

Walnut Street Traffic Assessment Town of Lynnfield

Recommendation from BETA to
Town of Lynnfield

Wednesday, June 24, 2015



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Project Area



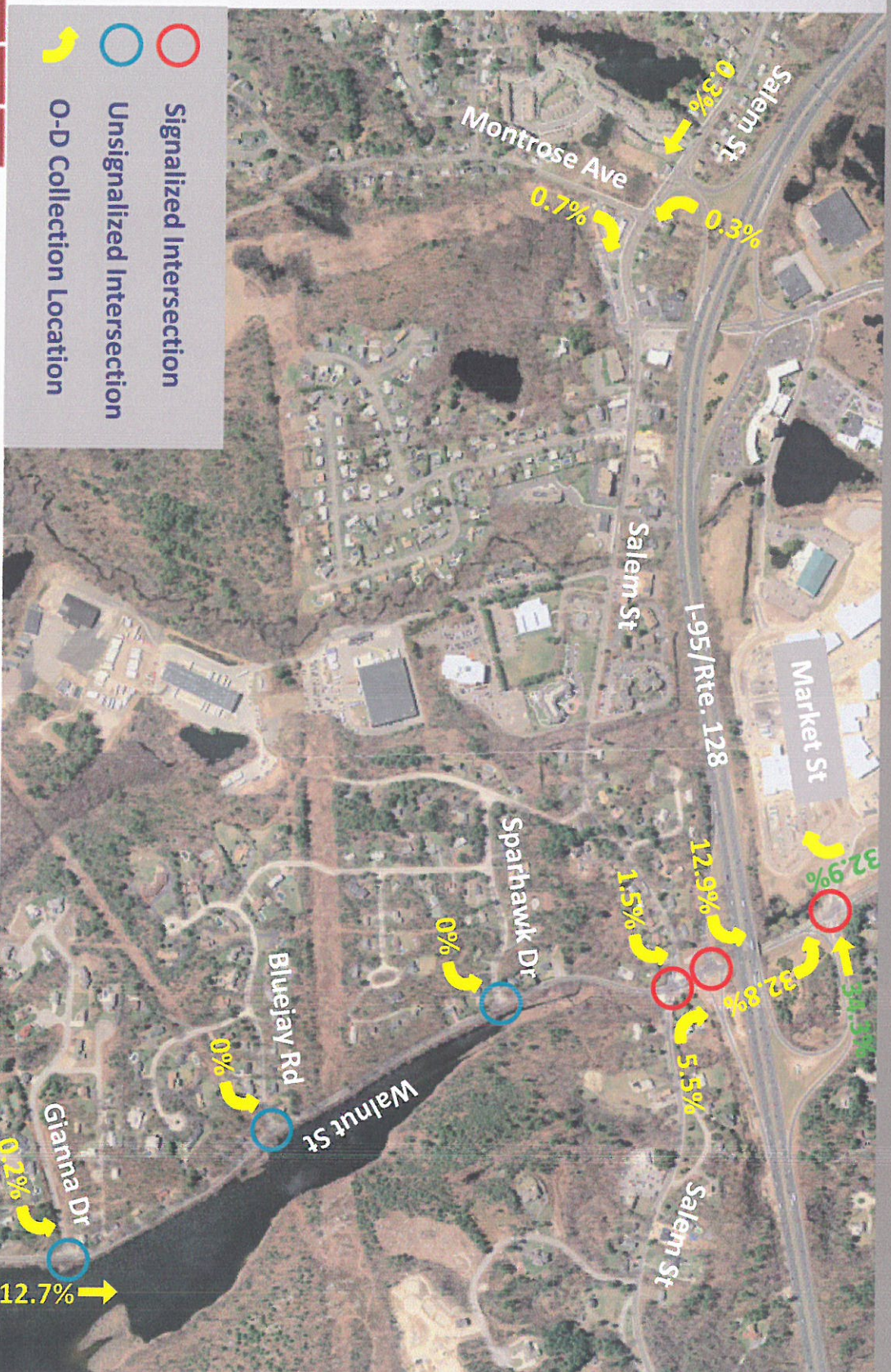
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Study Goals

- Traffic Operations
 - Origin Destination Study
 - Traffic Signal Analysis
- U-Turns along Walnut Street
 - Sparhawk Drive*
 - Bluejay Road
 - Gianna Drive
- Intersection Improvements at Gianna Drive
- Existing Signage Issues

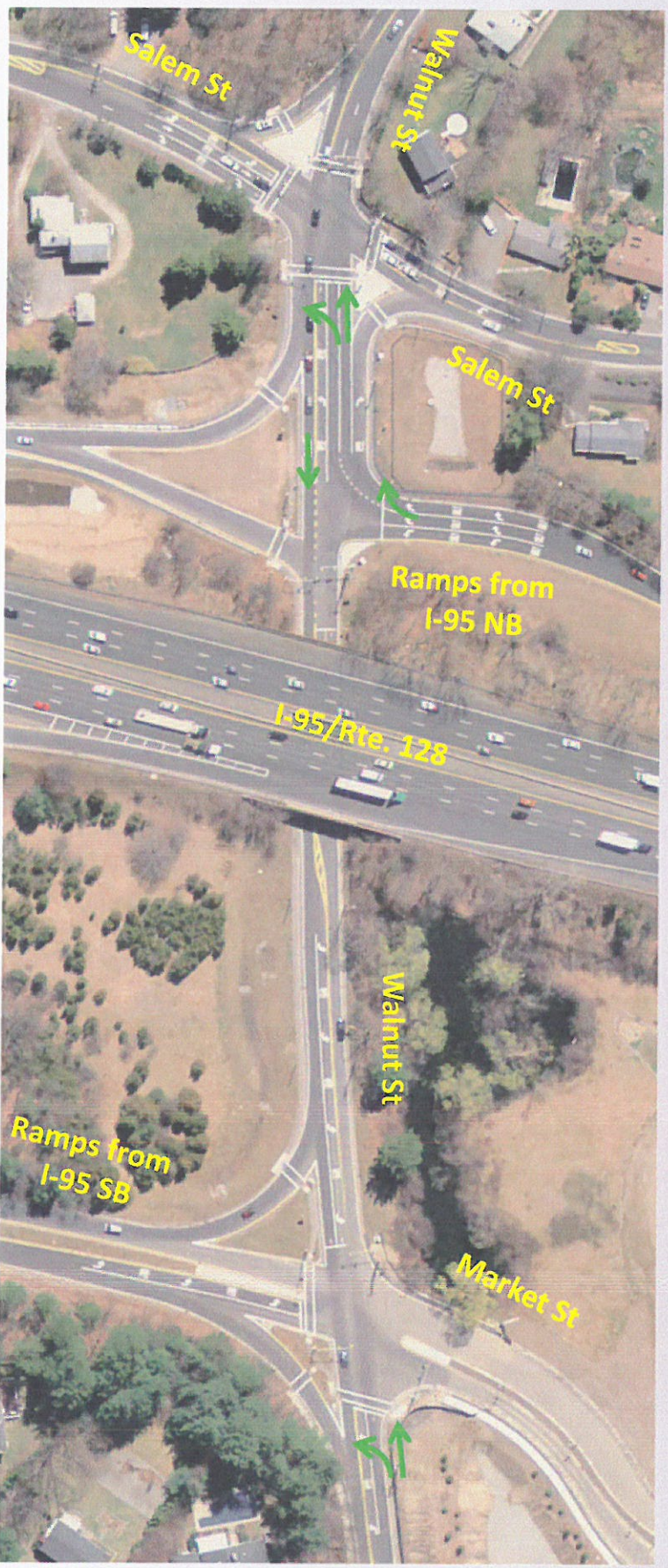
Origin-Destination Study



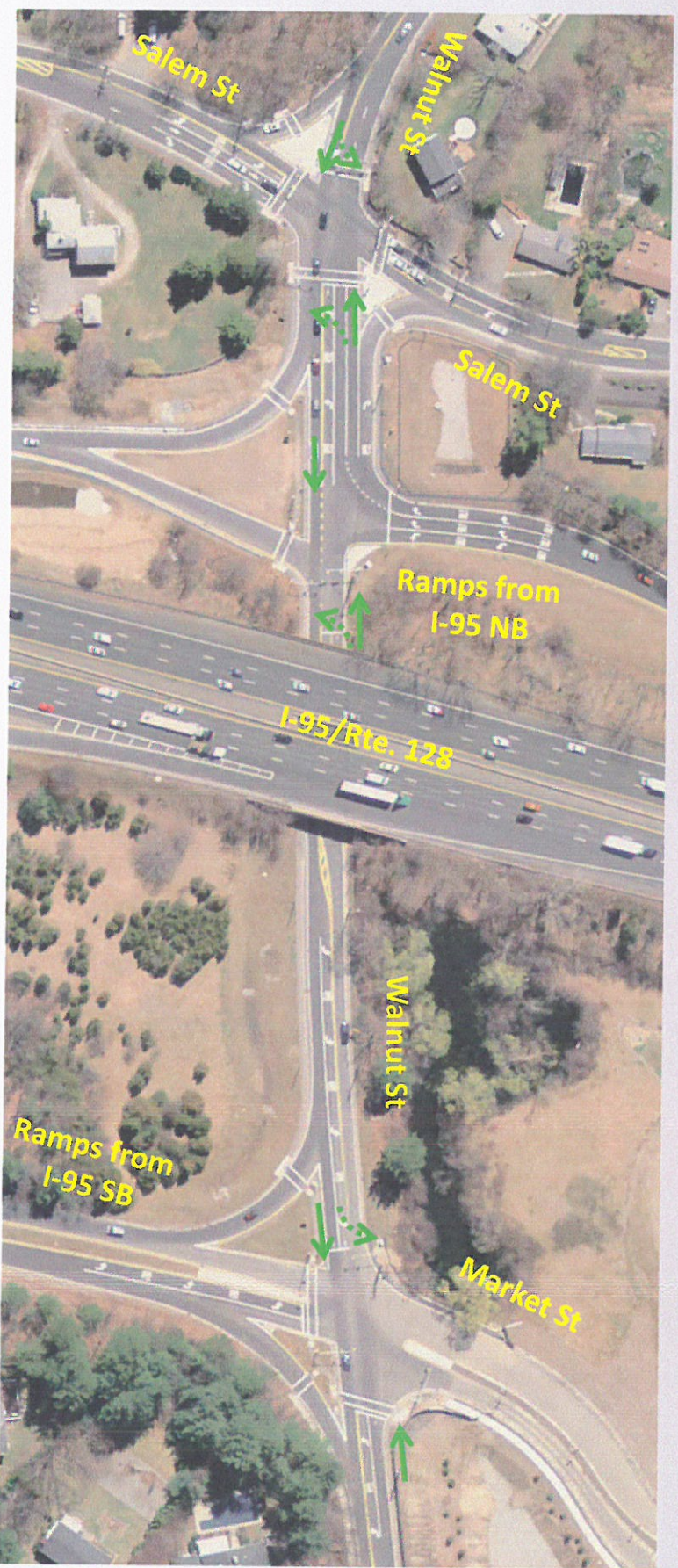
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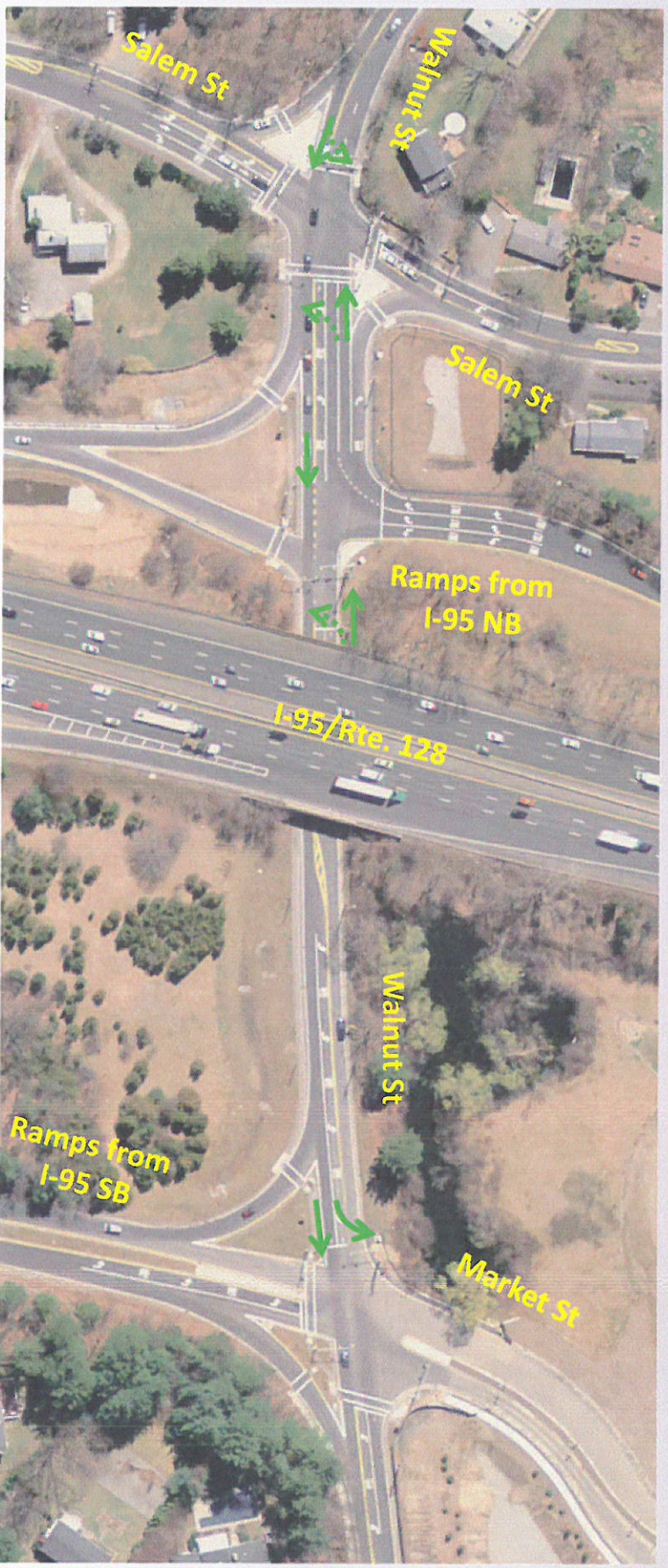
Traffic Signal Analysis – Signal Phasing (1)



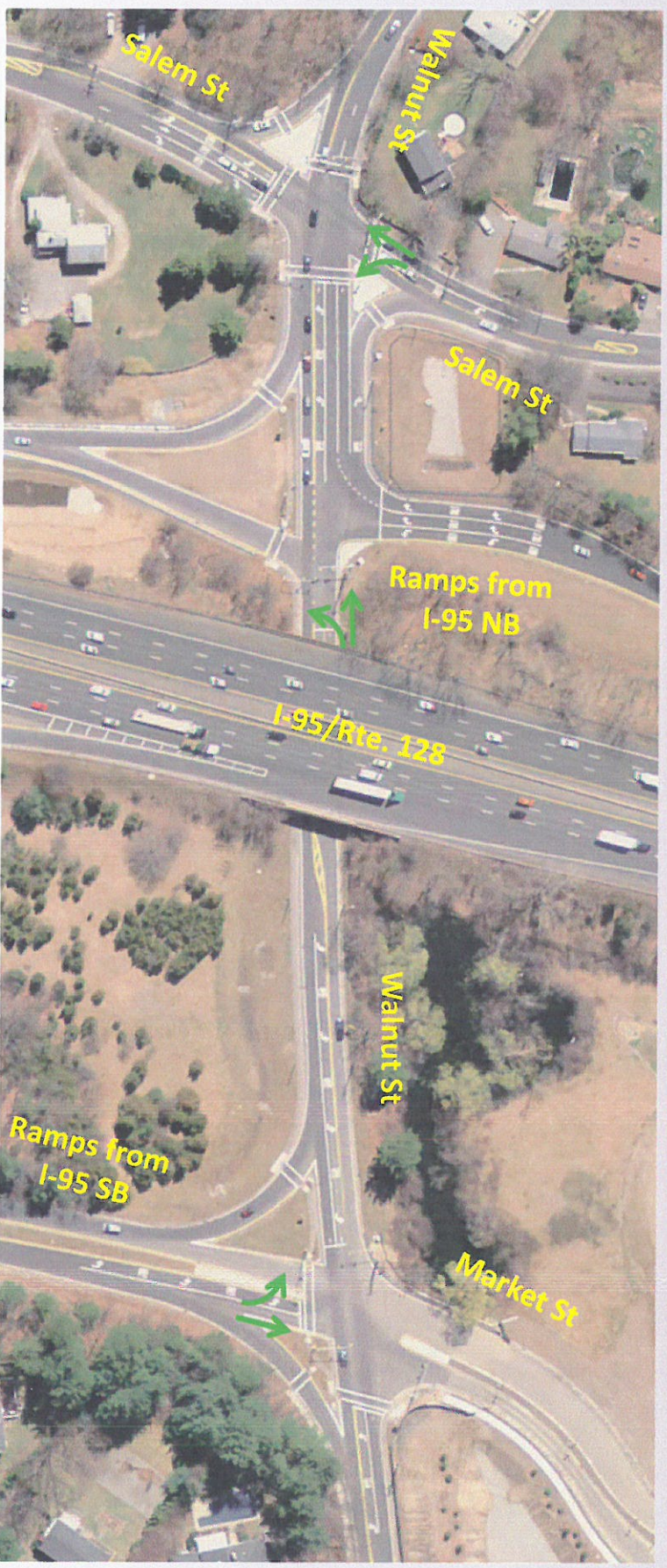
Traffic Signal Analysis – Signal Phasing (2)



Traffic Signal Analysis – Signal Phasing (3)



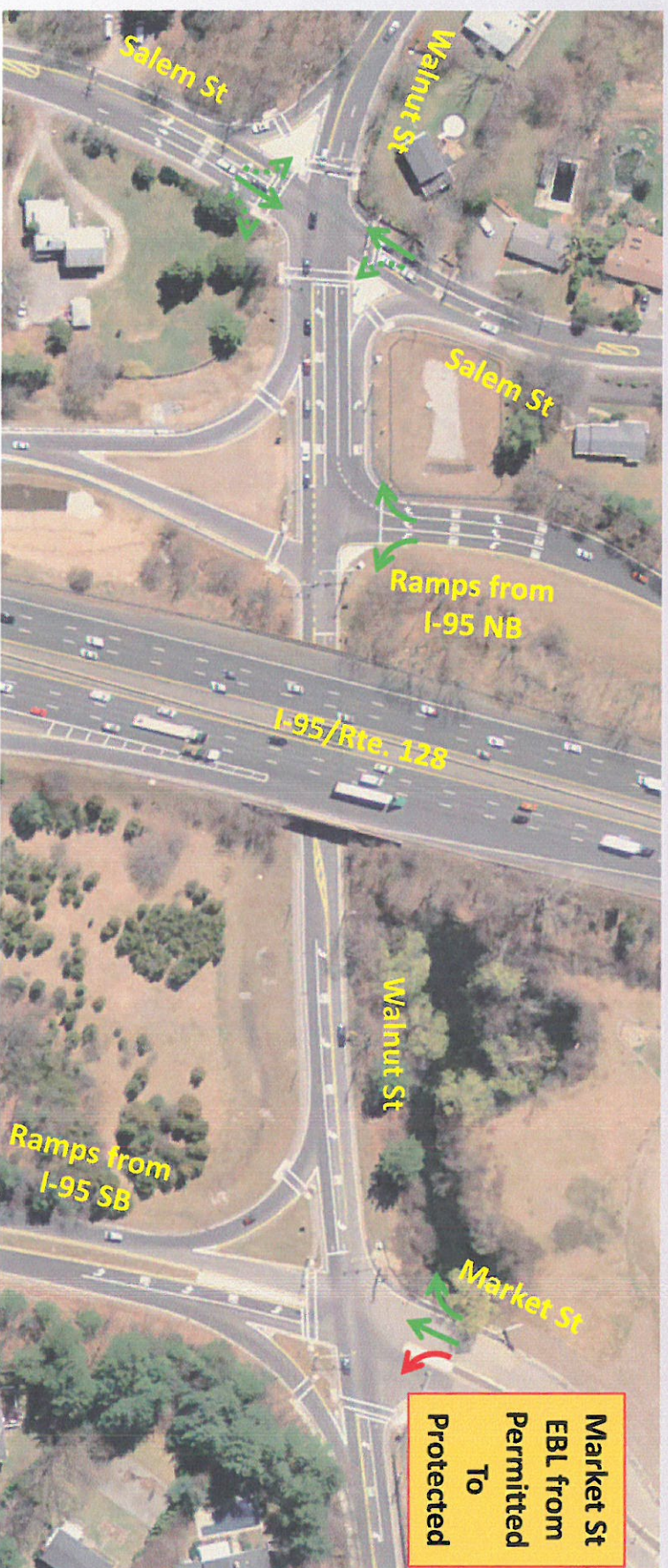
Traffic Signal Analysis – Signal Phasing (4)



Traffic Signal Analysis – Signal Phasing (5)

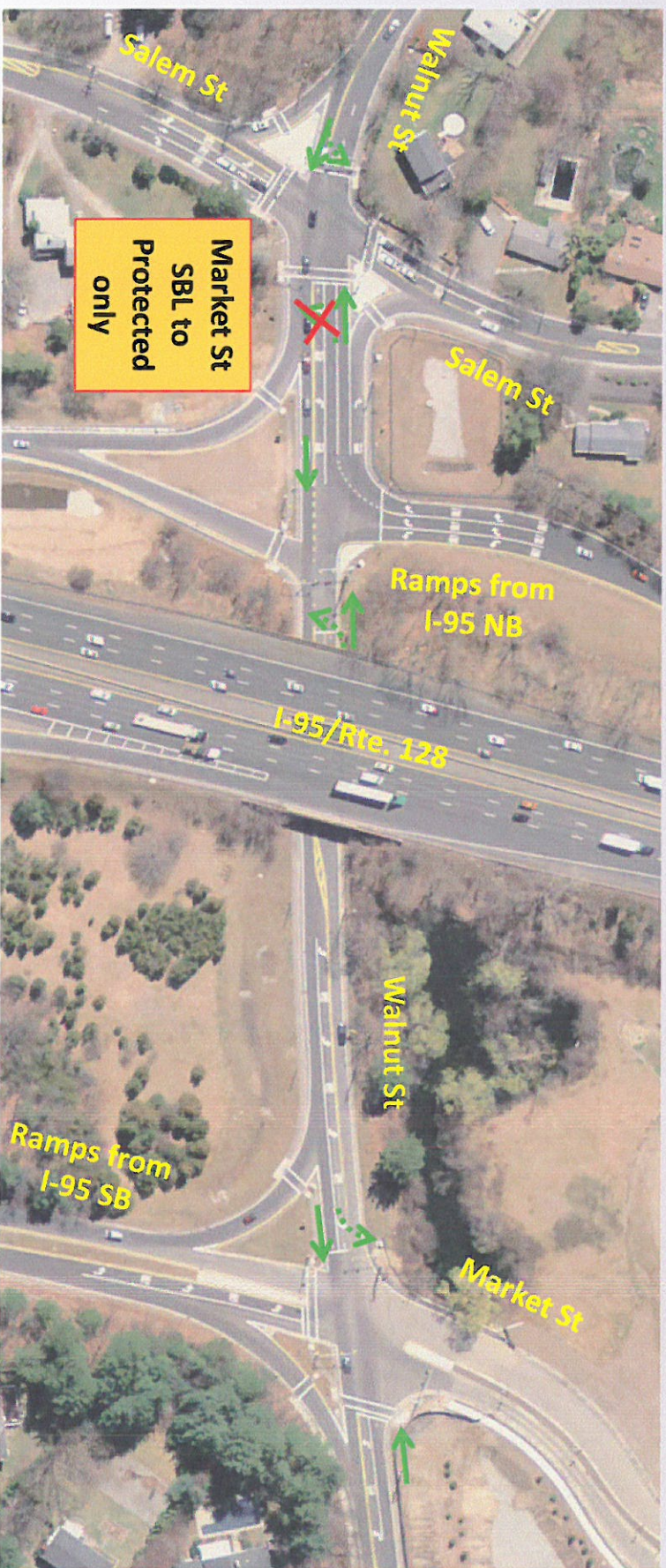


Traffic Signal Analysis – Alternative 1



Proposed change would degrade LOS in for several approaches at the intersection

Traffic Signal Analysis – Alternative 2



Proposed change would degrade LOS in PM Peak Hour from LOS D to LOS F

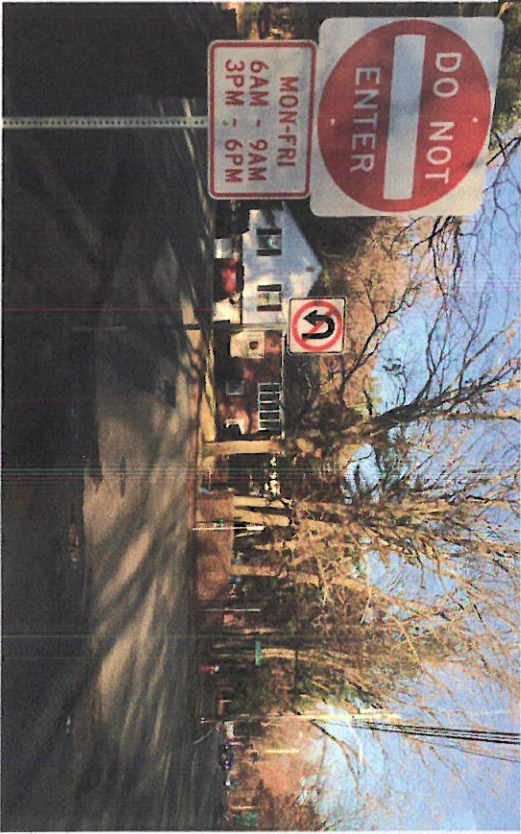
U-Turns - Walnut St at Sparhawk Dr

Morning Peak Hour

TIME	SB U-TURNS
7:00 - 7:15 AM	0
7:15 - 7:30 AM	0
7:30 - 7:45 AM	0
7:45 - 8:00 AM	1
8:00 - 8:15 AM	0
8:15 - 8:30 AM	0
8:30 - 8:45 AM	1
8:45 - 9:00 AM	0
TOTAL	2

Afternoon Peak Hour

TIME	SB U-TURNS
4:00 - 4:15 PM	0
4:15 - 4:30 PM	2
4:30 - 4:45 PM	0
4:45 - 5:00 PM	0
5:00 - 5:15 PM	1
5:15 - 5:30 PM	1
5:30 - 5:45 PM	0
5:45 - 6:00 PM	1
TOTAL	5



U-Turns - Walnut St at Sparhawk Dr

Install delineators along

Walnut Street :

- Restricts left turns in/out of Sparhawk Drive
- Prevents U-Turns
- Would divert traffic to Bluejay Road



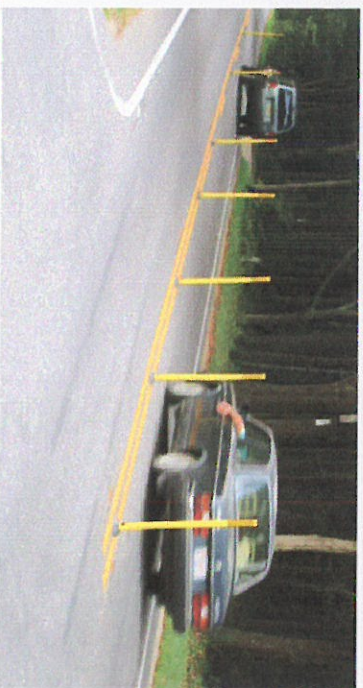
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U-Turns - Walnut St at Sparhawk Dr

Install delineators along Sparhawk Drive:

- Restricts turns in/out of Residential Driveways
- Prevents U-Turns
- Diverts corner property owners to Bluejay Road



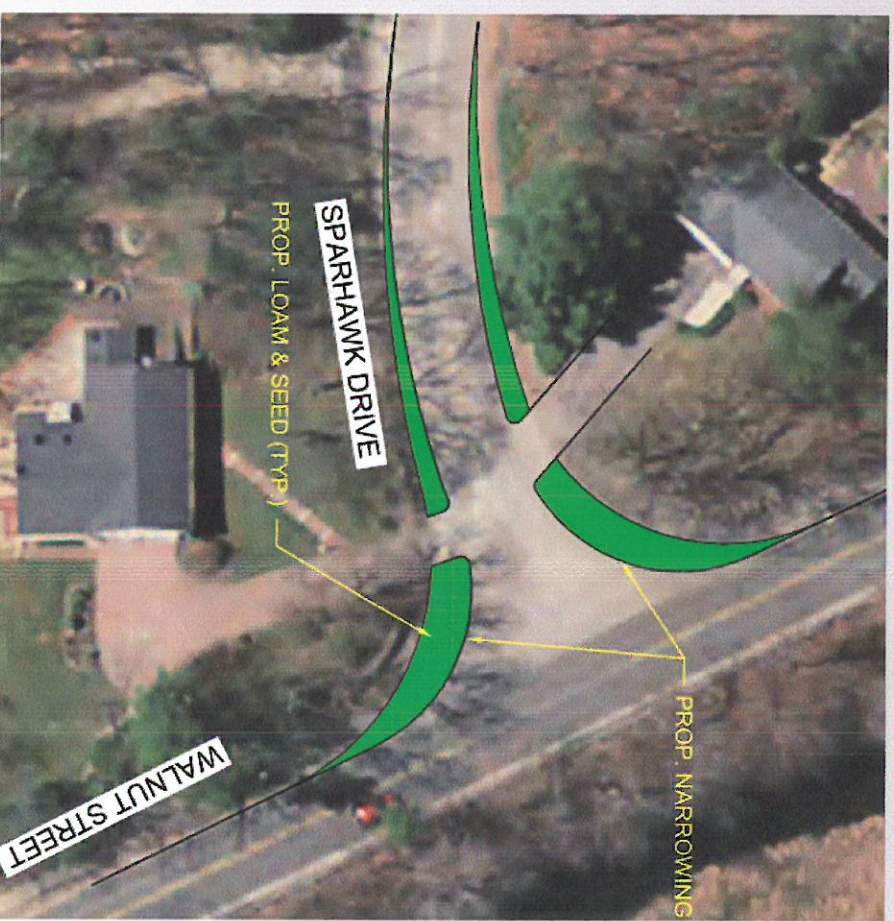
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U-Turns - Walnut St at Sparhawk Dr

Narrow Sparhawk Drive:

- Restricts turning radius required for U-Turns
- Maintains access to corner property owners
- Maintain minimum width to allows for trucks and buses
- Allows for the use of driveways to turn around



U-Turns - Walnut St at Sparhawk Dr

Install raised median island on Sparhawk Dr:

- Restricts turns in/out of Residential Driveways
- Prevents U-Turns
- Diverts corner property owners to Bluejay Road



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Intersection Improvements – Gianna Dr

Existing Issues:

- Exiting sight distance
 - Hill on NW corner blocks visibility
 - Curvature of Roadway
- Speeds on Walnut St.
 - Higher speeds on Walnut St were observed
- Driveway opening acts as an additional leg



Intersection Improvements – Gianna Dr



Driveway Proximity to Intersection



Flashing Beacon for turning vehicles prior to Gianna Drive on Walnut Street SB

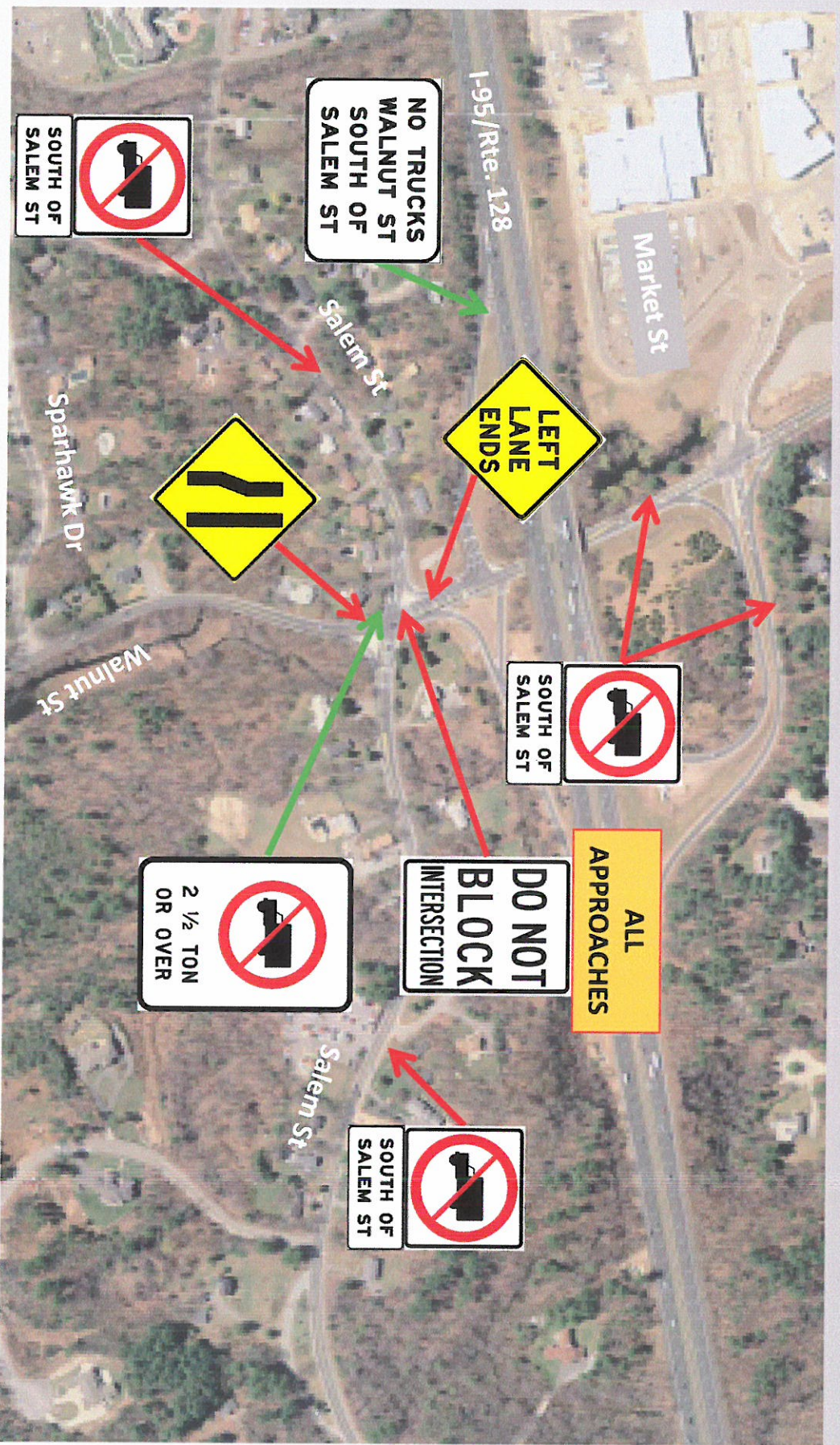


Hill on Northwest Corner

Existing Signage



Proposed Signage



Recommendations

- Study-Wide Traffic Operations:
 - Maintain the existing signal timing and operation

Recommendations

- **Walnut Street at Sparhawk Drive:**
 - Install a raised median island along the centerline of Sparhawk Drive for 50 feet, beginning from the intersection with Walnut Street.
 - Consider delineators for a trial period.

Recommendations

- **Study-Wide Signage:**
 - Replace existing truck exclusion signage on Walnut Street
 - Add diagrammatic R5-2 signs with a supplemental “South of Salem Street” plaque for both eastbound and westbound intersection approaches on Salem Street and on the southbound off-ramp from I-95 southbound.
 - Coordinate with MassDOT for possible truck exclusion signage on I-95

Recommendations

- **Walnut Street at Salem Street:**
 - Install “Do Not Block Intersection” signage at each approach of the intersection.
 - Increased police enforcement at the intersection
 - Replace existing signage for the southbound merge on Walnut Street, south of Salem Street.
 - Install diagrammatic sign (W4-2L), where the existing “Right Lane Ends” sign is located.
 - Install “Left Lane Ends” sign southbound on Walnut Street between the intersections of the I-95 Northbound Ramps and Salem Street.

Resource Slides

- Origin Destination Results
 - With Unmatched Results
 - Without Unmatched Results
 - Left-turn into Market Street
- Level of Service Analysis Results
 - Existing (2014)
 - Build (2017) with future build-out

Origin Destination Results

Traffic Percentages at Market Street based on

O-D Location with Unmatched Vehicles

Location	Matched	
Walnut St SBR	199 vehicles	or 27.5%
I-95 SB Ramps	207 vehicles	or 28.5%
Walnut St NBL	198 vehicles	or 27.3%
Unmatched	121 vehicles	or 16.7%
TOTAL	725 vehicles	or 100%

Traffic Percentages at Market Street based on

O-D Location without Unmatched Vehicles

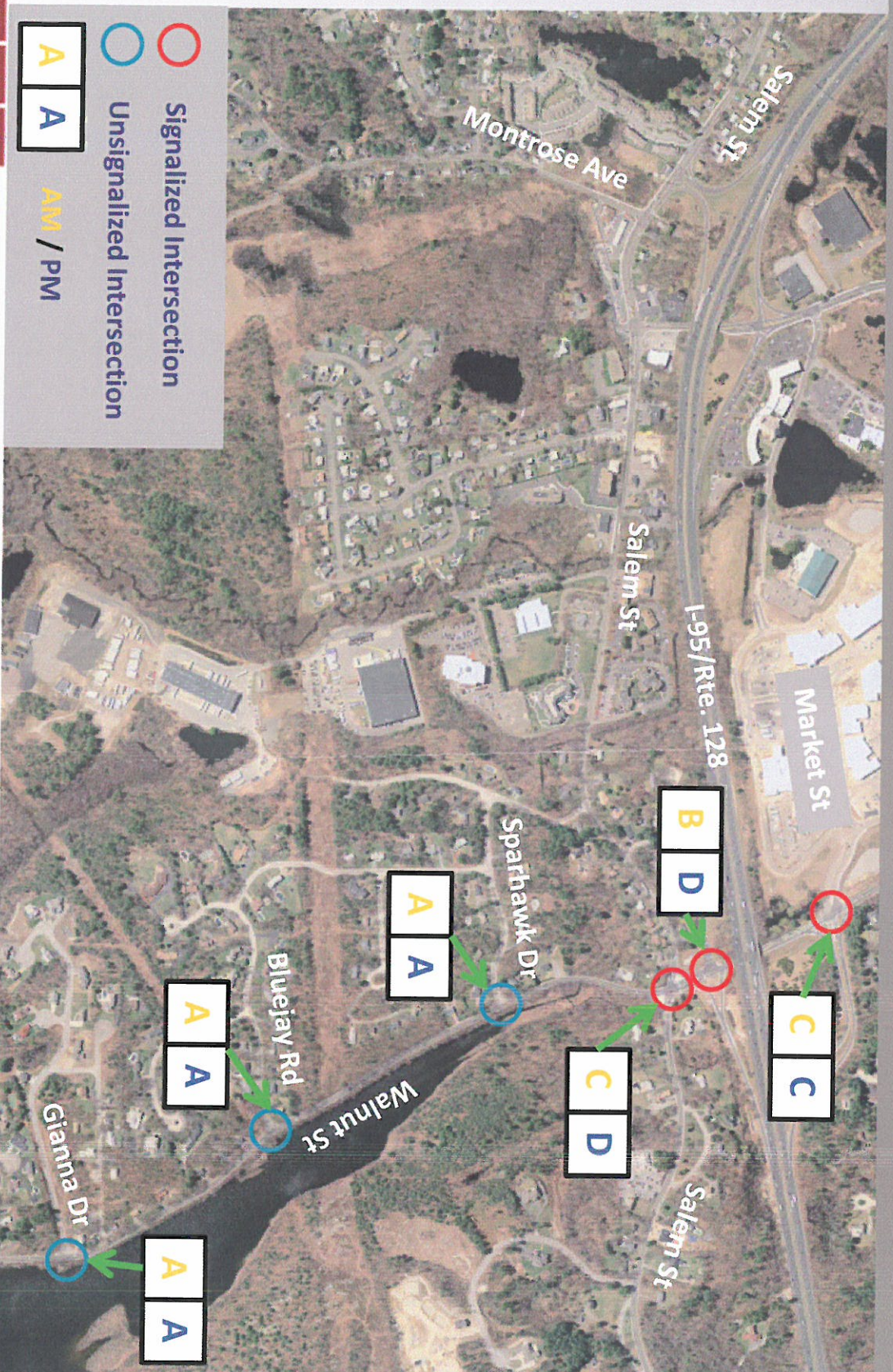
Location	Matched	
Walnut St SBR	199 vehicles	or 32.9%
I-95 SB Ramps	207 vehicles	or 34.3%
Walnut St NBL	198 vehicles	or 32.8%
TOTAL	604 vehicles	or 100%

Origin Destination Results

Traffic Percentages of Walnut Street Northbound left turns to Market Street

Location	Matched
I-95 NB Ramp	78 vehicles or 12.9%
Salem St WBR	33 vehicles Or 5.5%
Salem St EBL	9 vehicles or 1.5%
Sparhawk Dr EBL	0 vehicles or 0%
Bluejay Rd EBL	0 vehicles or 0%
Gianna Dr EBL	1 vehicles or 0.2%
Walnut St NBT	77 vehicles or 12.7%
TOTAL	198 vehicles or 32.8%

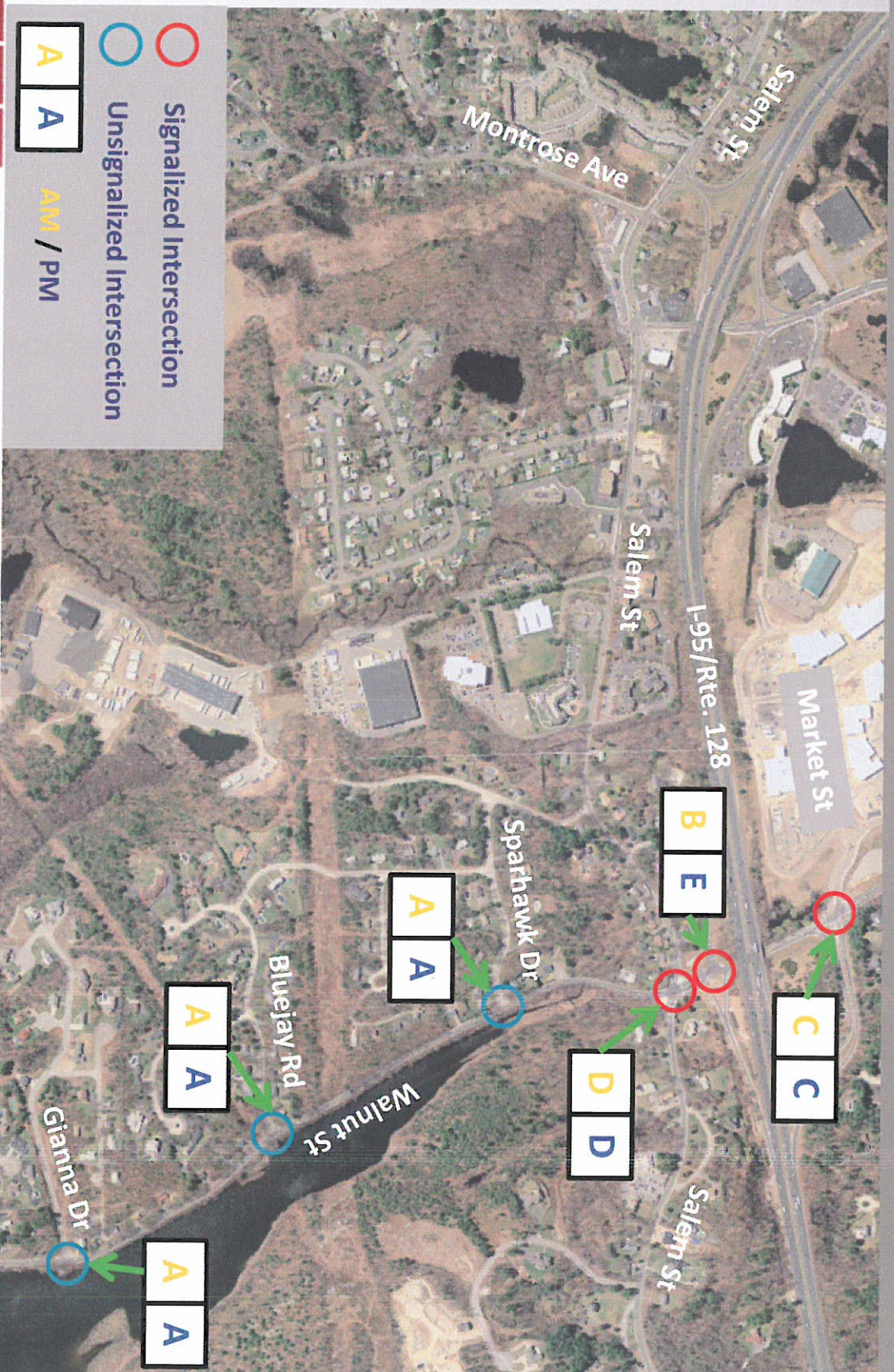
Existing (2014) Level of Service Results



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Build (2017) Level of Service Results



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