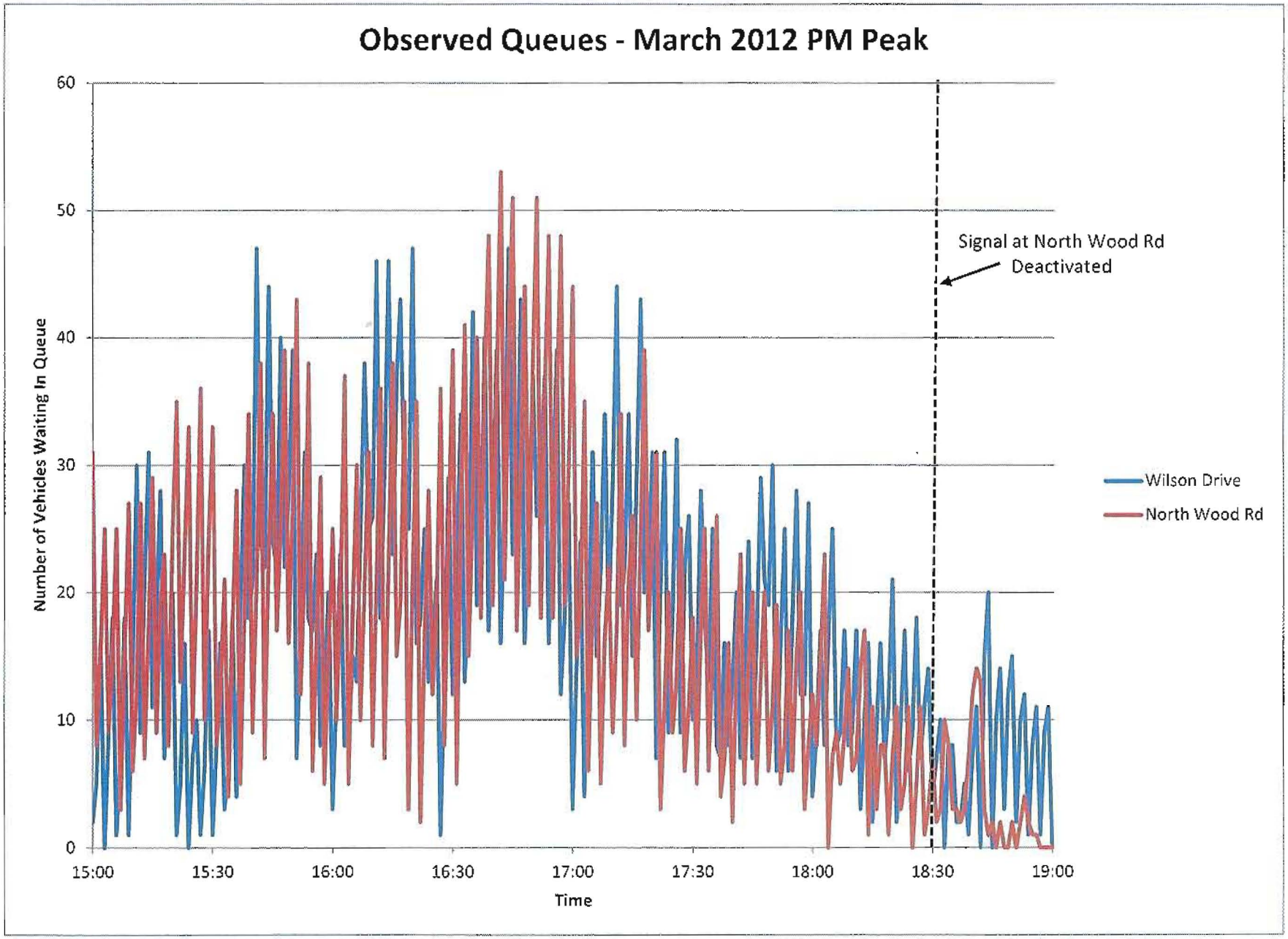
MD 355 Delay Study Summary
By: SHA Travel Forecasting & Analysis Division
Date: March 9, 2012

	Wilson Drive			North Wood Road		
Time	Volume (veh/hr)	Delay (min/veh)	Queue (veh)	Volume (veh/hr)	Delay (min/veh)	Queue (veh)
3pm to 4pm	583	1.8	15.9	781	1.6	19.7
4pm to 5pm	625	2.6	24.9	849	1.9	26.3
5pm to 6pm	601	2.1	19.3	527	1.7	15.7
6pm to 7pm*	353	1.7	9.3	207	1.4	5.7

* Signal at North Wood Road deactivated at 6:30 pm, see 15-minute breakdown below

	Wilson Drive			North Wood Road		
Time	Volume (veh)	Delay (min/veh)	Queue (veh)	Volume (veh)	Delay (min/veh)	Queue (veh)
6:00 - 6:15 pm	111	1.8	11.7	77	1.8	9.8
6:15 - 6:30 pm	104	1.7	10.7	53	1.5	5.9
6:30 - 6:45 pm	62	1.8	6.7	49	1.8	6.1
6:45 - 7:00 pm	76	1.6	7.9	28	0.6	1.1

Notes: Data collected on Wednesday, March 7, 2012 and Thursday, March 8, 2012
Queues are average number of vehicles waiting during the reporting period.


Observed Queues - March 2012 PM Peak
Number of Vehicles Waiting In Queue
60
50
40
30
20
10
0
15:00
15:30
16:00
16:30
17:00
17:30
18:00
18:30
19:00
Time
Signal at North Wood Rd
Deactivated
Wilson Drive
North Wood Rd

North Woods PM Operations

Observations:

- Between 6 and 6:30 PM there were 157 cars from Wilson Drive. The split time (green and yellow) for Wilson was between 13 and 33 seconds with an average of 27.2 seconds.
- North Woods would have very few opportunities to enter MD 355 between 6 and 6:30 PM without the signal operating.
- Opportunities increase as 6:30 approaches. Most of the opportunities are created by the max recall at Wilson. The first observed true gap at North Woods occurred at 6:20.
- After 6:30 PM queues on MD 355 still consistently blocked North Woods. During observations on Feb 22, drivers on MD 355 did allow some cars from North Woods to enter after the signal went into flash. During observations on Feb 16 almost no cars were able to enter. In some instances, the flow on MD 355 is interrupted when drivers did stop to allow traffic off on North Woods.
- After 6:30, with the light in flash, queues on North Woods were between 6 and 12 vehicles. Queues and delay appeared to be reasonable. Queues on North Woods cleared completely at 6:43. Traffic on MD 355 subsided at about the same time.
- Based on Feb 22 observations, 6:30 seems right for North Woods operations.

Options:

1. Put the signal in flash at 6 PM.
2. Put the signal in flash at 6:30 PM.
3. Put the signal in flash at an intermediate time.
4. Use a "dummy" phase at Wilson to hold back MD 355 for a few seconds and provide opportunities to enter MD 355.
5. Combination of several.

AM Operation at Wilson

Observations:

- The "dummy" phase at Wilson lasts for 50 to 60 seconds.
- There were only 9 u-turns at Wilson between 6 and 7:30 AM.
- However the "dummy" phase provides a long break in traffic which allows left turns to enter North Woods. Removing the phase would seriously hurt operations on southbound MD 355 at North Woods.

- If the "dummy" phase was removed at Wilson a half cycle at North Woods would be necessary at North Woods to keep left turn queues short. The overall operations would probably not change appreciably. The AM operations for North Woods would likely need to be extended beyond 8AM. The "dummy" phase also provides gaps after the signal has gone onto flash.
- Operations on southbound MD 355 were very good. The left turn queues at North Woods had minimal impacts on MD 355 and the Navy gate processed vehicles efficiently.

Options:

1. Remove the "dummy" phase and install a half cycle at North Woods. Consider extending North Woods operation past 8AM.
2. Reduce the dummy phase by a small amount (10 to 15 seconds)
3. Make no changes.

PM Operations on Cedar Lane

Observations:

- PM queues on eastbound Cedar Lane were observed on Feb 23. The queues did not reach the NIH drop-off loop (825 feet) during the peak period.
- During previous observations (after green time reduction), the queues stretched to nearly MD 187.
- It appears that some drivers are using alternate routes. Based on the distance between the intersections roughly 100 vehicles per hour are diverting (this is a very rough estimate).

Options:

1. Divert additional green time from Cedar Lane to MD 355
2. Make no changes.

Per Cycle Volume and Split for
Vehicles Exiting North Woods from 6:00 to 6:30 PM
22-Feb-12

Time	Cycle	Vehicles	Split* (seconds)
18:00	1	27	33
18:03	2	15	22
18:06	3	20	31
18:09	4	13	22
18:12	5	19	32
18:15	6	10	31
18:18	7	19	27
18:21	8	7	13
18:27	9	16	30
18:30	10	11	31
Avg/Total		**15.7 / 157**	**27.2 / 272**

* Split includes green and yellow time for North Woods

BM TDSD 2/23/2012