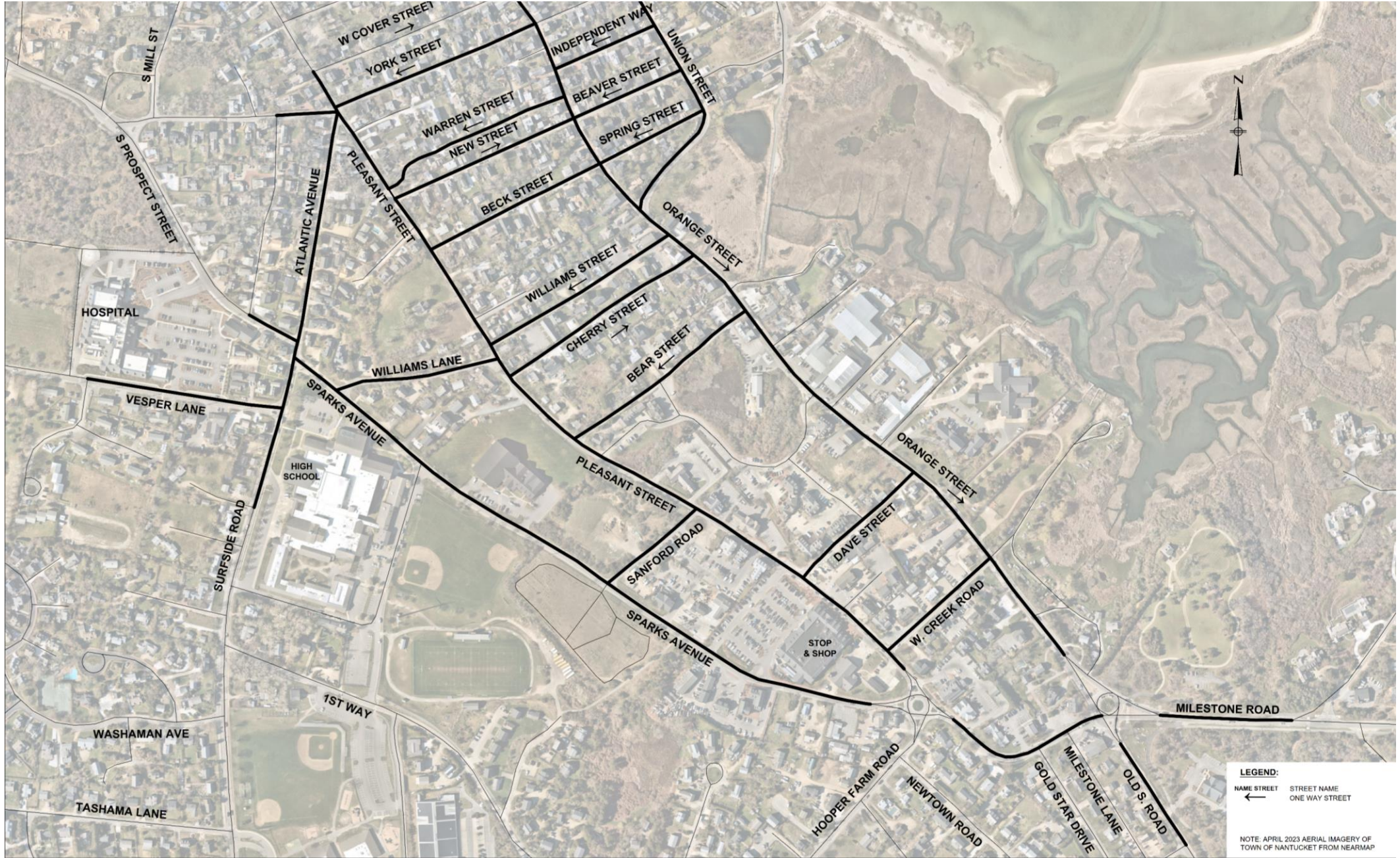


Nantucket Complete Streets: Circulation Alternatives Analysis

Pleasant St, Sparks Ave, Williams Lane

September 21, 2023





LEGEND:
 NAME STREET STREET NAME
 ← ONE WAY STREET

NOTE: APRIL 2023 AERIAL IMAGERY OF TOWN OF NANTUCKET FROM NEARMAP

Alternatives

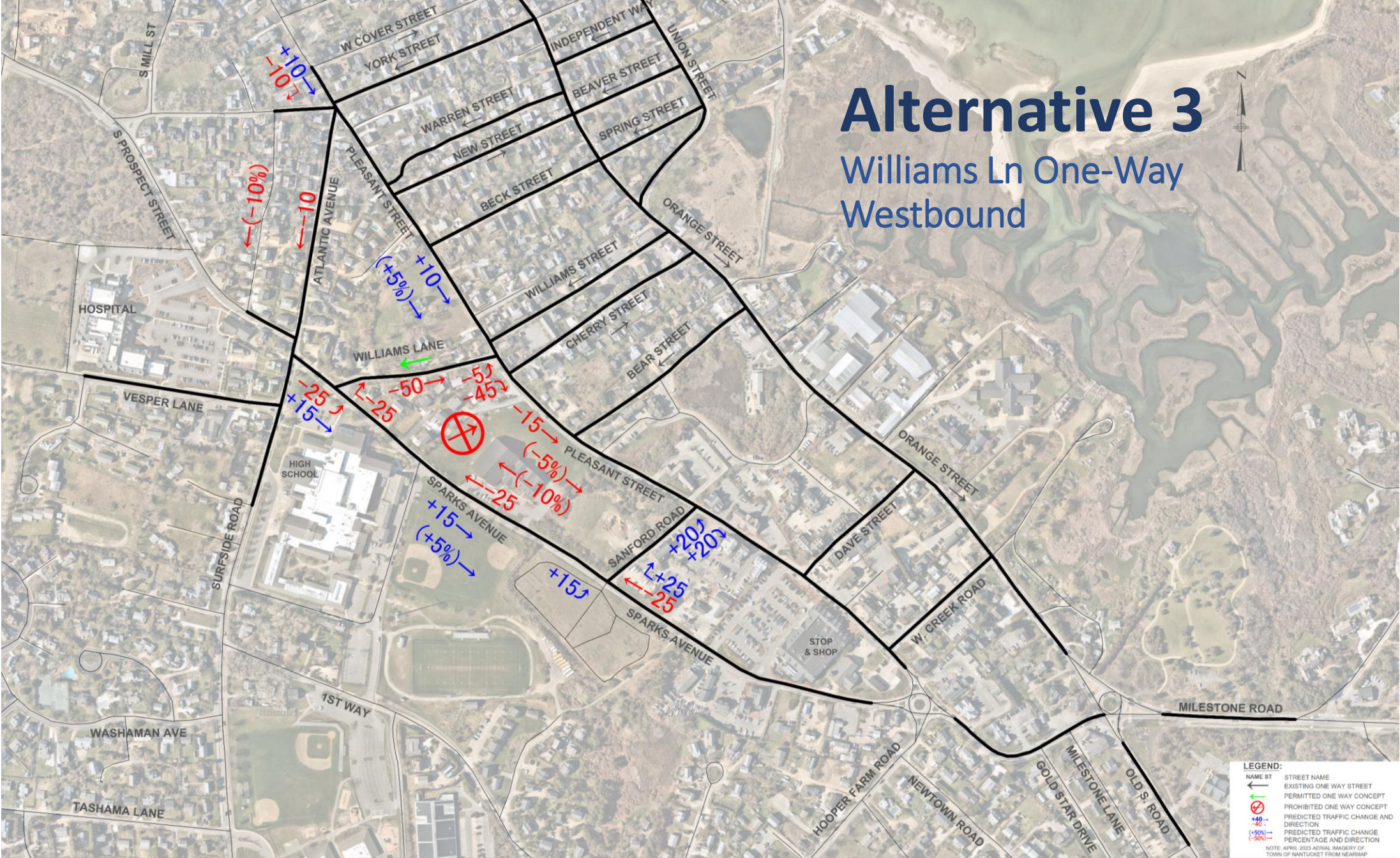
- Existing
 - No changes to the roadway system
- Alternative 1
 - Pleasant St One-Way Northbound from Williams Ln to Five Corners
- Alternative 2
 - **Removed from consideration**
- Alternative 3
 - Williams Ln One-Way Westbound
- Alternative 4
 - Williams Ln One-Way Eastbound
- Alternative 5
 - Williams Ln One-Way Eastbound & Pleasant St One-Way Northbound
- Alternative 6
 - Williams Ln One-Way Eastbound & Pleasant St One-Way Northbound from Williams Ln to Five Corners
- Alternative 7
 - Williams Ln One-Way Westbound & Pleasant St One-Way Northbound from Williams Ln to Five Corners

Approach

1. Weekday AM Peak Hour analysis
2. Traffic volumes based on roadway circulation patterns and available traffic count data
3. Summarized traffic volume and percent volume change on roadways
4. Performed intersection capacity analysis at key intersections
 - 5 Corners
 - Atlantic Ave/Sparks Ave
 - Williams Ln/Sparks Ave
 - Williams Ln/Pleasant St
 - Pleasant St/Sparks Ave roundabout
5. Results summarized for each alternative

Alternative 3

Williams Ln One-Way Westbound



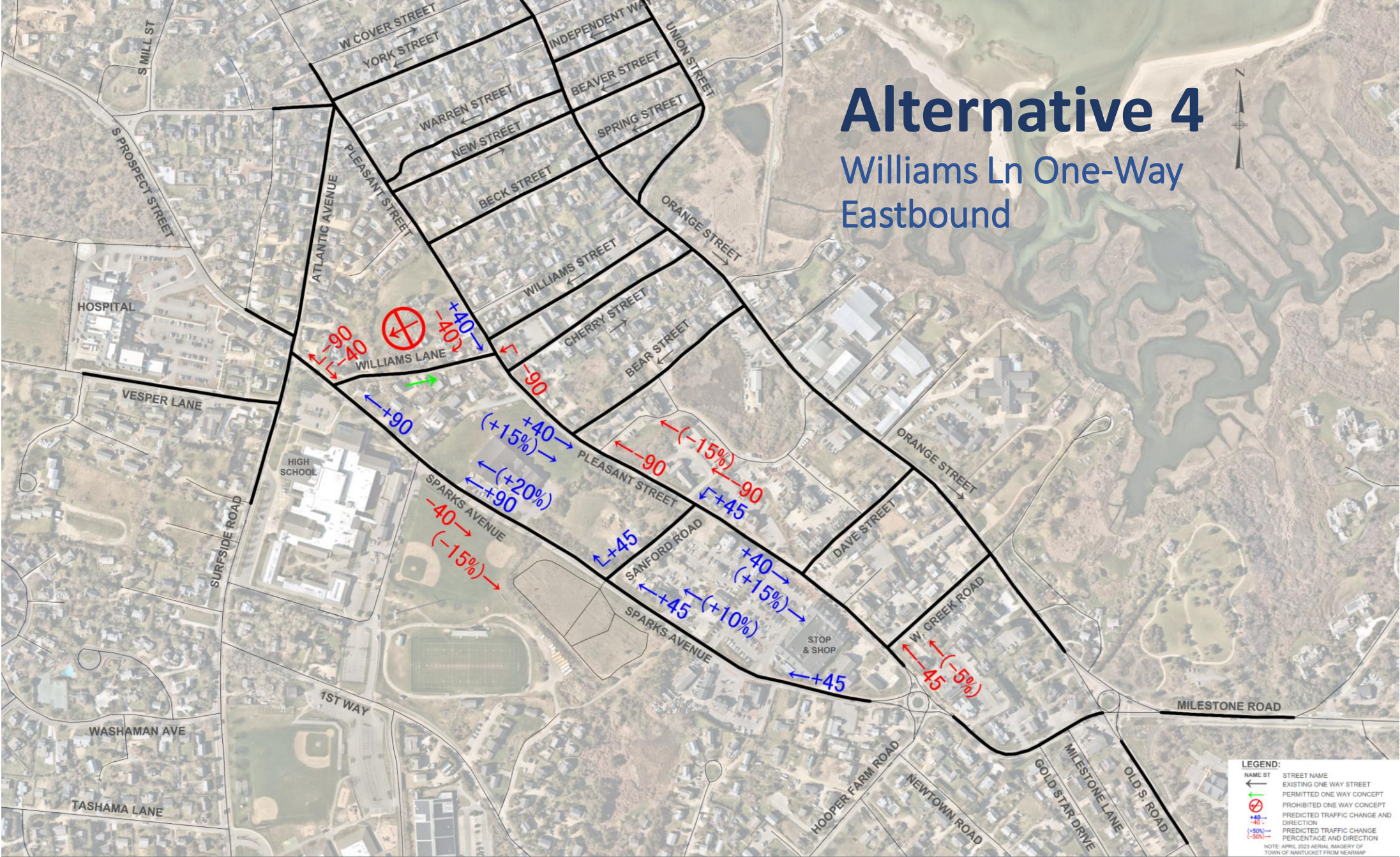
LEGEND:

- NAME ST
- STREET NAME
- EXISTING ONE WAY STREET
- PERMITTED ONE WAY CONCEPT
- PROHIBITED ONE WAY CONCEPT
- PREDICTED TRAFFIC CHANGE AND DIRECTION
- +40% →
- +10% →
- +5% →
- 10% ←
- 50% ←
- 25% ←
- PREDICTED TRAFFIC CHANGE PERCENTAGE AND DIRECTION

NOTE: APRIL 2023 AERIAL IMAGERY OF TOWN OF NANTUCKET FROM NEARMAP

Alternative 4

Williams Ln One-Way Eastbound



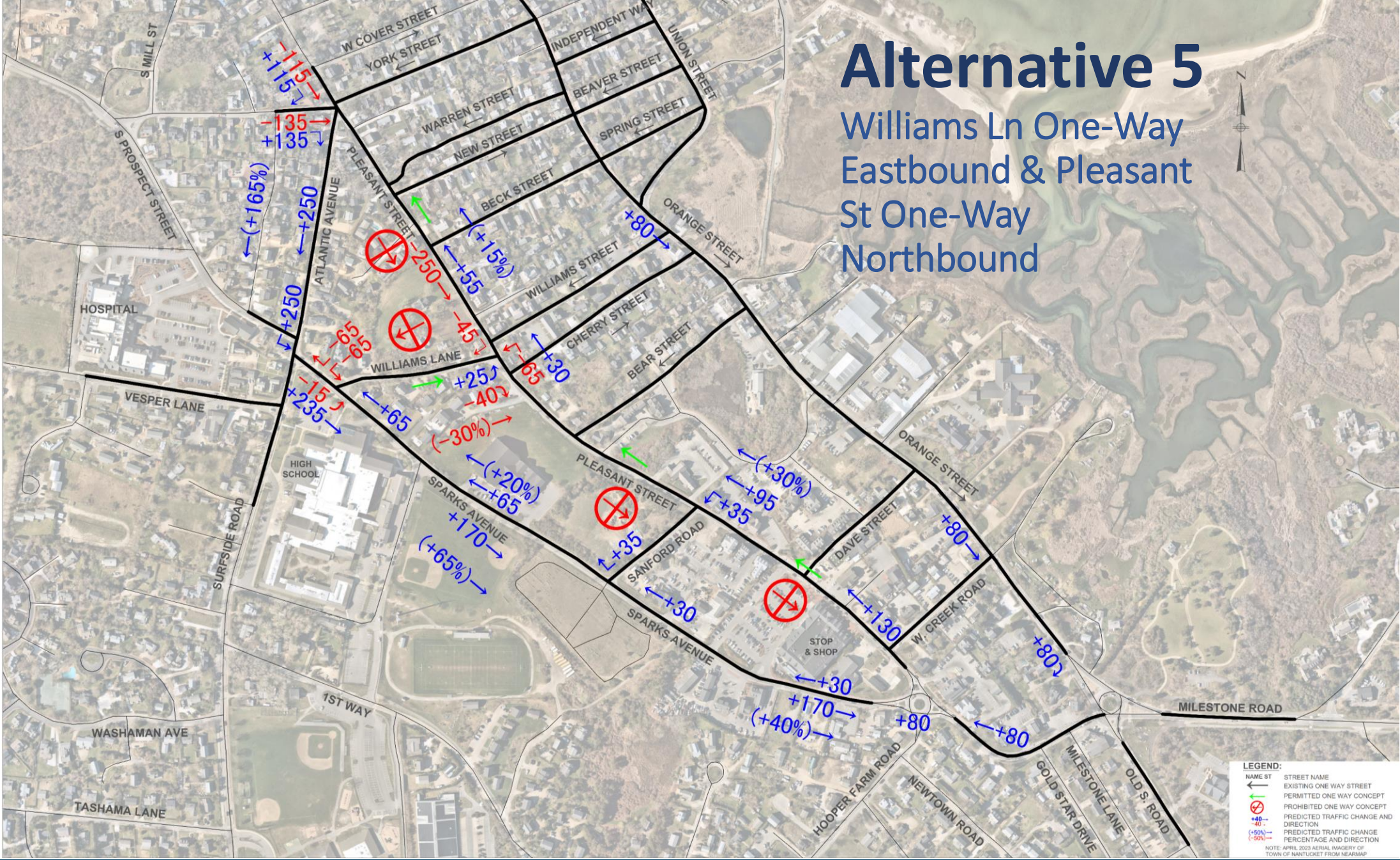
LEGEND:

NAME ST	STREET NAME
	EXISTING ONE WAY STREET
	PERMITTED ONE WAY CONCEPT
	PROHIBITED ONE WAY CONCEPT
	PREDICTED TRAFFIC CHANGE AND DIRECTION
	PREDICTED TRAFFIC CHANGE PERCENTAGE AND DIRECTION

NOTE: APRIL 2023 AERIAL IMAGERY OF TOWN OF NANTUCKET FROM NEARMAP

Alternative 5

Williams Ln One-Way
Eastbound & Pleasant
St One-Way
Northbound



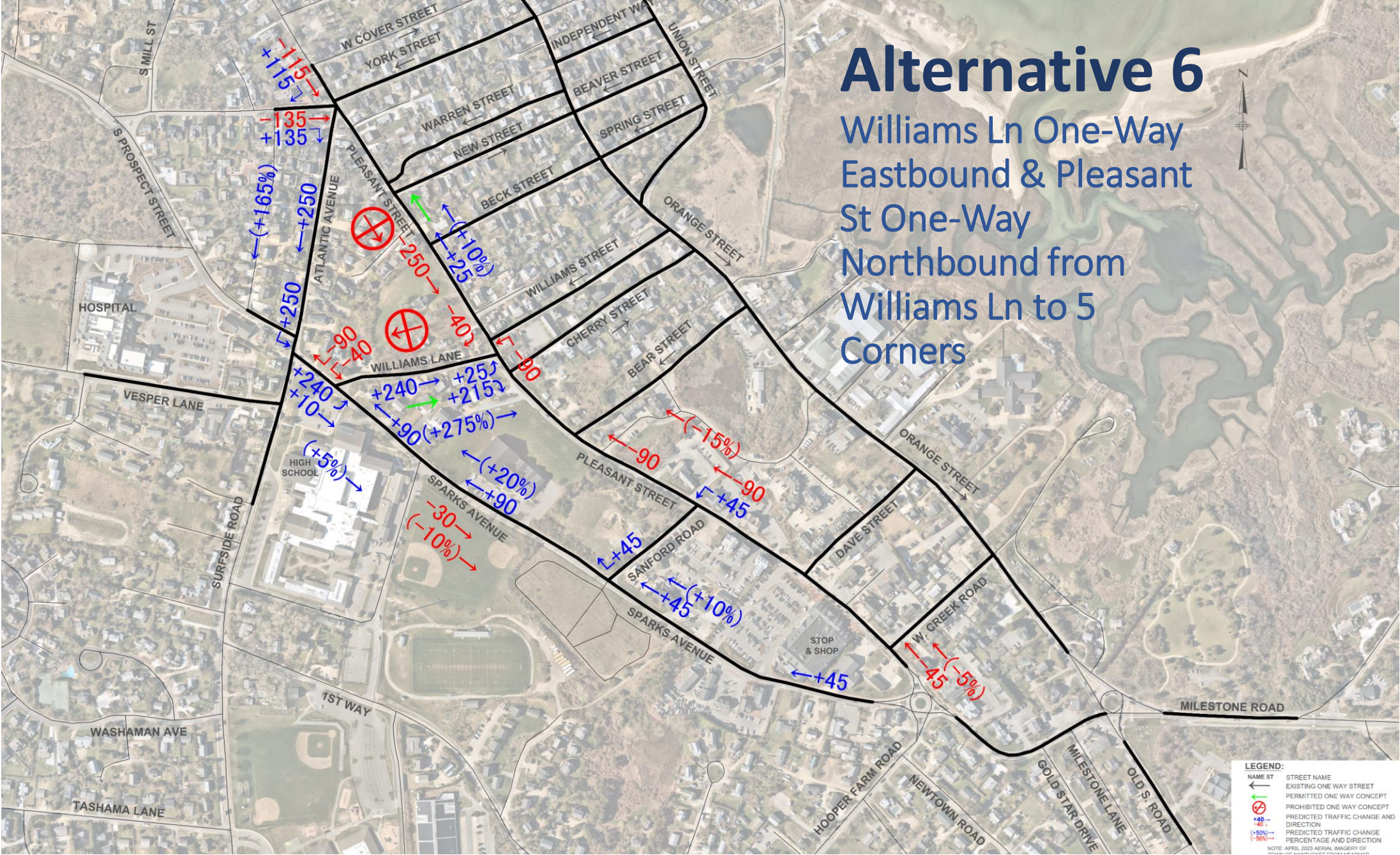
LEGEND:

NAME ST	STREET NAME
	EXISTING ONE WAY STREET
	PERMITTED ONE WAY CONCEPT
	PROHIBITED ONE WAY CONCEPT
	PREDICTED TRAFFIC CHANGE AND DIRECTION
	PREDICTED TRAFFIC CHANGE PERCENTAGE AND DIRECTION

NOTE: APRIL 2023 AERIAL IMAGERY OF TOWN OF NANTUCKET FROM NEARMAP

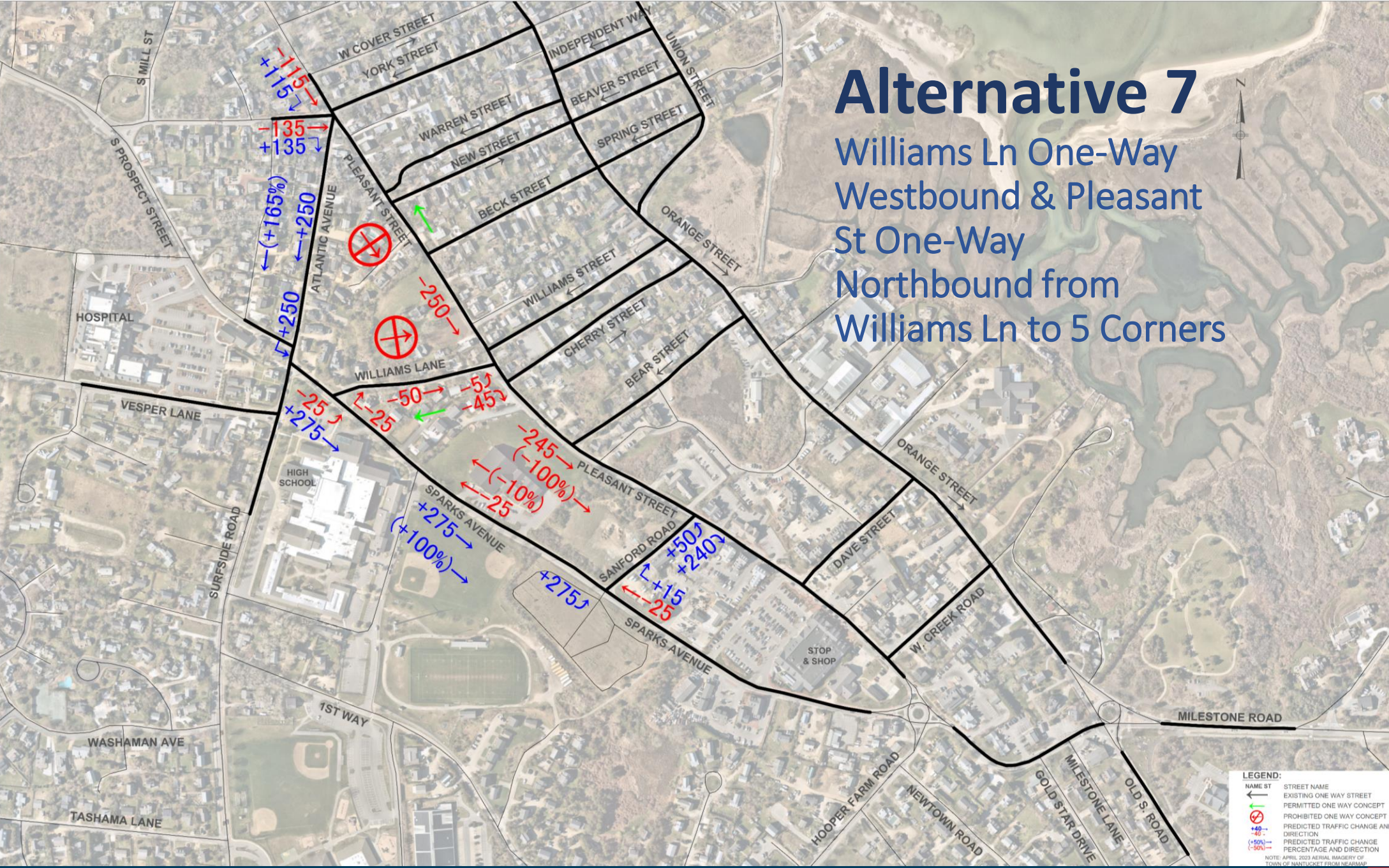
Alternative 6

Williams Ln One-Way Eastbound & Pleasant St One-Way Northbound from Williams Ln to 5 Corners



Alternative 7

Williams Ln One-Way Westbound & Pleasant St One-Way Northbound from Williams Ln to 5 Corners



LEGEND:

NAME ST	STREET NAME
←	EXISTING ONE WAY STREET
→	PERMITTED ONE WAY CONCEPT
↔	PROHIBITED ONE WAY CONCEPT
+40→	PREDICTED TRAFFIC CHANGE AND DIRECTION
-40←	PREDICTED TRAFFIC CHANGE AND DIRECTION
+50→	PREDICTED TRAFFIC CHANGE AND DIRECTION
-50←	PREDICTED TRAFFIC CHANGE AND DIRECTION

NOTE: APRIL 2023 AERIAL, BOUNDARY OF TOWN OF NANTUCKET FROM NEARMAP

Evaluation Matrix – Pleasant St

		Traffic Impacts (Avg Daily Traffic: 7,499)	Extent of right of way impact (need for easements)	Level of bicycle accommodations	Level of pedestrian accommodations	Magnitude of construction cost
		One-Way NB (Alt 1, 5, 6, 7)	One-Way NB (Alt 1, 5, 6, 7)	One-Way NB (Alt 1, 5, 6, 7)	One-Way NB (Alt 1, 5, 6, 7)	One-Way NB (Alt 1, 5, 6, 7)
Pleasant St	Five Corners to Williams St	Five Corners - Minimal, maintains LOS C	Minimal (approx. sqft)	Optimal - former southbound lane used for two-way bike lanes	Moderate - two-way bike lanes without sidewalk	Moderate - two-way bike lanes without sidewalk
		Four Corners - High - maintains LOS F with significant increase in delay at Atlantic, Surfside, and Prospect approaches				
		Two-Way	Two-Way	Two-Way	Two-Way	Two-Way
		Minimal - Maintains one travel lane in each direction.	High - sidewalk on private property. Relocate utility poles and utility vault?	Minimal - share the road condition.	Optimal - 5 FT to 6 FT sidewalk on west side. Rebuild approximately 250 FT of sidewalk on east side east of Atlantic Ave. All sidewalks, ramps, and crosswalks ADA compliant.	High - due to right of way costs Relocate utility poles and utility vault.?

		One-Way NB (Alt 5)	One-Way NB (Alt 5)	One-Way NB (Alt 5)	One-Way NB (Alt 5)	One-Way NB (Alt 5)
Pleasant St	Williams St to Sparks Ave	Four Corners - High - maintains LOS F with significant increase in delay at Atlantic, Surfside, and Prospect approaches.	Williams St to Dave St - Minimal without sidewalk	Optimal - southbound lane used for two-way bike lanes	Moderate - two-way bike lanes without sidewalk	Moderate - two-way bike lanes without sidewalk. Right of way costs for added angled parking.
		Reduces vehicular access, increases traffic volumes on Sparks Ave, Atlantic Ave, Pleasant St. northbound., Orange St., and side streets.	Dave St to W Creek Rd - High due to added angled parking			
		Two-Way	Two-Way	Two-Way	Two-Way	Two-Way
		Minimal - Maintains one travel lane in each direction. New angled parking spaces on north side will have minimal impact on traffic when vehicles back out of spaces.	Williams St to Dave St - Moderate at 51 Sparks/109 Pleasant Dave St to W Creek Rd - High due to added on-street parking	Minimal - share the road condition. Bicycles travel adjacent to parallel and angled parking spaces in commercial area.	Optimal -5.5 to 6.0 FT sidewalk on east side and 10.5 sidewalk on west side plus 6" curb. All sidewalks, ramps, and crosswalks ADA compliant. New greenspace at Fiver Corners.	High - due to sidewalk construction, right of way costs, and relocation of utility poles.

Evaluation Matrix – Williams Lane

		Traffic Impacts (Avg Daily Traffic: 2,024)	Extent of right of way impact (need for easements)	Level of bicycle accommodations	Level of pedestrian accommodations	Magnitude of construction cost
		One-Way EB (Alt 4, 5, 6)	One-Way EB (Alt 4, 5, 6)	One-Way EB (Alt 4, 5, 6)	One-Way EB (Alt 4, 5, 6)	One-Way EB (Alt 4, 5, 6)
Williams Ln	Sparks Ave to Pleasant St	Moderate - Higher traffic volumes westbound so more traffic shifted to Sparks Ave and Atlantic Ave.	Minimal	Optimal - Provide two-way bike facility or shared-use path.	Moderate - two-way bike lanes without sidewalk	Moderate
		One-Way WB (Alt 3, 7)	One-Way WB (Alt 3, 7)	One-Way WB (Alt 3, 7)	One-Way WB (Alt 3, 7)	One-Way WB (Alt 3, 7)
		Moderate - Lower traffic volumes eastbound so less traffic shifted to Sparks Ave.	Minimal	Optimal - Provide two-way bike facility or shared-use path.	Moderate - two-way bike lanes without sidewalk	Moderate
		Two-way	Two-way	Two-way	Two-way	Two-way
		Minimal - Maintains one travel lane in each direction Tighten corner at Pleasant St to slow speeds, reduce crossing distance and improve safety.	High - Requires area on north side of Williams for sidewalk. Relocate utility poles.	Minimal - share the road condition.	Optimal - 5 FT sidewalk on north side. Sidewalks ramps, and crosswalk ADA compliant.	High - due to right of way costs. Relocate utility poles

Volume Shifts

Roadway Segment	Alternative 1		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7	
	Vol Change	% Change	Vol Change	% Change	Vol Change	% Change	Vol Change	% Change	Vol Change	% Change	Vol Change	% Change
SB Atlantic Ave s/o Five Corners	+250	+165%	-10	-10%	0	0%	+250	+165%	+250	+165%	+250	+165%
SB Sparks Ave s/o Williams Ln	+10	+5%	+15	+5%	-40	-15%	+170	+65%	-30	-10%	+275	+100%
SB Sparks Ave s/o Sanford Rd	0	0%	0	0%	0	0%	+170	+40%	0	0%	0	0%
NB Sparks n/o Sanford Rd	0	0%	-25	-10%	+90	20%	+65	+20%	+90	+20%	-25	-10%
SB Pleasant St s/o Five Corners	-250	-100%	+10	+5%	0	0%	-250	-100%	-250	-100%	-250	-100%
NB Pleasant St s/o Five Corners	+25	+10%	0	0%	0	0%	+55	+15%	+25	+10%	0	0%
SB Pleasant St s/o Williams Ln	0	0%	-15	-5%	+40	+15%	0	0%	0	0%	-245	-100%
SB Pleasant St s/o Sanford Rd	0	0%	0	0%	+40	+15%	0	0%	0	0%	0	0%
NB Pleasant Street n/o Sanford Rd	0	0%	0	0%	-90	-15%	+95	+30%	-90	-15%	0	0%
EB Williams Ln	+240	+275%	-50	-100%	0	0%	-15	-30%	+240	+275%	-50	-100%
WB Williams Ln	-15	-15%	0	0%	-130	-100%	-130	-100%	-130	-100%	0	0%



Traffic Volume shift of +90 or more vehicles in peak hour

Traffic Volume shift of -90 or more vehicles in peak hour

LOS Results

INTERSECTION	Existing		Alternative 1		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7	
	LOS	DEL ^a	LOS	DEL ^a	LOS	DEL ^a	LOS	DEL ^a	LOS	DEL ^a	LOS	DEL ^a	LOS	DEL ^a
Pleasant Street at York Street, & Atlantic Avenue (5 Corners) - AWSC														
Overall Intersection	C	17	C	16	C	17	C	17	C	16	C	16	C	16
Sparks Avenue at Atlantic Avenue (Offset 4-Way) - AWSC														
Surfside Road - NB	F	203	F	306	F	197	F	203	F	306	F	306	F	306
Atlantic Avenue - SB	D	26	F	177	C	25	D	26	F	182	F	177	F	177
Sparks Avenue - WB	F	134	F	217	F	130	F	134	F	217	F	217	F	217
S Prospect Street - EB	F	99	F	173	F	96	F	99	F	182	F	173	F	173
Overall Intersection	F	137	F	224	F	133	F	137	F	225	F	224	F	224
Sparks Avenue at Williams Lane - TWSC														
Sparks Avenue - EB	A	1	A	3	A	0	A	1	A	1	A	4	A	0
Sparks Avenue - WB	A	0	A	0	A	0	A	0	A	0	A	0	A	0
Williams Lane - SB	D	26	F	151	C	23	A	0	A	0	A	0	D	34
Overall Intersection	A	3	B	15	A	3	A	1	A	1	A	2	A	4
Pleasant Street at Williams Lane - TWSC														
Pleasant Street - EB	A	0	A	0	A	0	A	0	A	0	A	0	A	0
Pleasant Street - WB	A	2	A	2	A	2	A	0	A	0	A	0	A	2
Williams Lane - NB	B	12	B	11	A	0	B	11	B	12	B	11	A	0
Overall Intersection	A	2	A	5	A	1	A	1	A	1	A	5	A	2
Pleasant Street at Sparks Avenue & Pleasant Street - Roundabout														
Pleasant Street - SB	A	8	A	8	A	8	A	8	A	0	A	8	A	8
Sparks Ave - EB	A	10	A	10	A	10	B	11	A	8	B	11	A	10
Hooper Farm Road - NB	B	15	B	15	B	15	B	15	B	12	B	15	B	15
Sparks Ave - WB	B	14	B	14	B	14	B	14	C	17	B	14	B	14
Overall Intersection	B	12	B	12	B	12	B	12	B	12	B	12	B	12

a. Delay measured in seconds per vehicle

NOTE:

Intersection analysis prepared using HCM 6th (Via Synchro)

HCM 6th - AWSC (All-Way Stop Control)

HCM 6th - TWSC (Two-Way Stop Control)

Roundabout analysis prepared using GDOT Roundabout Analysis Tool V4.2

LEGEND

	LOS deteriorates significantly from existing conditions
	LOS improves significantly from existing conditions