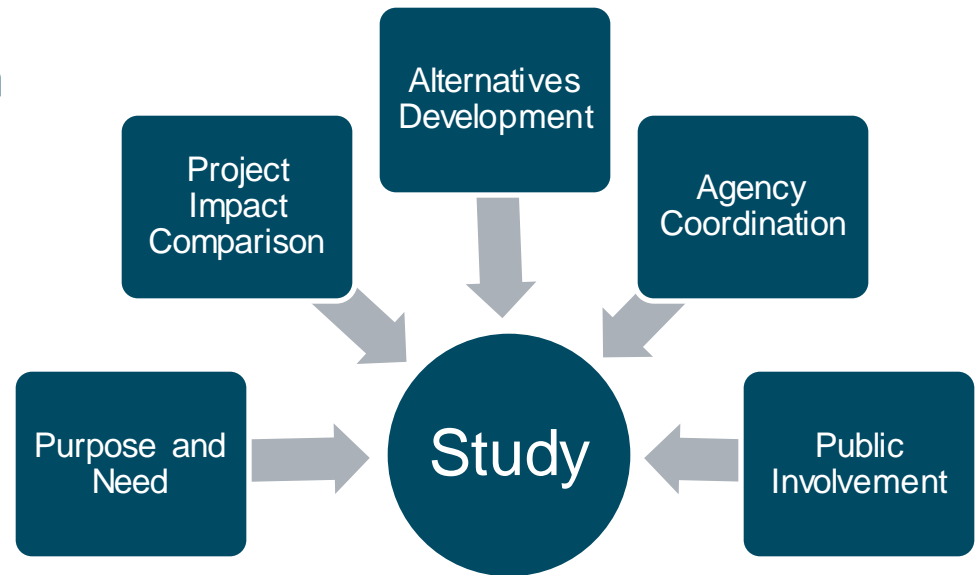


Study Area

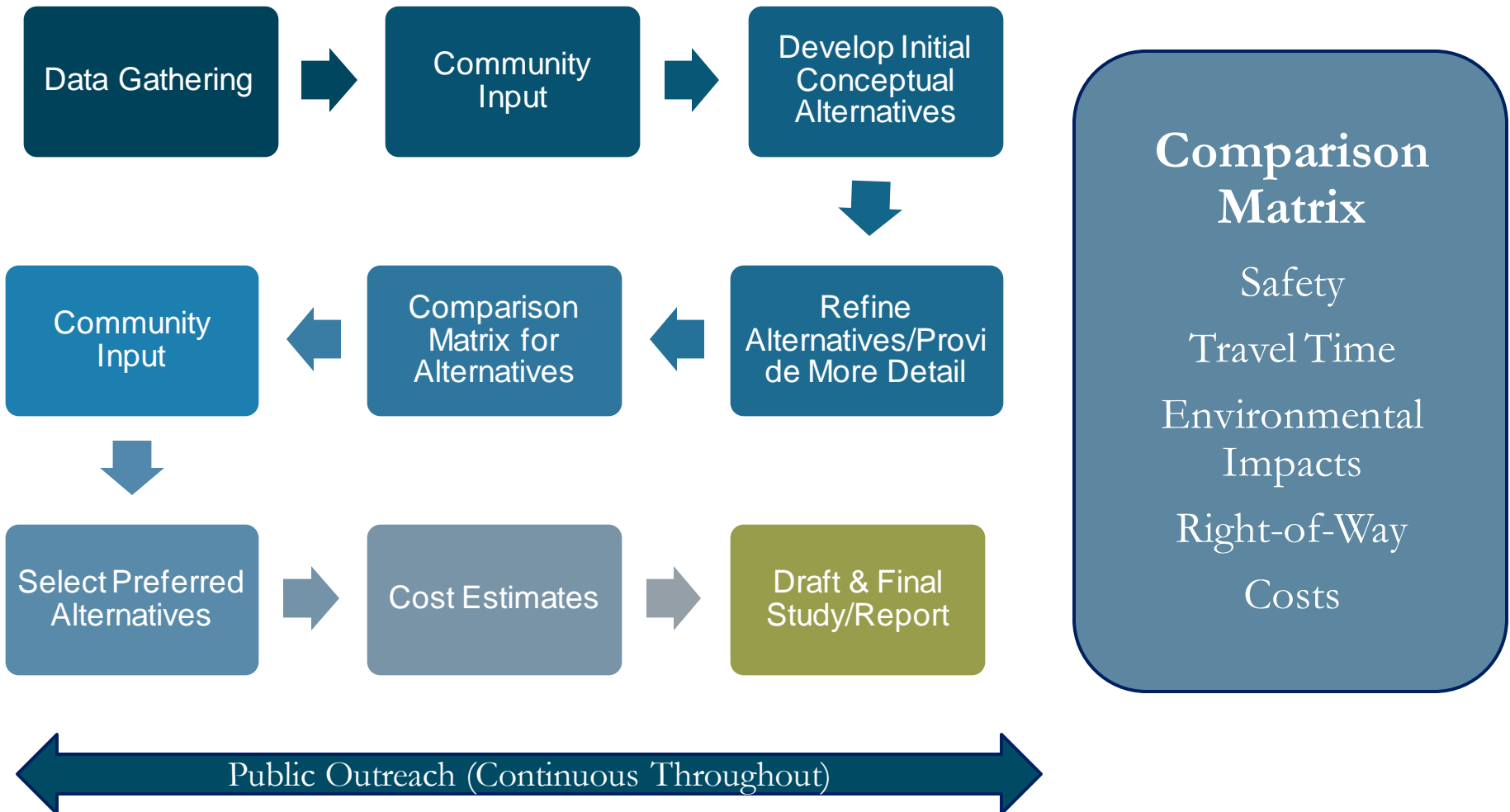


Purpose and Need

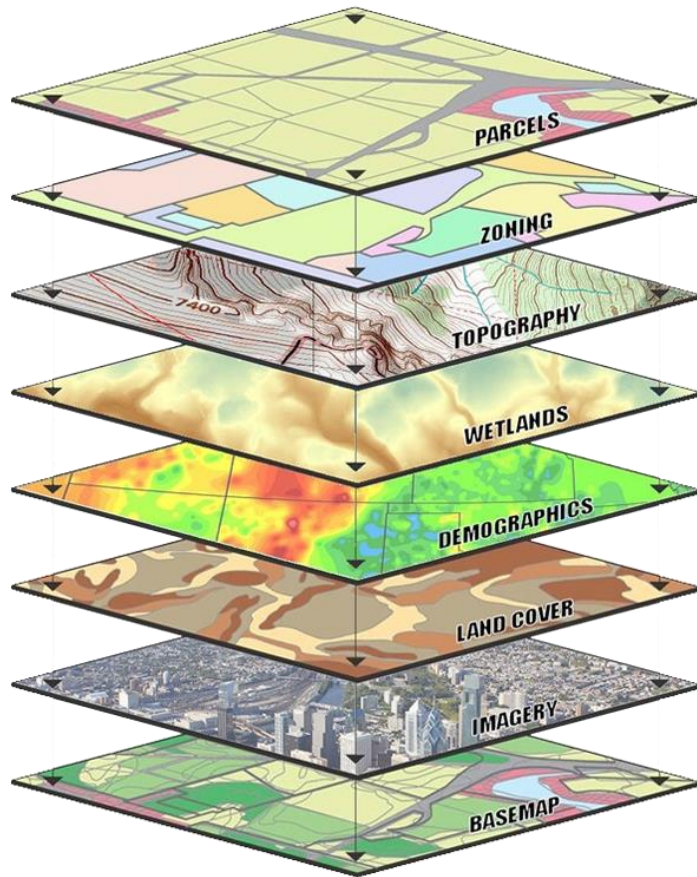
- Purpose
 - Improve safety and capacity at the intersection of SR1 and Trap Shooters Road
- Need
 - The intersection is experiencing high crash rates
 - The intersection reducing the overall capacity of SR1



Process



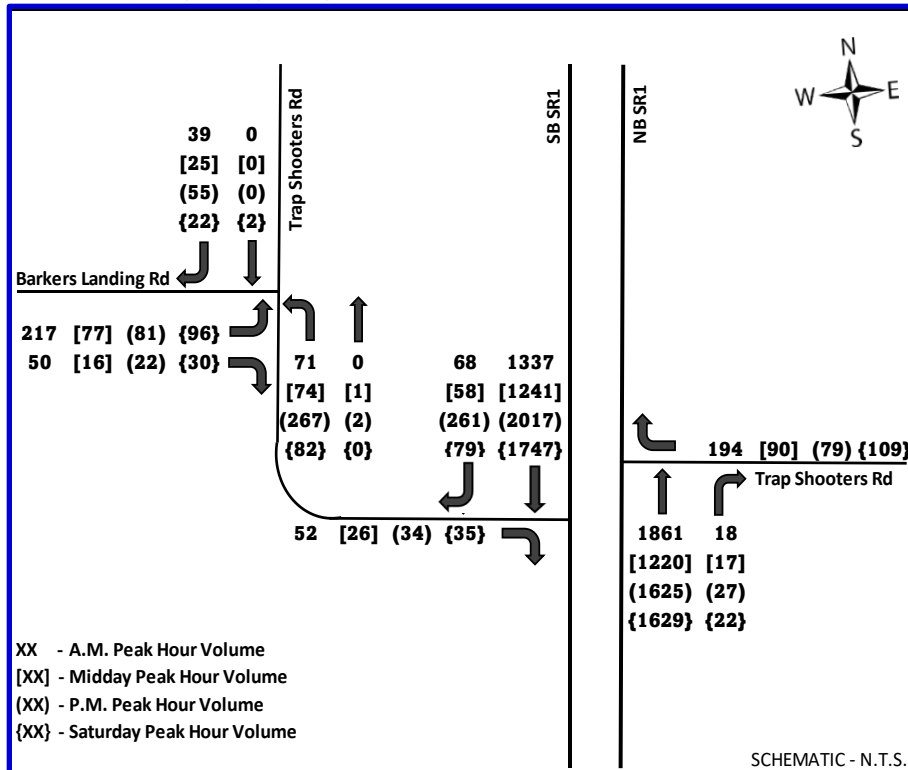
Existing Conditions



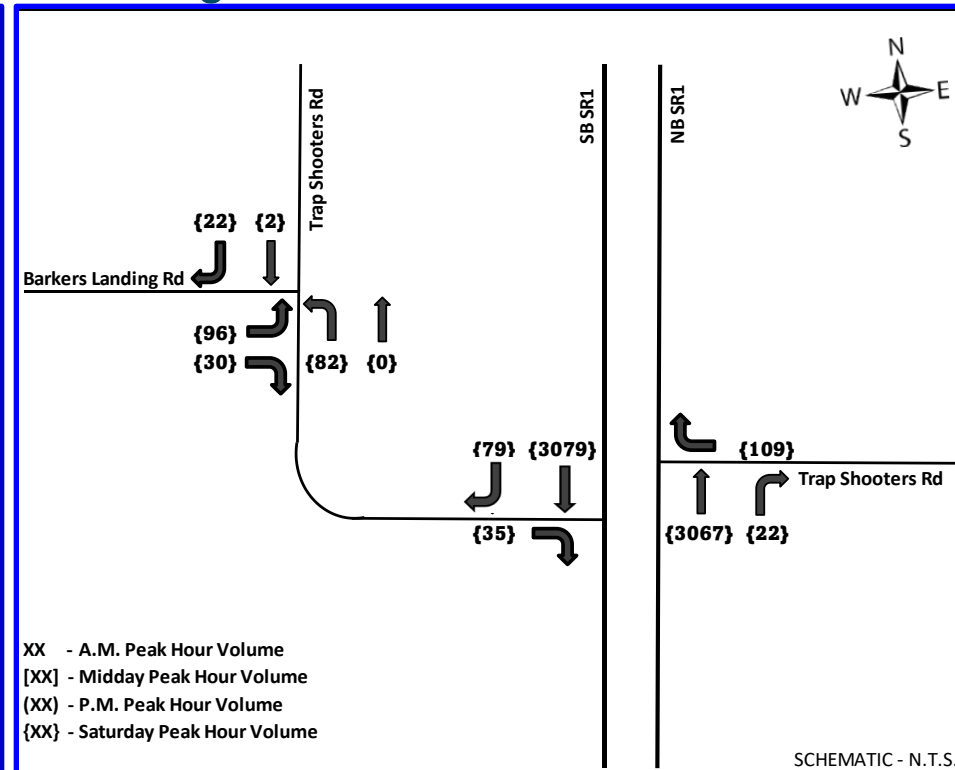
- Data Collection
 - Adjacent Parcel Research
 - State Strategies for State Spending
 - Environmental Inventory
 - Ag land Preservation
 - Crashes / Volumes
 - Zoning
 - Development Trends
 - SR1 Capacity Analysis
 - Current Projects

Existing Conditions

Non summer peak hour turning movements



Summer Saturday peak hour turning movements



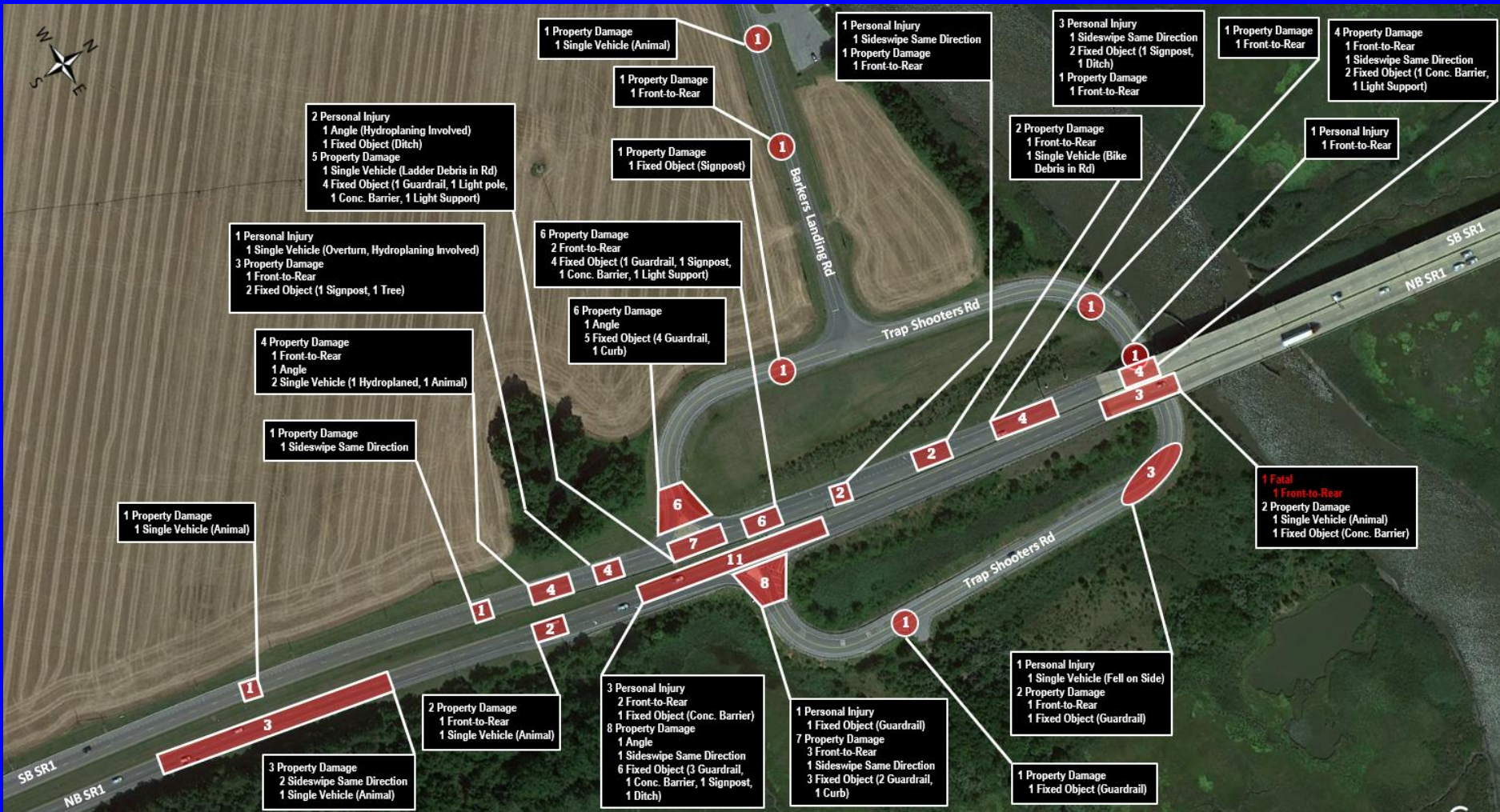
Existing Conditions

SB SR1 at Trap Shooters Road

Control Type	Movement	Measures of Effectiveness under Existing 2022 Traffic Conditions														
		Weekday AM			Weekday Midday			Weekday PM			Non-Summer Saturday			Summer Saturday		
		Delay (Sec)	LOS	95th % Queue (ft)	Delay (Sec)	LOS	95th % Queue (ft)	Delay (Sec)	LOS	95th % Queue (ft)	Delay (Sec)	LOS	95th % Queue (ft)	Delay (Sec)	LOS	95th % Queue (ft)
Two-Way Stop	EBR Trap Shooters Rd	17.4	C	15	16.4	C	8	27.6	D	15	21.5	C	13	93.5	F	53

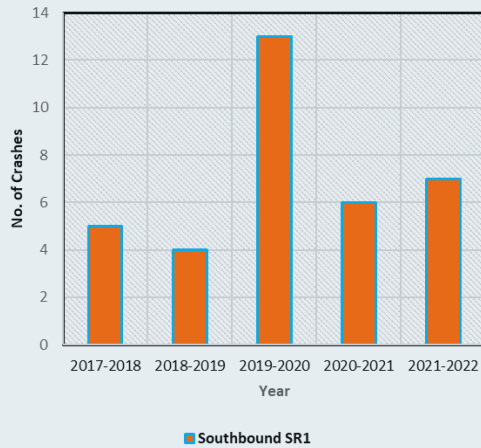
NB SR1 at Trap Shooters Road

Control Type	Movement	Measures of Effectiveness under Existing 2022 Traffic Conditions														
		Weekday AM			Weekday Midday			Weekday PM			Non-Summer Saturday			Summer Saturday		
		Delay (Sec)	LOS	95th % Queue (ft)	Delay (Sec)	LOS	95th % Queue (ft)	Delay (Sec)	LOS	95th % Queue (ft)	Delay (Sec)	LOS	95th % Queue (ft)	Delay (Sec)	LOS	95th % Queue (ft)
Two-Way Stop	WBR Trap Shooters Rd	87.6	F	198	16.9	C	23	27.1	D	38	35.6	E	70	301.4	F	213



Existing Conditions

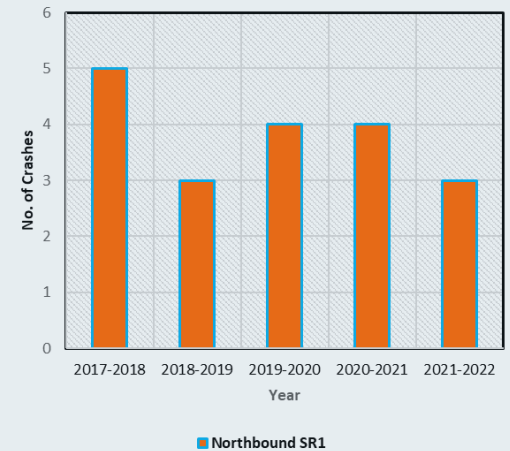
Annual Crashes



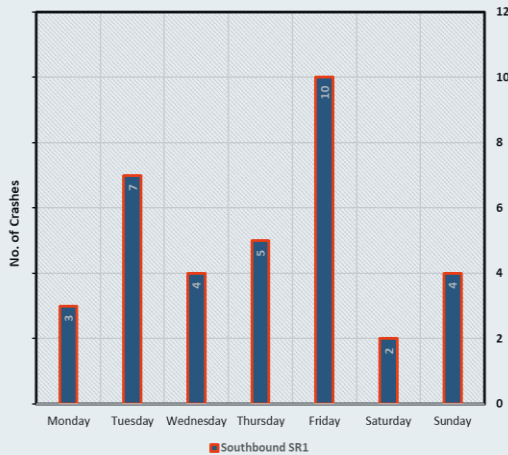
SR1 Southbound Crashes

- Total of 35 crashes
- 2020 experienced an abnormally high number of crashes
- Friday has a higher number of crashes

Annual Crashes



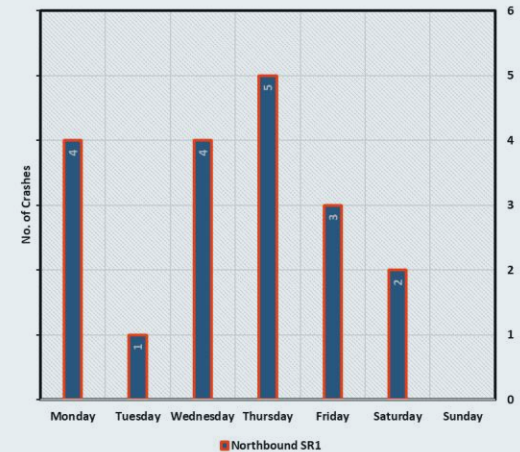
Five Year Day of the Week Crashes



SR1 Northbound Crashes

- Total of 19 crashes
- Relatively consistent number of crashes across the 5 years

Five Year Day of the Week Crashes



First Community Workshop - January 23, 2023

- Location: Virtual via Zoom Webinar
- Advertised through over 500 direct mailings, legislative newsletters, MPO website and social media, DeIDOT website.
- PowerPoint presentation including the study area, purpose and need, work plan, existing conditions, current DeIDOT efforts, the proposed study schedule and then took questions after the presentation.
- 13 people registered for the workshop and 8 people attended.
- Community members were engaged and provided good feedback.
- 4 Comments were received



Trap Shooters Road Public Workshop

Help us develop the new plan for Trap Shooters Road!

Join us for an informational meeting to understand issues and concerns.

Join Us!

January 23rd
6:00 PM
On Zoom
Register at:

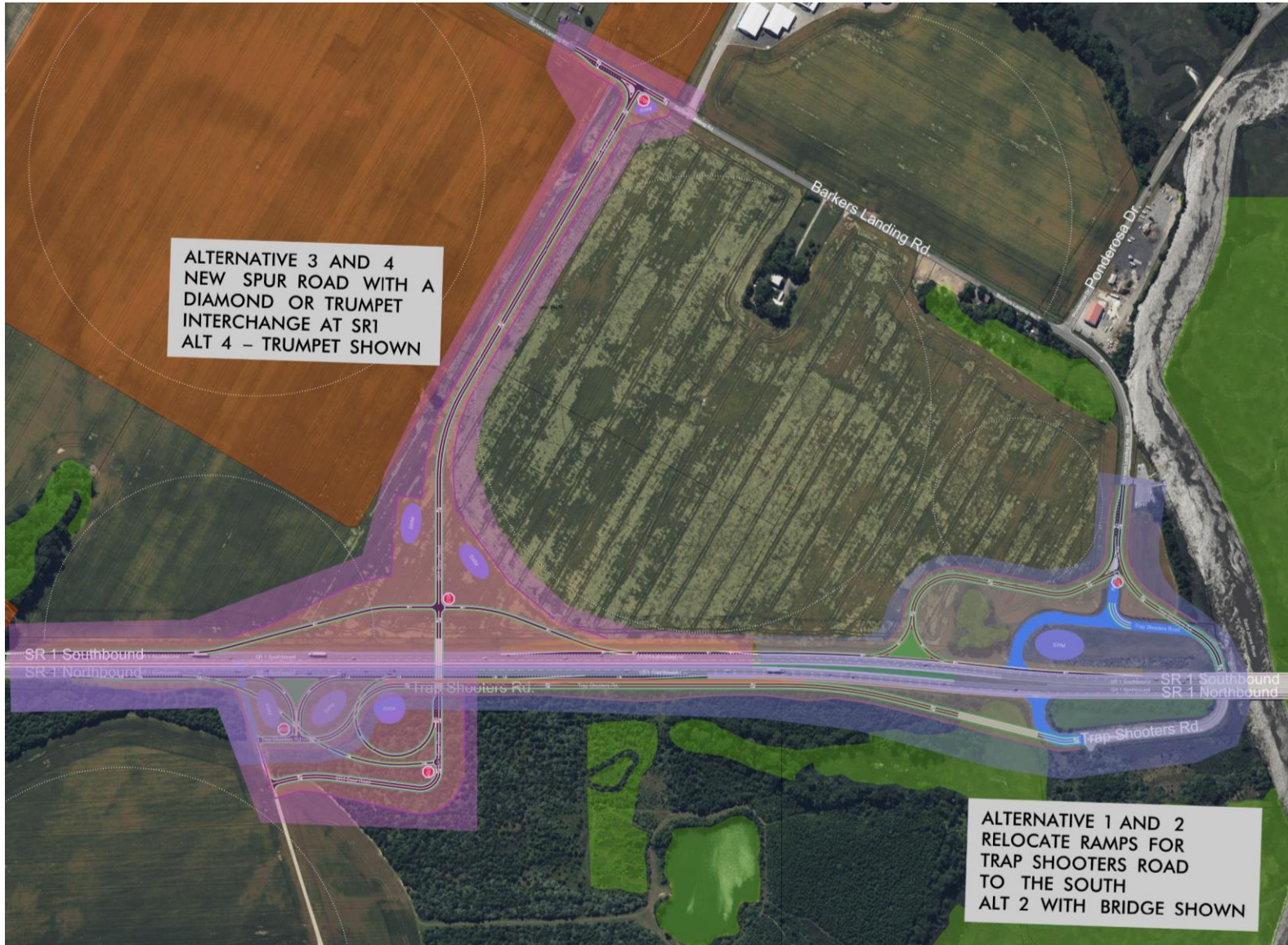


We want to hear from you!

DOVER/KENT COUNTY MPO
METROPOLITAN PLANNING ORGANIZATION

CENTURY
ENGINEERING
A Kleinfelder Company

https://us02web.zoom.us/join/register/WN_NcHs5xtiTuydiSPDA_K-Lw





Second Community Workshop – March 28, 2023

- Location: In-Person – McIlvaine Elem. School
- Advertised through over 1000 direct mailings, legislative newsletters, MPO website and social media, DeIDOT website.
- Information presented included the study area, project goals, existing traffic volumes, crash data, 4 alternatives, measures of effectiveness, and the anticipated schedule for the study.
- Feedback was gathered from attendees through conversations with staff, questionnaires, and comment forms.
- 39 Attendees
- 26 Comments were received



SR1 Trap Shooters Road Interchange - Public Workshop #2


 **Join us for the 2nd public workshop to explore possible solutions to traffic safety**



We want to hear from you!

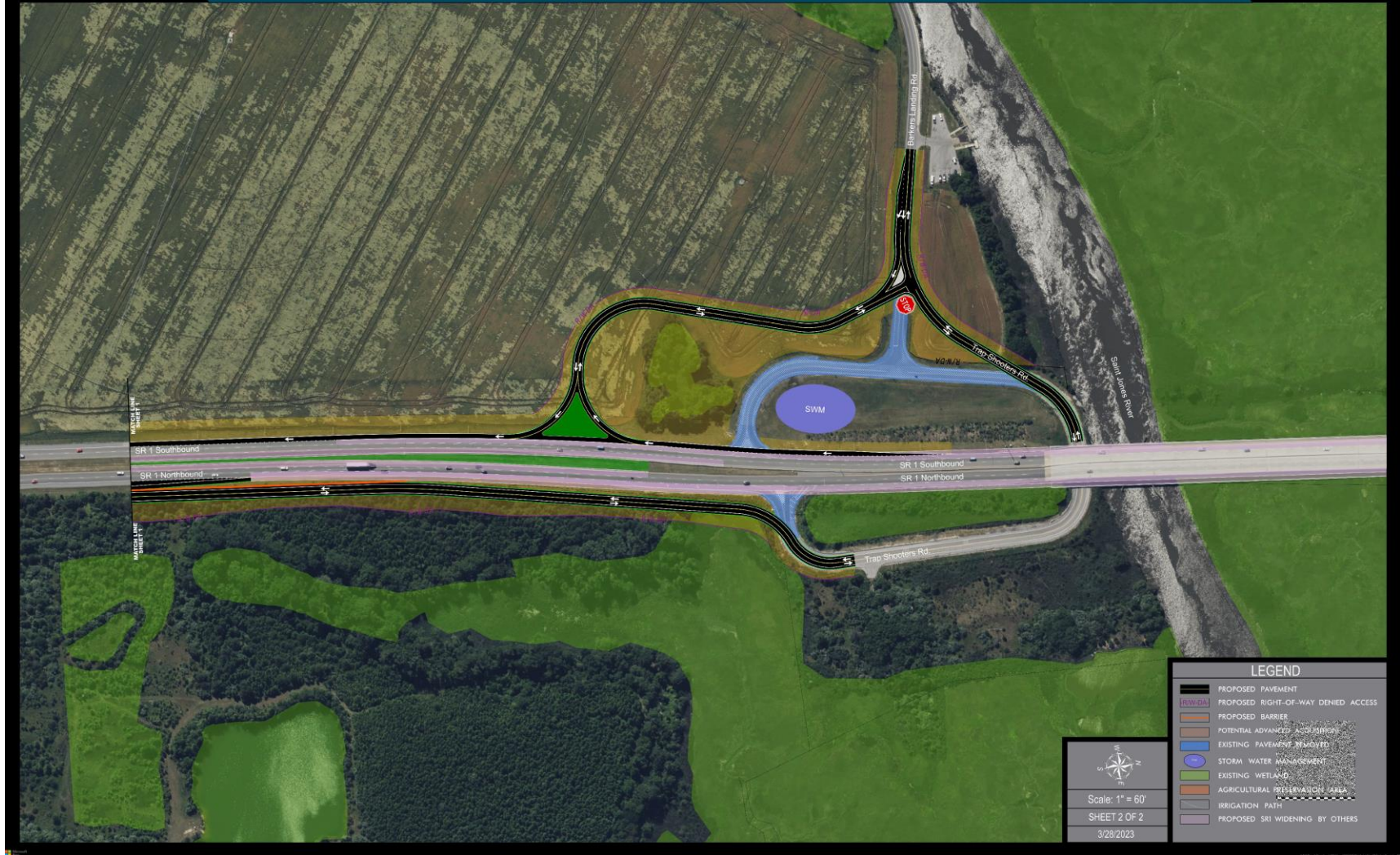
Open house format:
Come anytime to review concepts and ideas and provide your input

March 28, 2023
McIlvaine Elementary School
11 E. Walnut St.
Magnolia, DE 19962
6:00pm – 7:30pm



<https://doverkentmpo.delaware.gov/sr-1-trap-shooters-intersection-study-page/>

ALTERNATIVE 1 - TRAP SHOOTERS ROAD EXTENDED - WETLAND FILL



LEGEND

	PROPOSED PAVEMENT
	PROPOSED RIGHT-OF-WAY DENIED ACCESS
	PROPOSED BARRIER
	POTENTIAL ADVANCED ACQUISITION
	EXISTING PAVEMENT REPAVED
	STORM WATER MANAGEMENT
	EXISTING WETLAND
	AGRICULTURAL PRESERVATION AREA
	IRRIGATION PATH
	PROPOSED SRI WIDENING BY OTHERS

Scale: 1" = 60'
SHEET 2 OF 2
3/28/2023

ALTERNATIVE 1 - TRAP SHOOTERS ROAD EXTENDED - WETLAND FILL

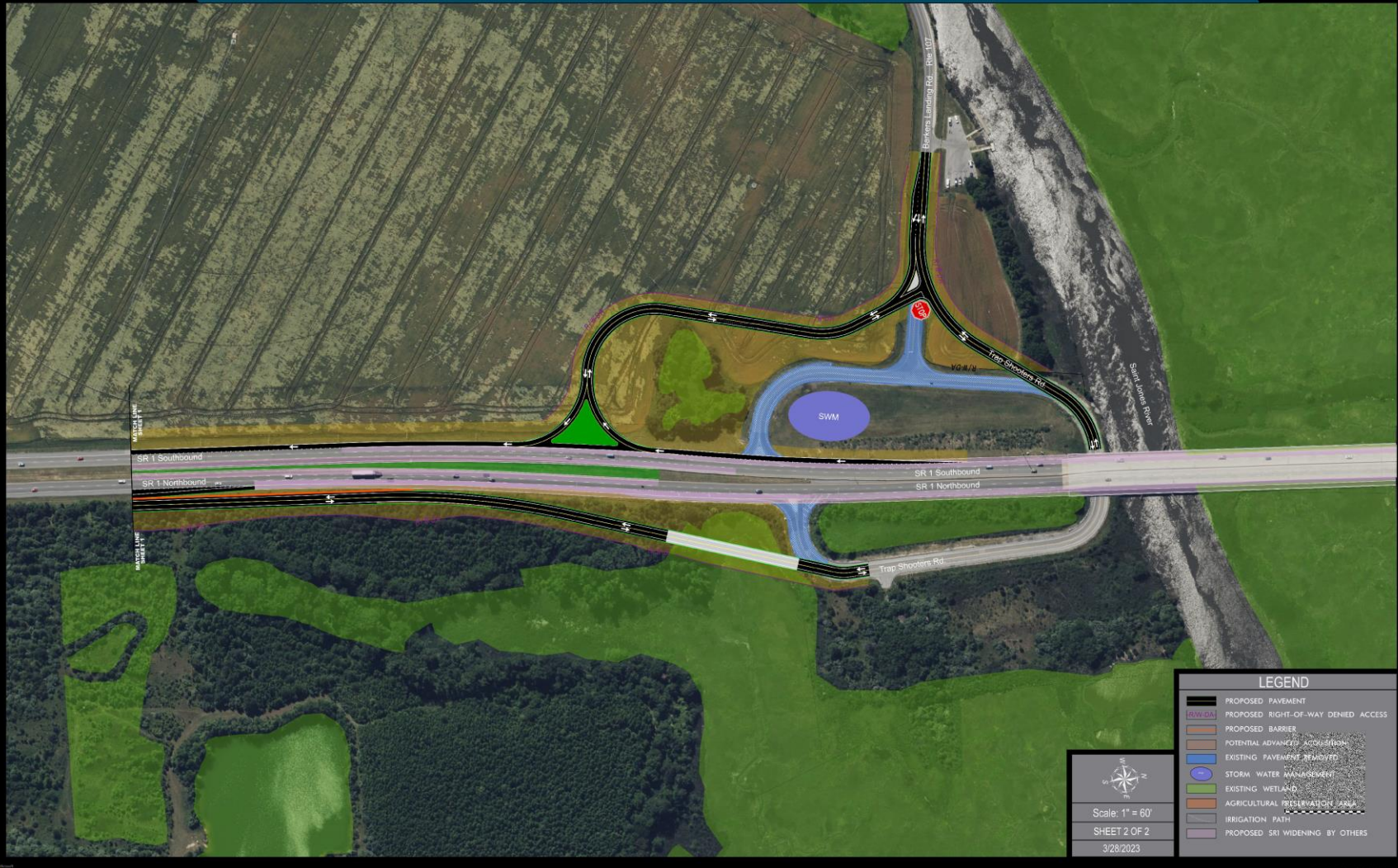


LEGEND

	PROPOSED PAVEMENT
	PROPOSED RIGHT-OF-WAY DENIED ACCESS
	PROPOSED BARRIER
	POTENTIAL ADVANCED ROADWAYS
	EXISTING PAVEMENT REMOVED
	STORM WATER MANAGEMENT
	EXISTING WETLAND
	AGRICULTURAL PRESERVATION AREA
	IRRIGATION PATH
	PROPOSED SRI WIDENING BY OTHERS

Scale: 1" = 60'
SHEET 1 OF 2
3/28/2023

ALTERNATE 2 - TRAP SHOOTERS ROAD EXTENDED W/ BRIDGE



LEGEND

	PROPOSED PAVEMENT
	PROPOSED RIGHT-OF-WAY DENIED ACCESS
	PROPOSED BARRIER
	POTENTIAL ADVANCED ACQUISITION
	EXISTING PAVEMENT REMOVAL
	STORM WATER MANAGEMENT
	EXISTING WETLAND
	AGRICULTURAL PRESERVATION AREA
	IRRIGATION PATH
	PROPOSED SR1 WIDENING BY OTHERS

Scale: 1" = 60'
SHEET 2 OF 2
3/28/2023

ALTERNATE 2 - TRAP SHOOTERS ROAD EXTENDED W/ BRIDGE



ALTERNATIVE 3 - SPUR ROAD WITH DIAMOND INTERCHANGE



ALTERNATIVE 3 - SPUR ROAD WITH DIAMOND INTERCHANGE



ALTERNATIVE 3 - SPUR ROAD WITH DIAMOND INTERCHANGE



ALTERNATIVE 4 - SPUR ROAD WITH TRUMPET INTERCHANGE



ALTERNATIVE 4 - SPUR ROAD WITH TRUMPET INTERCHANGE



ALTERNATIVE 4 - SPUR ROAD WITH TRUMPET INTERCHANGE



LEGEND

	PROPOSED PAVEMENT
	PROPOSED RIGHT-OF-WAY DENIED ACCESS
	PROPOSED BARRIER
	POTENTIAL ADVANCED ACQUISITION
	EXISTING PAVEMENT REMOVED
	STORM WATER MANAGEMENT
	EXISTING WETLAND
	AGRICULTURAL PRESERVATION AREA
	IRRIGATION PATH
	PROPOSED SR1 WIDENING BY OTHERS

Scale: 1" = 60'
SHEET 3 OF 3
3/28/2023

Ramp Analysis

Facility	Opening Year 2028 LOS (2-Lane SR1)				Design Year 2050 LOS (3-Lane SR1)			
	Non-Summer			Summer	Non-Summer			Summer
	AM	PM	Saturday	Saturday	AM	PM	Saturday	Saturday
NB Basic Segment South of Exit Ramp	B	B	B	D	B	B	B	C
NB Exit Ramp Diverge Influence Area	C	B	B	D	B	B	B	C
NB Basic Segment between Exit Ramp & Entrance Ramp	B	B	B	D	B	B	B	C
NB Entrance Ramp Merge Influence Area	C	B	B	C	B	A	B	B
NB Basic Freeway Segment North of Entrance Ramp	C	B	B	D	B	B	B	C

Northbound SR1

Facility	Opening Year 2028 LOS (2-Lane SR1)				Design Year 2050 LOS (3-Lane SR1)			
	Non-Summer			Summer	Non-Summer			Summer
	AM	PM	Saturday	Saturday	AM	PM	Saturday	Saturday
SB Basic Segment North of Exit Ramp	B	C	B	D	A	B	B	C
SB Exit Ramp Diverge Influence Area	B	C	B	D	B	B	B	C
SB Basic Segment between Exit Ramp & Entrance Ramp	B	B	B	D	A	B	B	C
SB Entrance Ramp Merge Influence Area	B	B	B	D	A	B	B	C
SB Basic Freeway Segment South of Entrance Ramp	B	B	B	D	A	B	B	C

Southbound SR1

Crash Reduction and Travel Time

Crash Reduction Benefits Due to Project (All Alternatives)

	No. of Vehicles involved in Property Damage Crashes	Injury Crashes	Fatal Crashes	Total Annual Crash Reduction Benefit
2018 through 2021 Calendar Years*	72	11	1	
Crash Modification Factor (CMF)	0.84	0.84	0.84	
Crashes after Project	60.48	9.24	0.84	
Annual Crash Reduction	15.12	2.31	0.21	
USDOT Monetized Value per crash**	\$4,800.00	\$307,800.00	\$13,046,800.00	
Annual Crash Reduction Benefit	\$72,576.00	\$711,018.00	\$2,739,828.00	

* Excluding Crashes with animals as they are not susceptible to reduction with any geometric changes

** 2021 Base Year Dollars

Travel Time Change with Magnolia Origin-Destination

Travel Time Change (Seconds)	Alt 1 Geometry				Alt 2 Geometry				Alt 3 Geometry				Alt 4 Geometry			
	Northbound Trips		Southbound Trip		Northbound Trips		Southbound Trip		Northbound Trips		Southbound Trip		Northbound Trips		Southbound Trip	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
XX = Increase; (XX) = Decrease	11.7	20.6	12.5	6.7	0.2	9.2	9.7	5.7	(72.8)	(72.4)	13.3	(47.5)	(71.9)	(53.2)	12.7	(47.3)

Travel Time Change with Ponderosa Drive Origin-Destination

Travel Time Change (Seconds)	Alt 1 Geometry				Alt 2 Geometry				Alt 3 Geometry				Alt 4 Geometry			
	Northbound Trips		Southbound Trip		Northbound Trips		Southbound Trip		Northbound Trips		Southbound Trip		Northbound Trips		Southbound Trip	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
XX = Increase; (XX) = Decrease	11.7	20.6	12.5	6.7	0.2	9.2	9.7	5.7	(22.6)	(15.9)	63.5	9.0	(21.7)	4.5	62.6	10.4

Alternatives Comparison Matrix

SR1 Trap Shooters Road Interchange Study									
Measures of Effectiveness - Physical Impacts									
Measure	UOM	Move SR1 Access Points South No Bridge		Move SR1 Access Points South With Bridge		Alternate 3 New Spur Road to SR1 with Diamond Interchnage		Alternate 4 New Spur Road to SR1 with Trumpet Interchnage	
Wetland Impacts Permanent	Square Feet / Ac	10,155	0.23	786	0.02	0	0.00	0	0.00
Wetland Impacts Temp	Square Feet / Ac	0	0.00	6,621	0.15	0	0.00	0	0.00
Forested Land Impacts	Square Feet / Ac	278,036	6.38	287,930	6.61	357,621	8.21	326,427	7.49
Agricultural Land Impacts	Square Feet / Ac	164,408	3.77	164,408	3.77	549,855	12.62	558,526	12.82
Ag. Land Preservation Impacts	Square Feet / Ac	0	0.00	0	0.00	5,294	0.12	5,294	0.12
Irrigation Impacts	Square Feet / Ac	10,482	0.24	10,482	0.24	123,248	2.83	123,248	2.83
Right-of-way Area	Square Feet / Ac	519,455	11.93	553,971	12.72	919,292	21.10	969,772	22.26
Costs	Thousands Dollars	\$17,500,000		\$25,250,000		\$34,500,000		\$31,700,000	

Second Community Workshop

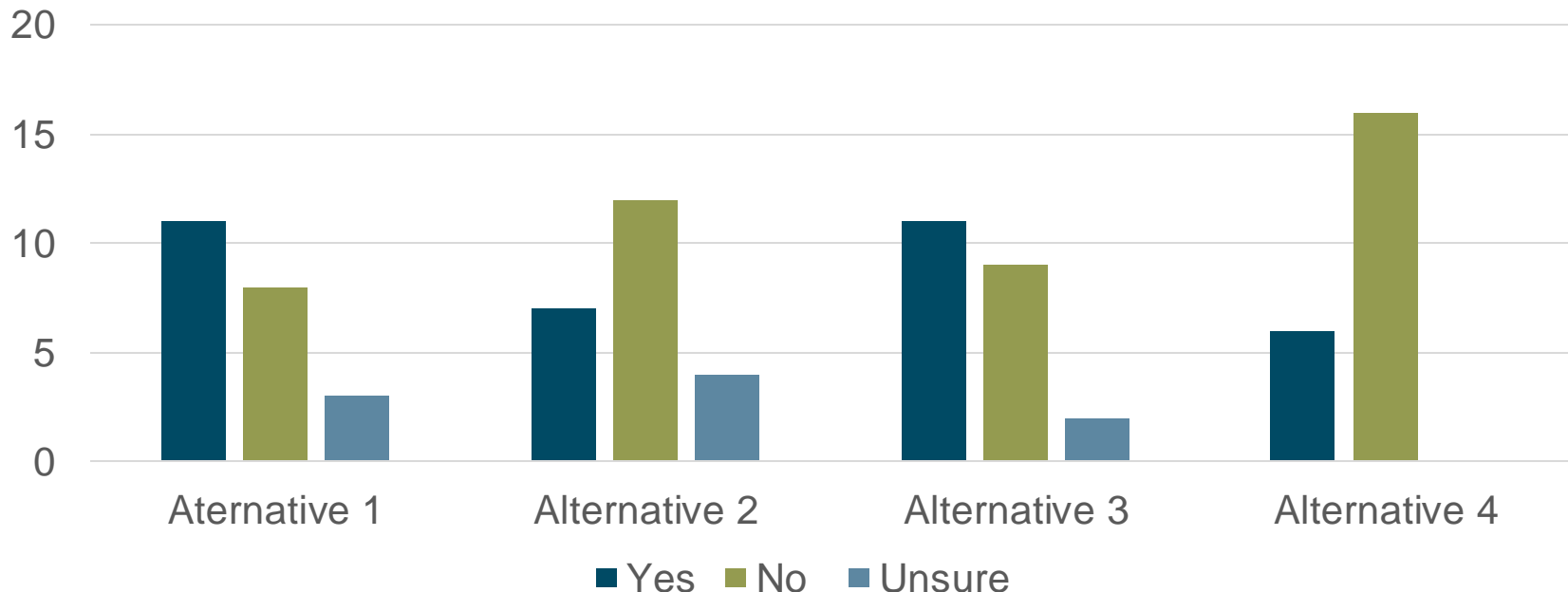
Alternative 1 – Extension of Trap Shooters Road with Wetland Fill

Alternative 2 – Extension of Trap Shooters Road with Bridge Spanning Wetland

Alternative 3 – New Spur Road from Barkers Landing Road to SR1 with Diamond Interchange

Alternative 4 – New Spur Road from Barkers Landing Road to SR1 with Trumpet Interchange

Public Opinion of Alternatives

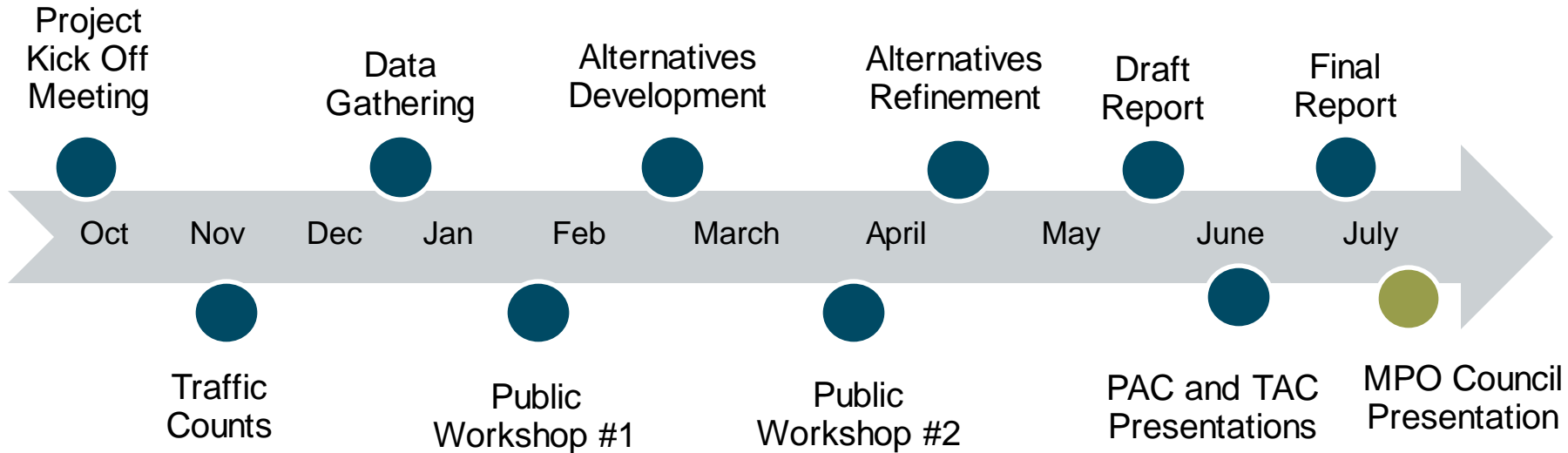


Final Recommendation

- Alternative 1 provides the greatest Benefit Cost (B/C) Ratio and meets the purpose and need
- Alternative 1 had the least physical impacts the existing land use, but requires wetland fill and mitigation
- Alternative 1 has a slight increase in travel time over existing conditions
- Alternative 1 also received the same public support as Alternative 3

- Alternative 1 should be advanced for further project development

Schedule





<https://doverkentmpo.delaware.gov/sr-1-trap-shooters-intersection-study-page/>



Jim Galvin
302-387-6030
James.Galvin@doverkentmpo.org



Drew Boyce
302-734-9188
dboyce@kleinfelder.com

Thank You!