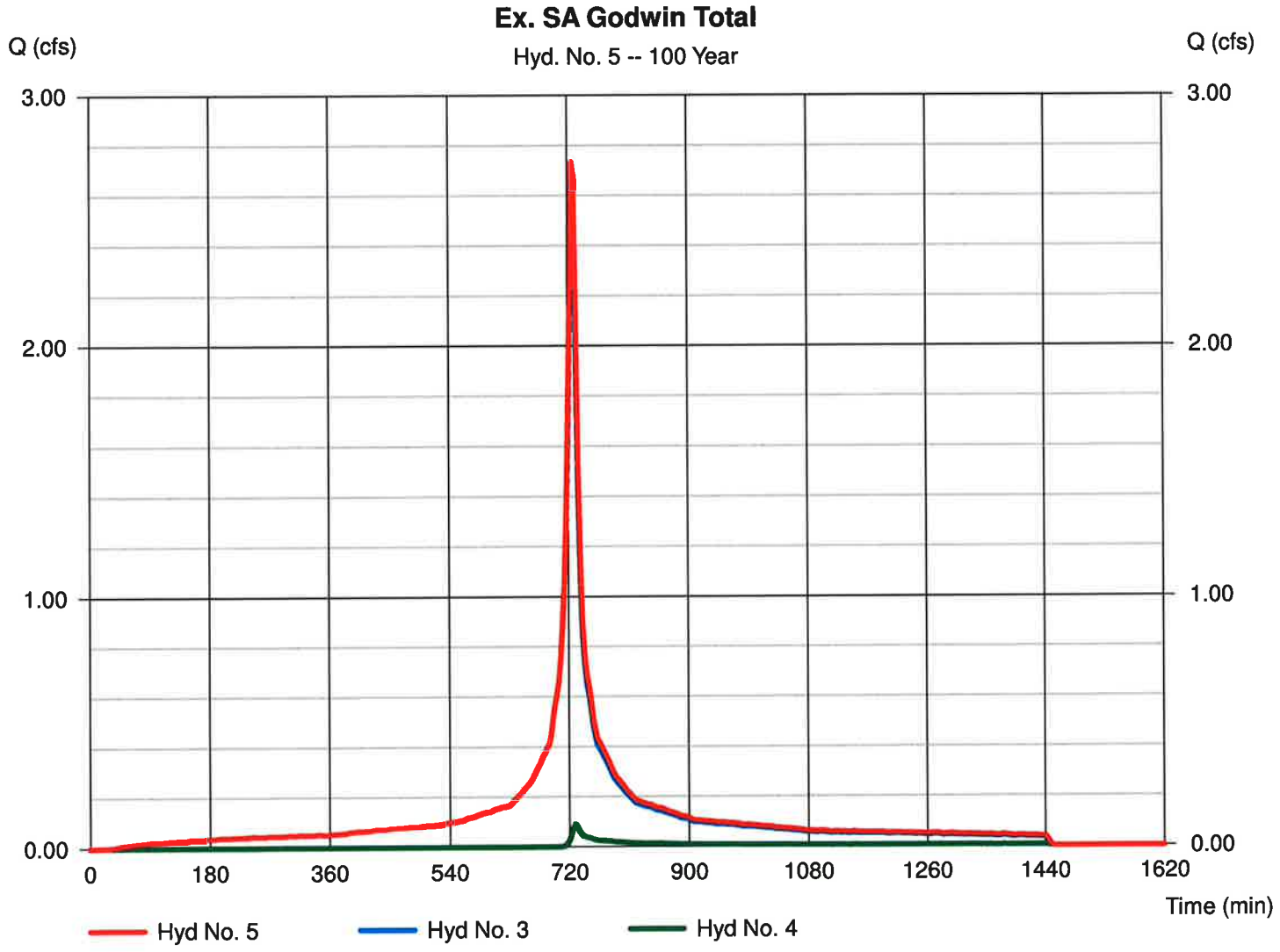


Hydrograph Report

Hyd. No. 5

Ex. SA Godwin Total

Hydrograph type	= Combine	Peak discharge	= 2.732 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 11,619 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.490 ac

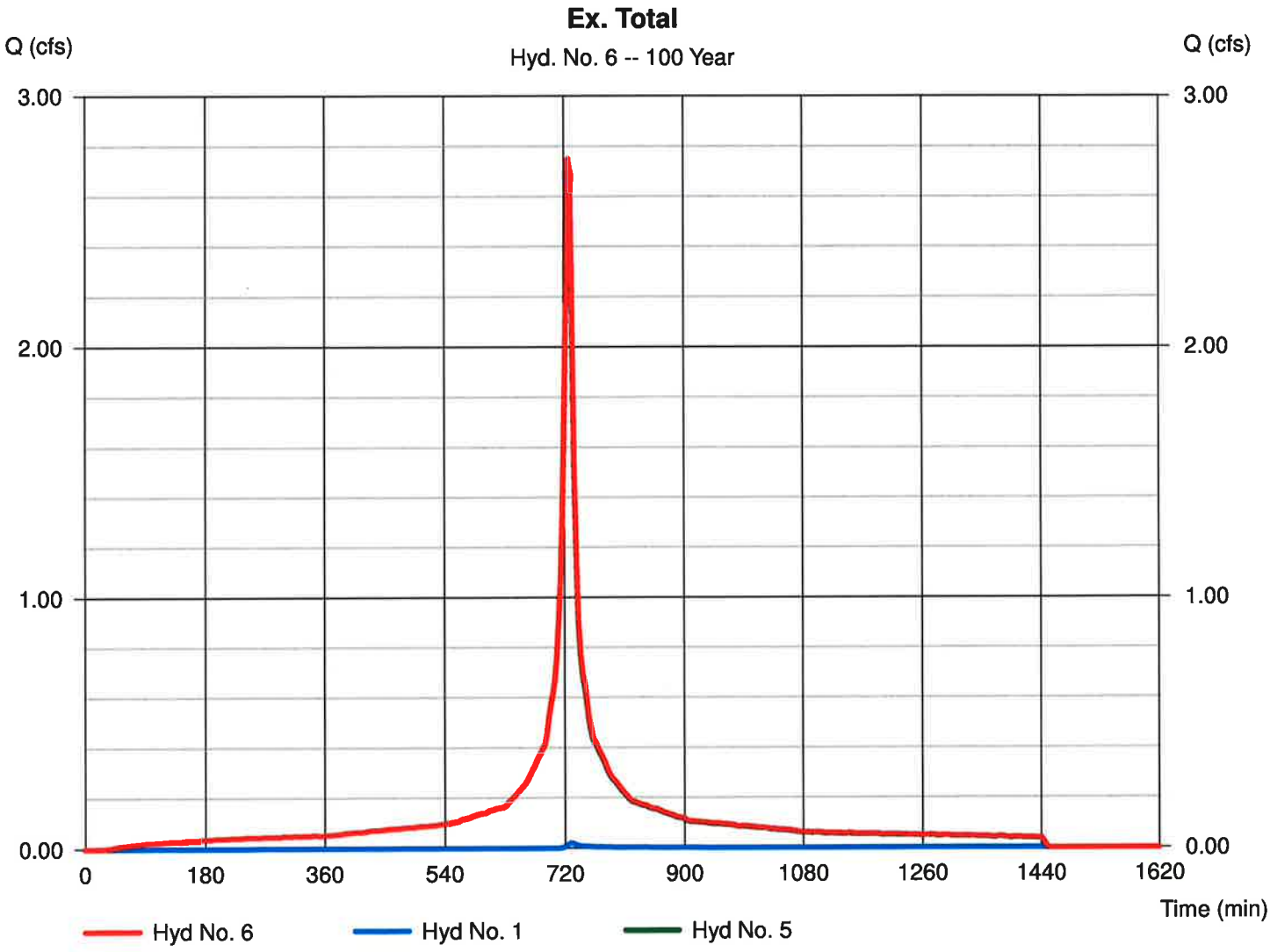


Hydrograph Report

Hyd. No. 6

Ex. Total

Hydrograph type	= Combine	Peak discharge	= 2.749 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 11,712 cuft
Inflow hyds.	= 1, 5	Contrib. drain. area	= 0.020 ac

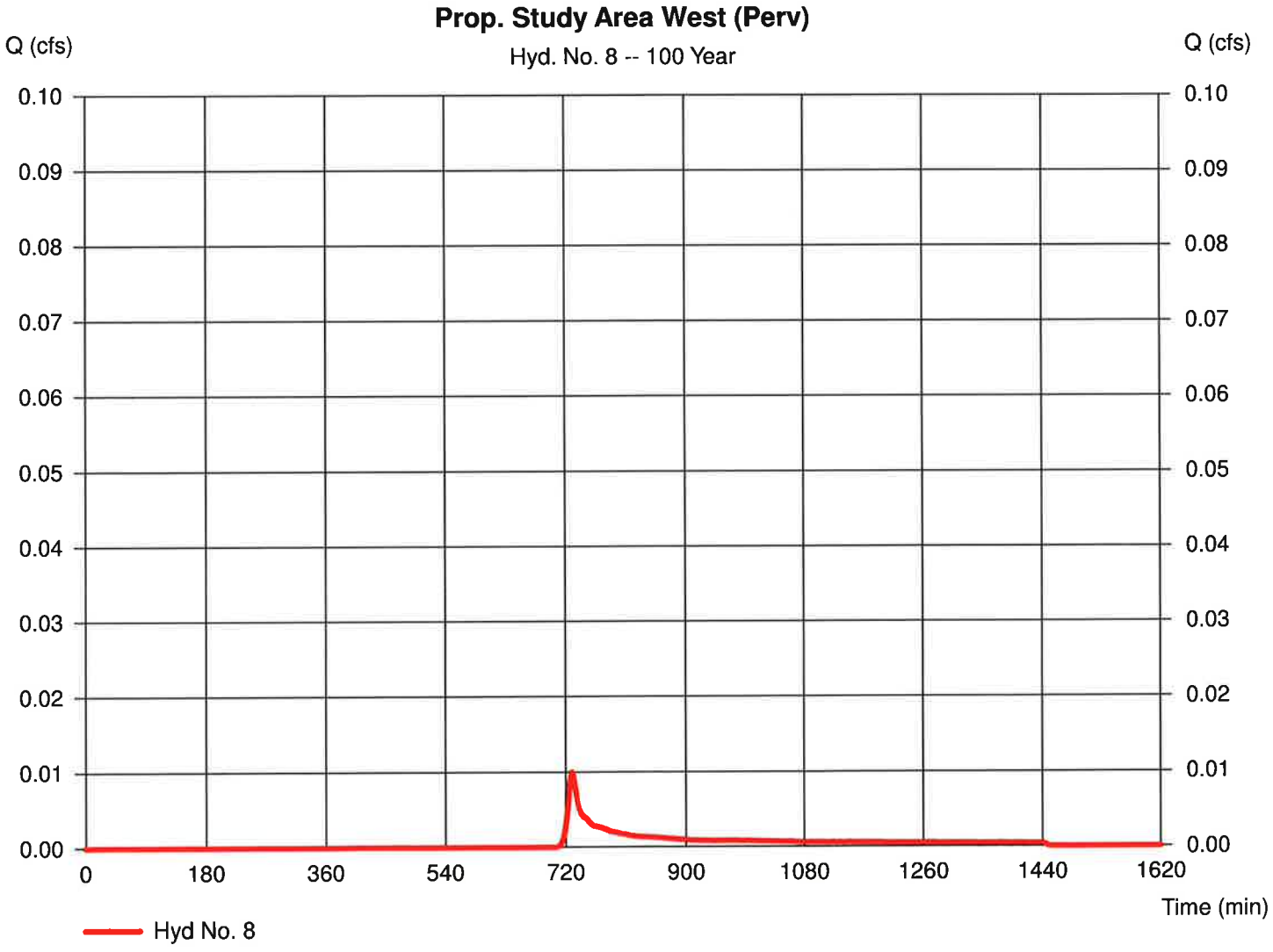


Hydrograph Report

Hyd. No. 8

Prop. Study Area West (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.010 cfs
Storm frequency	= 100 yrs	Time to peak	= 729 min
Time interval	= 3 min	Hyd. volume	= 46 cuft
Drainage area	= 0.010 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.47 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484

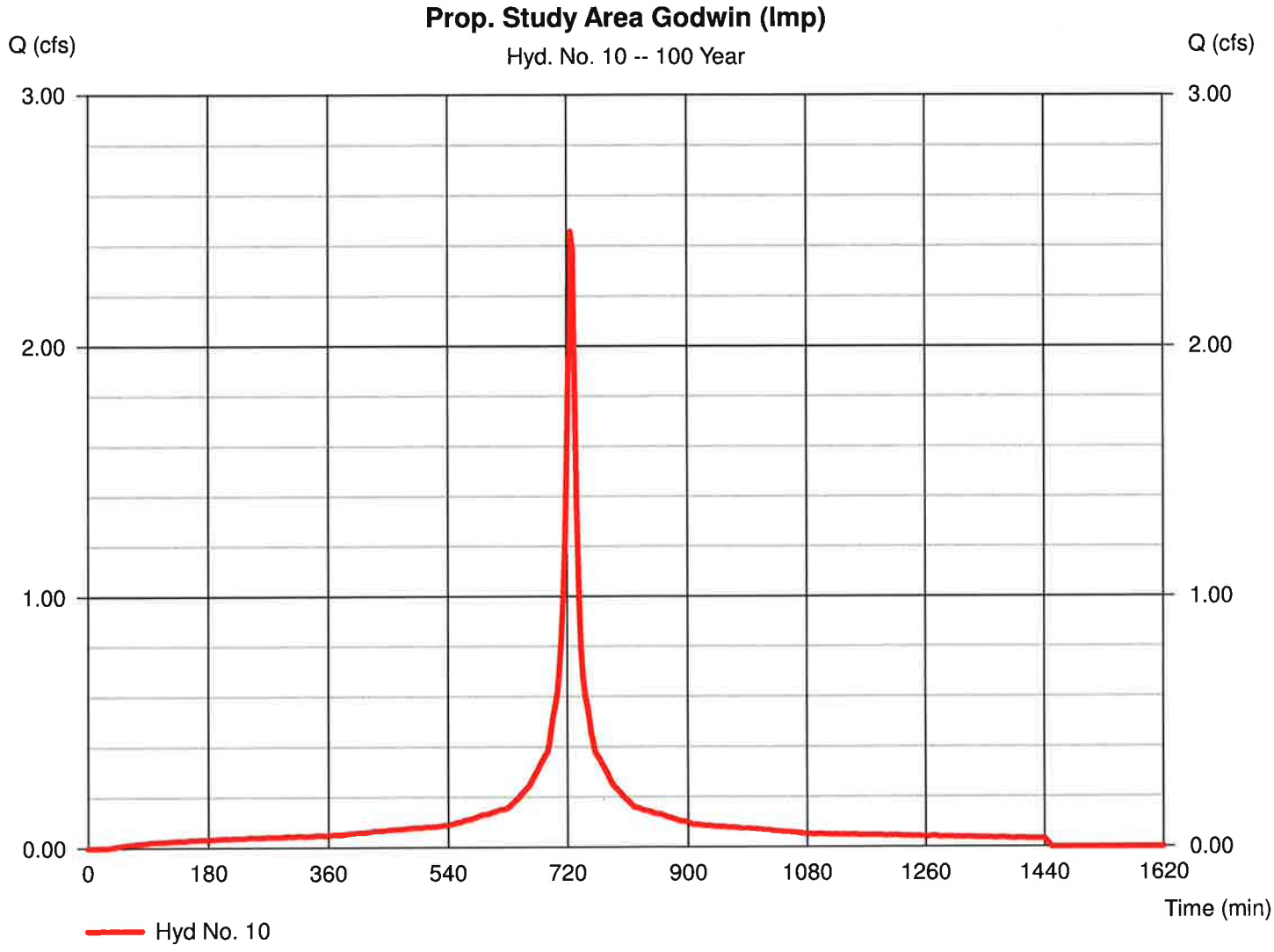


Hydrograph Report

Hyd. No. 10

Prop. Study Area Godwin (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.457 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 10,363 cuft
Drainage area	= 0.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.47 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484

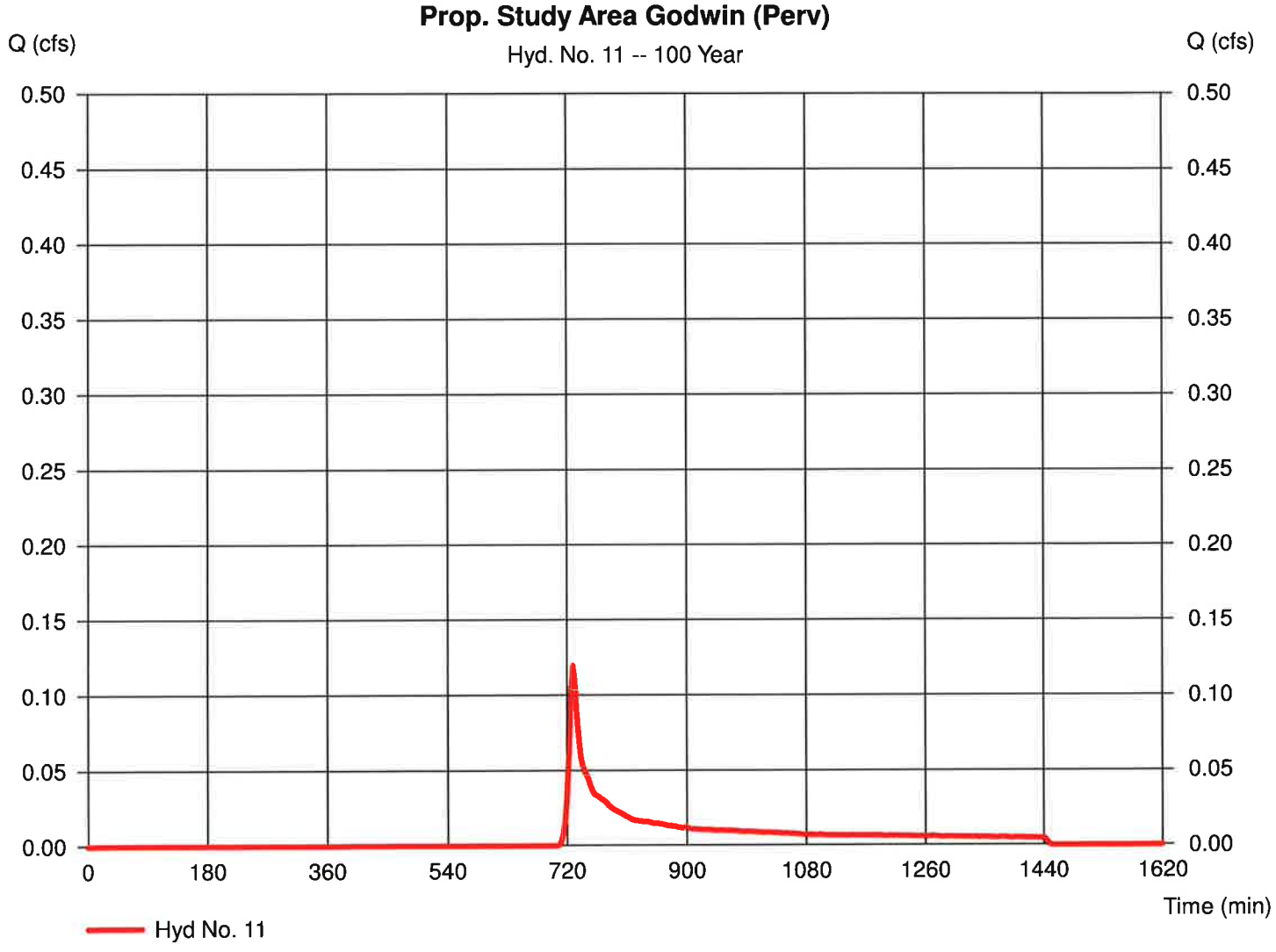


Hydrograph Report

Hyd. No. 11

Prop. Study Area Godwin (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.119 cfs
Storm frequency	= 100 yrs	Time to peak	= 729 min
Time interval	= 3 min	Hyd. volume	= 555 cuft
Drainage area	= 0.120 ac	Curve number	= 39
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 6.00 min
Total precip.	= 8.47 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-D.cds	Shape factor	= 484

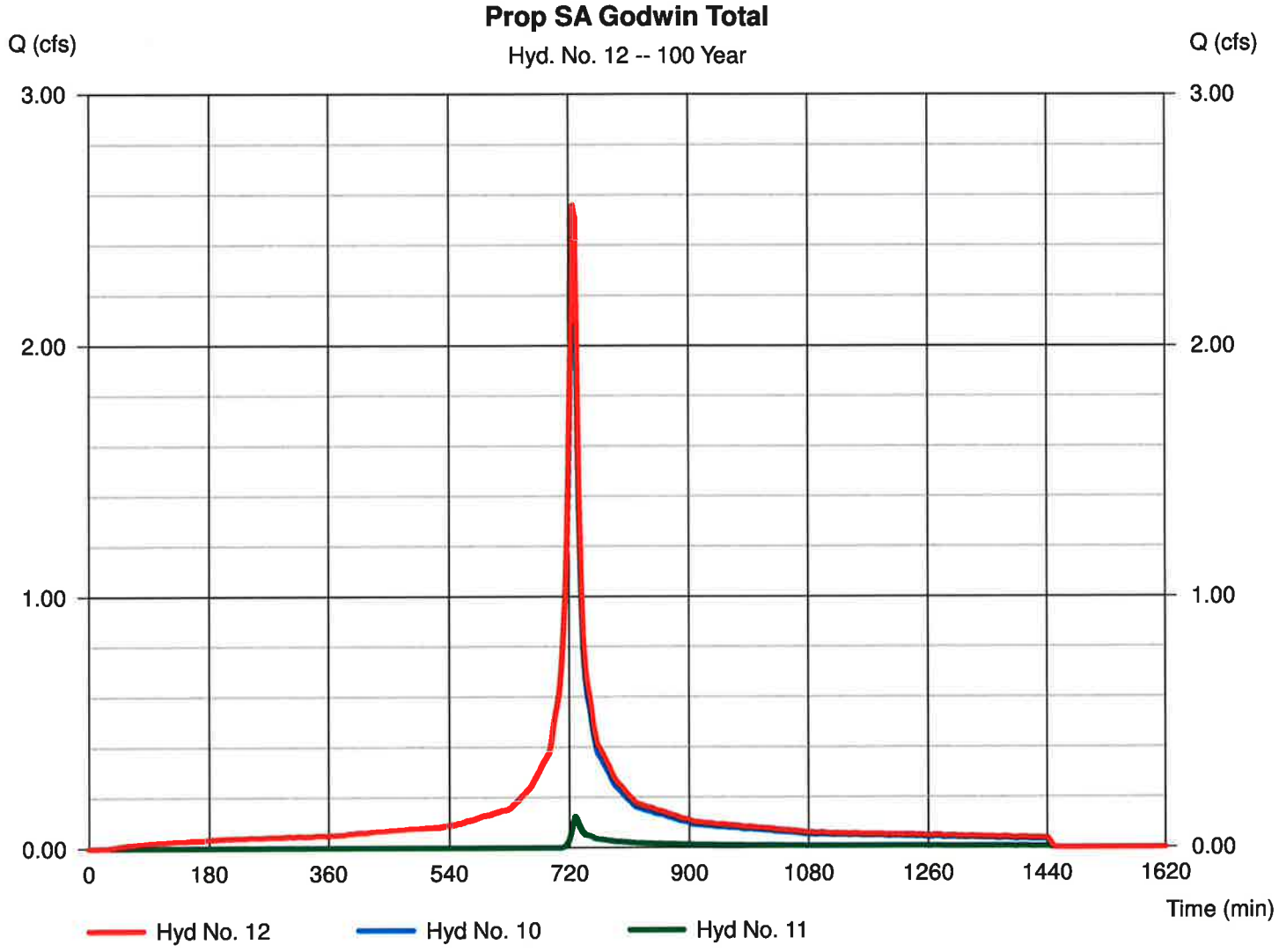


Hydrograph Report

Hyd. No. 12

Prop SA Godwin Total

Hydrograph type	= Combine	Peak discharge	= 2.558 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 10,918 cuft
Inflow hyds.	= 10, 11	Contrib. drain. area	= 0.490 ac

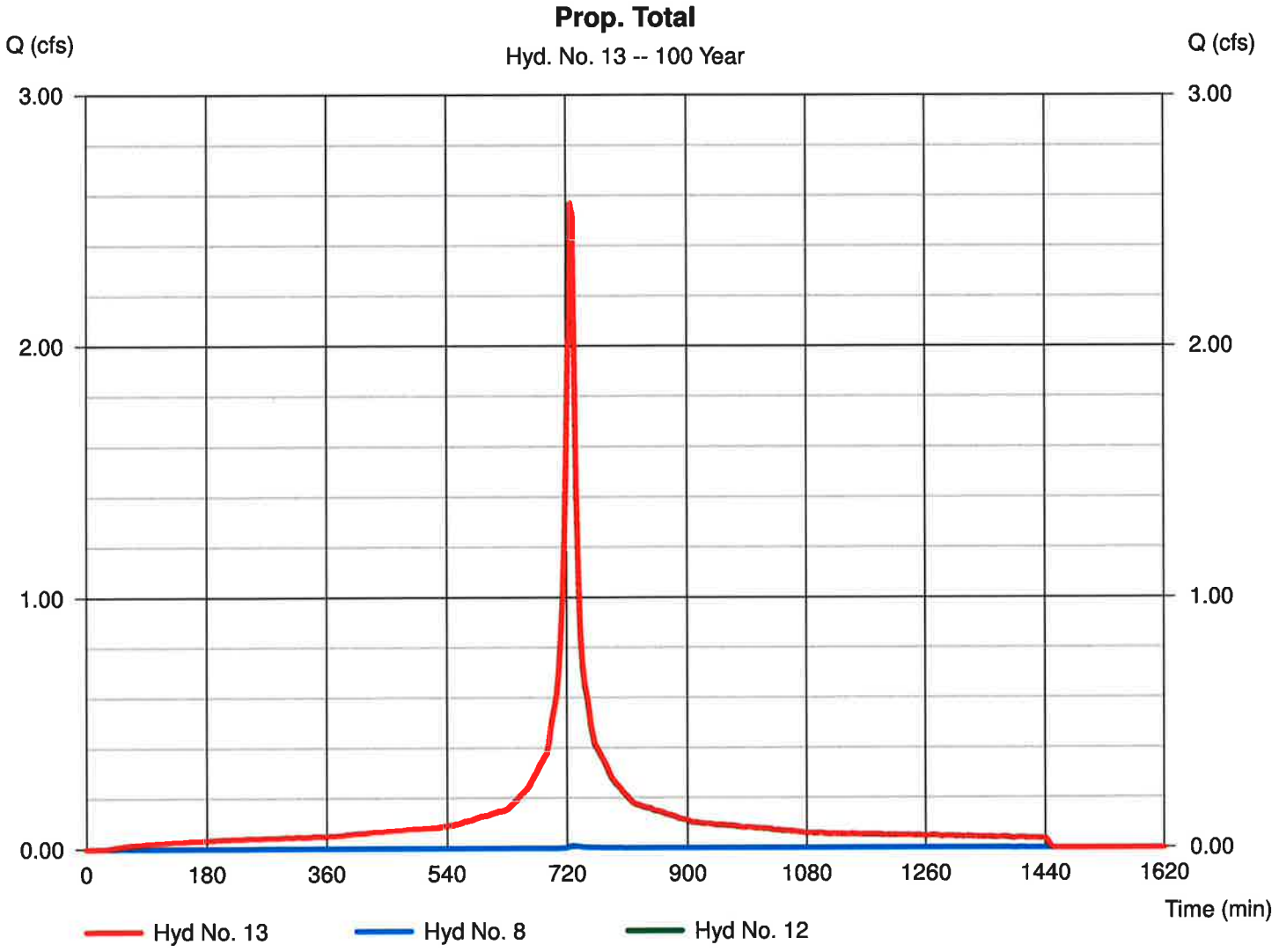


Hydrograph Report

Hyd. No. 13

Prop. Total

Hydrograph type	= Combine	Peak discharge	= 2.567 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 3 min	Hyd. volume	= 10,964 cuft
Inflow hyds.	= 8, 12	Contrib. drain. area	= 0.010 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	39.0824	9.5000	0.8528	--------
2	45.6943	10.7000	0.8185	--------
3	0.0000	0.0000	0.0000	--------
5	99.7061	14.8000	0.9304	--------
10	249.7597	21.8001	1.0961	--------
25	115.7547	14.9000	0.8980	--------
50	7.3699	0.1000	0.2544	--------
100	403.8513	25.1001	1.1108	--------

File name: TRENTON.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.00	3.10	2.55	2.18	1.91	1.70	1.54	1.40	1.29	1.20	1.12	1.05
2	4.80	3.83	3.21	2.77	2.45	2.20	2.00	1.84	1.70	1.59	1.49	1.40
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.20	5.03	4.24	3.67	3.24	2.90	2.63	2.40	2.22	2.06	1.92	1.80
10	6.80	5.63	4.80	4.17	3.69	3.30	2.98	2.72	2.50	2.31	2.14	2.00
25	7.89	6.45	5.47	4.76	4.23	3.80	3.46	3.17	2.93	2.73	2.55	2.40
50	4.87	4.09	3.69	3.44	3.25	3.10	2.98	2.88	2.80	2.72	2.66	2.60
100	9.20	7.76	6.69	5.87	5.22	4.70	4.27	3.91	3.60	3.33	3.10	2.90

Tc = time in minutes. Values may exceed 60.

Precip. file name: Bergen County.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	3.34	0.00	0.00	5.07	6.28	0.00	8.47
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	1.25	3.34	0.00	0.00	5.07	6.28	0.00	8.47

Hydraflow Table of Contents

2020-11-05 Ex. Prop. 2-10-100.gpw

Hydraflow Hydrographs by Intelisolve v9.1

Tuesday, Nov 17, 2020

STORMWATER COLLECTION SYSTEM CALCULATIONS
(PIPE SIZING)

DYNAMIC ENGINEERING

Inlet Area Summary and Average Coefficient (C) Calculations

Project: ABDD Capital
Job #: 3486-99-001
Location: Midland Park

Computed By: MSA
Checked By: KCK
Date: 11/17/2020

Drainage Area	Impervious Area (sf)	Coefficient (C) Used	Open Space (SF)	Coefficient (C) Used	Average Coefficient (C) Used	Total Area (SF)	Total Area (acres)
Inlet Area 8	3448	0.95	288	0.35	0.90	3736	0.09
Inlet Area 10	4227	0.95	947	0.35	0.84	5174	0.12
Inlet Area 11	554	0.95	659	0.35	0.62	1213	0.03
Inlet Area 15	1690	0.95	1145	0.35	0.71	2835	0.07
Inlet Area 12	2520	0.95	627	0.35	0.83	3147	0.07
Inlet Area 13	1455	0.95	806	0.35	0.74	2261	0.05
Inlet Area Roof	2119	0.95	0	0.35	0.95	2119	0.05

DYNAMIC ENGINEERING

Stormwater Collection System Calculations

Project: ADBB Capital
Job #: 3486-99-001
Location: Midland Park
Design Storm: 25-year

Computed By: MSA
Checked By: KCK
Date: 11/17/2020

NOTES:
1) Design method used is Rational Method, unless otherwise noted.
2) Refer to Weighted Runoff Coefficient table for calculation of incremental areas and C values

PIPE SECTION		SUBCATCHMENT AREA	INCREMENTAL		CUMULATIVE	TIME OF CONCENTRATION			I	PEAK RUNOFF		PIPING INPUT			PIPING DATA		
FROM	TO	Area (Acres)	"C"	A x C Ac	A x C (acres)	Tc to Inlet (min)	Tc in Pipe (min.)	Final Tc (min)	(In/Hr)	Q to Inlet (CFS)	Q cum. for Pipe (CFS)	Dia. (In)	Length (Ft)	Man. "n"	Slope (ft/ft)	Pipe Capacity (cfs)	Pipe Velocity (fps)
Inlet 8	Inlet 10	0.09	0.90	0.08	0.08	10.00	0.27	10.00	6.80	0.54	0.54	15	60.0	0.013	0.0050	4.57	3.73
Inlet 10	Inlet 11	0.12	0.84	0.10	0.18	10.00	0.25	10.27	6.80	0.68	1.22	15	57.0	0.013	0.0050	4.57	3.73
Inlet 15	Inlet 11	0.07	0.71	0.05	0.05	10.00	0.22	10.00	6.80	0.34	0.34	15	50.0	0.013	0.0050	4.57	3.73
Inlet 11	Inlet 12	0.03	0.62	0.02	0.25	10.00	0.19	10.52	6.68	0.13	1.67	15	43.0	0.013	0.0050	4.57	3.73
Roof	Inlet 12	0.05	0.95	0.05	0.05	10.00	0.23	10.00	6.80	0.34	0.34	6	52.0	0.010	0.0100	0.73	3.72
Inlet 12	Inlet 13	0.07	0.83	0.06	0.36	10.00	0.30	10.71	6.68	0.40	2.40	15	68.0	0.013	0.0050	4.57	3.73
Inlet 13	Ex Inlet	0.05	0.74	0.04	0.40	10.00	0.08	11.01	6.56	0.26	2.62	15	18.0	0.013	0.0050	4.57	3.73

DRAINAGE AREA MAPS

EX. SA WEST

EX. SA GODWIN AVE

TAX LOT 4
N/F HELLER PROPERTY PARTNERS LP
DB. 1943, PG. 821

N84° 45' 00"E 182.96' (DR1)

TAX LOT 9.01
N/F PATRICIA A ENNIS
DB. 3224, PG. 399

80.07' (DR1)

N14° 59' 20"E

1 Story Building
Height: 20'±
TAX LOT 5.01
BLOCK 20.10
N/F 195 GODWIN MP LLC C/O S KALOFFRAS
DB. 2064, PG. 1847
21,968 SF, 0.504 AC.

S05° 15' 00"E 115.00' (DR1)

TAX LOT 6
N/F CHRISTIAN REFORMED CHURCH
DB. N/A, PG. N/A

72.96' (DR1)

N62° 07' 00"W 149.56' (DR1)

S84° 45' 00"W 305.61' (Tie)

P.O.B.

Cap Fnd.

UP #831

UP #60011

UP #60012 w/ Light & Transformer

UP #61392 w/ Transformer

Chain Link Fence

Chain Link Gate

Stockade Fence

Cobble Stone Wall

Conc. Curb (Typ.)

Conc. Walk

Dep. Curb

Cross Walk

Cross Walk Sign

No Parking Sign

ADA Sign

15 Min Parking Sign

LS Area

Grass

Asphalt

Hand Rail

ID Sign

Yard Inlet
GRT: 257.77
INV: 256.57

Yard Inlet
GRT: 256.74
INV(A): 253.26
INV(B): Not Visible

Type 'A' Inlet
GRT: 254.30
INV(A): 251.10
INV(B): 251.00

Type 'B' Inlet
TC: 254.64
GRT: 254.30

Manhole
RIM: 254.82

Manhole
RIM: 254.52

12" RCP

15" RCP

Benchmark
P.K. Nail Set
EL: 256.29
(NAVD 88)

VAN BLARCOM AVENUE
(50' ROW WIDTH PER TAX MAP)

GODWIN AVENUE
(VARIABLE ROW WIDTH PER TAX MAP)

GRAPHIC SCALE

-10 0 5 10 20 40

(IN FEET)
1 INCH = 10 FT.

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1904 Main Street
Lake Como, NJ 07719
T: 732.974.0198
F: 732.974.3521
www.dynamicec.com

TITLE:
EXISTING DRAINAGE AREA MAP

PROJECT: **ABDD CAPITAL**
PROPOSED DUNKIN' DRIVE-THRU RESTAURANT
DUNKIN' BLOCK 20.10, LOT 5.01
195 GODWIN AVENUE (CR 84)
BOROUGH OF MIDLAND PARK, BERGEN COUNTY, NEW JERSEY

JOB No: 3486-99-001
DATE: 09/01/2020
DRAWN BY: KJH
SCALE: (H) 1"=10' (V)
DESIGNED BY: KCK
CHECKED BY: JMS
CHECKED BY: _
SHEET No: 1 OF 3

JOSHUA M. SEWALD
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 52908

KYLE C. KAVINSKI
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 52985

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Rev. | Date | Comments | By

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PROP. SA WEST

PROP. SA GODWIN

TAX LOT 4
N/F HELLER PROPERTY PARTNERS LP
DB. 1943, PG. 821

N84° 45' 00"E 182.96' (DR1)

UP #60012
w/ Light
& Transformer

UP #61392
w/ Transformer

TAX LOT 9.01
N/F PATRICIA A ENNIS
DB. 3224, PG. 399

80.07' (DR1)

N14° 59' 20"E

TAX LOT 5.01
BLOCK 20.10
F 195 GODWIN MP LLC
C/O S KALOFFRAS
2064, PG. 1847
968 SF, 0.504 AC.

B-1 ZONE

R-1 ZONE

72.96' (DR1)

TAX LOT 6
N/F CHRISTIAN REFORMED CHURCH
DB. N/A, PG. N/A

UP #831

N62° 07' 00"W

Cap Fnd.

149.56' (DR1)

S84° 45' 00"W

TAX LOT 6
N/F CHRISTIAN REFORMED CHURCH
DB. N/A, PG. N/A

DRIVE THRU

MOBILE ORDER

BY PASS

DUNKIN'
PROPOSED DUNKIN' DRIVE-THRU
RESTAURANT
(2,119 SF)
(13 PARKING SPACES)

S0° 15' 00"E

145.90' (DR1)

P.O.B.

Cap Fnd.

UP #60011

Type 'A' Inlet

PROP. INV. (A): 251.10

Manhole

Type 'B' Inlet

Manhole

Benchmark
P.K. Nail Set
El: 256.29
(NAVD 88)

VAN BLARCOM AVENUE
(50' ROW WIDTH PER TAX MAP)

GODWIN AVENUE (CR 84)
(VARIABLE ROW WIDTH PER TAX MAP)

N

W E

S

GRAPHIC SCALE

−10 0 5 10 20 40

(IN FEET)
1 INCH = 10 FT.

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Newtown, Pennsylvania T: 267.685.0276 | Delray Beach, Florida T: 561.921.8570

TITLE:
PROPOSED DRINAGE AREA MAP

PROJECT: **ABDD CAPITAL**
PROPOSED DUNKIN' DRIVE-THRU RESTAURANT
DUNKIN'
BLOCK 20.10, LOT 5.01
195 GODWIN AVENUE (CR 84)
BOROUGH OF MIDLAND PARK, BERGEN COUNTY, NEW JERSEY

JOB No: 3486-99-001
DATE: 09/01/2020
DRAWN BY: KJH
SCALE: (H) 1"=10' (V)
DESIGNED BY: KCK
CHECKED BY: JMS
CHECKED BY: _
SHEET No: 2 OF 3
Rev. # 0

JOSHUA M. SEWALD
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 52908

KYLE C. KAVINSKI
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TAX LOT 4
N/F HELLER PROPERTY PARTNERS LP
DB. 1943, PG. 821

N84° 45' 00"E 182.96' (DR1)

INLET AREA #10

PROP. TYPE 'E' INLET
STORM STR. #10
GRT: 255.60
INV IN (15"): 252.03
INV OUT (15"):252.03

INLET AREA #8

15" HDPE 60 LF @ 0.50% SL. STM SEWER

PROP. TYPE 'E' INLET
STORM STR. #8
GRT: 255.60
INV OUT (15"):252.33

UP #60012 w/ Light & Transformer

UP #61392 w/ Transformer

S06° 15' 00"E

TAX LOT 9.01
N/F PATRICIA A ENNIS
DB. 3224, PG. 399

80.07' (DR1)

N14° 55' 20"E

INLET AREA #15

PROP. TYPE 'B' INLET
STORM STR. #15
TC: 257.50
GRT: 257.00
INV OUT (15"):252.00

DRIVE THRU
MOBILE ORDER
BY PASS

TAX LOT 5.01
BLOCK 20.10
195 GODWIN MP LLC
C/O S KALOFFRAS
DB. 20164, PG. 1847
9,368 SF, 0.504 AC.

B-1 ZONE

R-1 ZONE

72.96' (DR1)

TAX LOT 6
N/F CHRISTIAN REFORMED CHURCH
DB. N/A, PG. N/A

UP #831

N82° 07' 00"W

Cap Fnd.

INLET AREA #11

15" HDPE 57 LF @ 0.50% SL. STM SEWER

15" HDPE 30 LF @ 0.50% SL. STM SEWER

DUNKIN'
PROPOSED DUNKIN' DRIVE-THRU RESTAURANT
(2,119 SF)
(13 PARKING SPACES)

INLET AREA ROOF

INLET AREA #13

15" HDPE 43 LF @ 0.50% SL. STM SEWER

PROP. 6" SCH 40 PVC ROOF LEADER @ 1.00% SL. (TYP.)

INLET AREA #12

15" HDPE 68 LF @ 0.50% SL. STM SEWER

PROP. TYPE 'B' INLET
STORM STR. #11
TC: 256.00
GRT: 255.50
INV IN (A): 251.75
INV IN (B): 251.75
INV OUT (15"):251.75

PROP. TYPE 'B' INLET
STORM STR. #12
TC: 255.95
GRT: 255.45
INV IN (A): 251.53
INV IN (B): 251.53
INV OUT (15"):251.53

TAX LOT 6
N/F CHRISTIAN REFORMED CHURCH
DB. N/A, PG. N/A

S84° 45' 00"W

Cap Fnd.

UP #60011

HDPE 18 LF @ 1.50% SL. STM SEWER

Type 'A' Inlet
GRT: 254.30
PROP. INV. (A): 251.10
INV(B): 251.00

Manhole
INV: 254.82

15" RCP

Manhole
INV: 254.52

Type 'B' Inlet
TC: 254.64
GRT: 254.30

PROP. TYPE 'B' INLET
STORM STR. #13
TC: 254.50
GRT: 254.00
INV IN (15"): 251.19
INV OUT (15"):251.19

Benchmark
P.K. Nail Set
El: 256.29
(NAVD 88)

GODWIN AVENUE (CR 84)
(VARIABLE ROW WIDTH PER TAX MAP)

VAN BLARCOM AVENUE
(50' ROW WIDTH PER TAX MAP)

N
W E
S

GRAPHIC SCALE
-10 0 5 10 20 40
(IN FEET)
1 INCH = 10 FT.

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Rev.	Date	Comments	By

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1904 Main Street
Lake Como, NJ 07719
T: 732.974.0198
F: 732.974.3521
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TITLE:
INLET AREA MAP

PROJECT: **ABDD CAPITAL**
PROPOSED DUNKIN' DRIVE-THRU RESTAURANT
DUNKIN' BLOCK 20.10, LOT 5.01
195 GODWIN AVENUE (CR 84)
BOROUGH OF MIDLAND PARK, BERGEN COUNTY, NEW JERSEY

JOB No: 3486-99-001
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DRAWN BY: KJH
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SHEET No: 3 OF 3
Rev. # 0

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.C-ALL-811.COM

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SANITARY SEWER & POTABLE WATER ENGINEER'S REPORT

for

ABDD Capital
Proposed Dunkin' Drive-Thru Restaurant

Block 20.10, Lot 5.01
195 Godwin Avenue (C.R. 84)
Borough of Midland Park, Bergen County, NJ

Prepared by:

DYNAMIC ENGINEERING

1904 Main Street
Lake Como, NJ 07719
(732) 974-0198

Joshua M. Sewald, PE, PP
NJ Professional Engineer License #52908

November 2020
DEC # 3486-99-001

INTRODUCTION

The subject property is known as Block 20.10, Lot 5.01 as shown on the Tax Maps of the Borough of Midland Park, Bergen County, New Jersey. The parcel consists of approximately 0.5 acres and is located within the B-1 (Business Retail) Zone. Under existing conditions, the parcel is developed with a Friendly's Restaurant.

The site is bound to the north by commercial uses, to the south by a religious use with commercial & residential uses beyond, to the east by Godwin Avenue with commercial uses beyond, and to the west by residential uses.

The proposed development consists of the demolition of the existing Friendly's Restaurant and the construction of the proposed 2,119 SF Dunkin' Drive-Thru Restaurant. Additional improvements include driveways, parking areas, landscaping, lighting, stormwater management facilities and other related site improvements as shown on the accompanying engineering drawings.

PROPOSED SANITARY SEWER SYSTEM

The proposed sanitary sewer service will be provided to the Dunkin' Drive-Thru Restaurant building via approximately 54 LF of 4-inch, SDR-35 PVC lateral service connection at a 2.08% minimum slope to the existing sewer main within Godwin Avenue (CR 84).

SEWERAGE FLOW CALCULATION

Sanitary sewage flow estimation has been calculated utilizing the sanitary sewer design flow calculations listed under NJAC 7:14A-23.3(a). Considering the above, the proposed estimated daily sewerage demand is as follows:

Restaurant (24-Hour Service): 50 gallons per seat

Average Daily Flow in Gallons Per Day (GPD)

Proposed Dunkin' Drive-Thru Restaurant: 15 Seats x (50 GPD / 1 Seat) = 750 GPD

Proposed Total Sewage Flow = 750 GPD

SANITARY SEWER PIPE DESIGN

Per NJDEP regulations, the criteria for establishing the size of gravity sanitary sewer is to convey two times the average daily flow with the pipe flowing half full. Utilizing Manning's Equation with a roughness coefficient of 0.010 for PVC pipe, the following is the minimum capacity of the proposed sanitary sewer lateral:

Pipe Size	Slope	Roughness (n)	Capacity at ½ Full	2 X ADF
4" PVC	2.08%	0.010	115,618 GPD	1,500 GPD

The proposed 4-inch PVC sanitary sewer lateral can easily convey two times the proposed average daily flow proposed by the onsite development while flowing half full. The total flow from the proposed Dunkin' Drive-Thru Restaurant will constitute less than 1.00% of the line's total capacity.

PROPOSED WATER SYSTEM

The proposed water service for the Dunkin' Drive-Thru Restaurant will be provided via connection to the existing water line located near the Godwin Avenue (CR 84) right-of-way. The on-site service will be provided by a 2" Domestic Water Service to the proposed building.

DOMESTIC WATER DEMAND CALCULATION

As specified in NJAC 7:10-12.6(2)2, Table 1, the NJDEP Standard for Domestic Water Demand is as follows:

Restaurant - 10 gallons per day per seat

Demand projections shall be multiplied by a factor of 1, 2, or 3 reflecting the hours of operation as follows:

- One to six hours: Factor of 1
- Seven to twelve hours: Factor of 2
- Greater than twelve hours: Factor of 3

Average Daily Flow in Gallons Per Day (GPD)

Proposed Dunkin' Drive-Thru Restaurant:

- (15 Seats) x (10 GPD/1 Seat) x (3) = 450 GPD

Total Domestic Water Demand = 450 GPD

APPENDIX

CAPACITY OF CIRCULAR PIPE FLOWING ½ FULL

DYNAMIC ENGINEERING

Capacity of Circular Pipe Flowing 1/2 Full

Project: Proposed Commercial Development
Job #: 3486-99-001
Location: Midland Park, NJ

Computed By: MSP
Checked By: KK
Date: 11/19/2020

PIPE DESCRIPTION	SLOPE (%)	SIZE (IN)	MANNING'S COEFFICIENT (n)	VELOCITY (FT/S)	CAPACITY (CFS)	CAPACITY (GPD)	CAPACITY (MGD)
4" PVC	2.080%	4	0.010	4.10	0.18	115,618	0.12

Variables Defined
Q=Capacity of Pipe (CFS)
V=Velocity in Pipe Section (FT/S)
R=Hydraulic Radius of Pipe Section
S=Slope of Pipe Section (FT/FT)
D=Diameter of Pipe (FT)
d=Depth of Flow in Pipe (FT)
n=Manning's Coefficient
Wp=Wetted Perimeter (FT)

Typical Values for Manning's Coefficient (n)

n(RCP)=	0.013
n(HDPE-Smooth Interior)=	0.012 *Varies with Manufacturer
n(DIP)=	0.013
n(PVC)=	0.010
n(CMP)=	0.024

Equations used:
Q=VA
V=(1.49/n)*R^(2/3)*S^(1/2)
Q=(1.49/n)*R^(2/3)*S^(1/2)*A

Utilizing Appendix 16.A from the Civil Engineering Reference Manual-Seventh Edition, by Micheal Lindeburg, Copyright 1999
The following equations were utilized to calculate the Hydraulic Radius and Area of a Circular Pipe Section flowing 1/2 full
$A=(\pi*D^2/4)*0.5=0.3927*D^2$
$R=A/Wp=0.3927*D^2/((2*\pi*D/2)*0.5)=0.25*D$

Therefore:
$Q=(1.49/n)*(0.25*D)^(2/3)*S^(1/2)*(0.3927*D^2)$
$V=(1.49/n)*(0.25*D)^(2/3)*S^(1/2)$

Unit Conversion Equations
1 Cubic Foot=7.4805 Gallons
1 Day = 86,400 Seconds
Therefore:

$$\frac{\text{Cubic Foot}}{\text{Second}} \times \frac{86{,}400 \text{ Seconds}}{1 \text{ Day}} \times \frac{7.4805 \text{ Gallons}}{1 \text{ Cubic Foot}} = \frac{\text{Gallon}}{\text{Day}}$$

$$\frac{\text{Gallon}}{\text{Day}} \times \frac{1 \text{ Million Gallons}}{1{,}000{,}000 \text{ Gallons}} = \frac{\text{Million Gallons}}{\text{Day}}$$