

CITY OF POULSBO

STREET AND PEDESTRIAN SAFETY PLAN

APRIL 2018



Prepared By:

City of Poulsbo
Engineering Department
200 NE Moe Street
Poulsbo, Washington 98370

ACKNOWLEDGEMENTS

The City thanks the following individuals who generously volunteered to participate in developing and reviewing this plan:

Advisory Committee

Kate Collins-Nunes, Planning Commission

Rick Eckert, North Kitsap School District

Dianne Iverson, West Sound Cyclist

Sandy Kolbeins, Historic Downtown Poulsbo Association

Jeff McGinty, City Council

Molly Mervick, Citizen

Jim Schlachter, Rotary

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EXECUTIVE SUMMARY

The City of Poulsbo is committed to reducing serious accidents on City streets and roads. This street and pedestrian safety plan was prepared to identify potential projects that provide opportunities to improve safety of both vehicle and non-motorized users.

This plan describes accident data analysis, assessment of accident locations, and potential safety improvement projects. Two periods of accident data were evaluated; 2012 through 2017, and 2007 through 2017. Accident data was provided by the Washington State Department of Transportation (WSDOT), and the data evaluation followed the federal and state guidelines. City of Poulsbo accident data is generally summarized as follows:

- There were six serious injury accidents in the 2012- 2017 period, and a total of 22 serious injury accidents in the 2007-2017 period.
- The most prevalent serious accident type was pedestrian-vehicle crash caused by distraction and/or failure to yield.
- The most common accident location was at an arterial or collector street intersections and at driveways (18 of 22) and was associated with a left turn movement.
- Based on accident data, locations recommended for the 2018 WSDOT Safety Grant were Iverson Street between Jensen Way and 4th Avenue, and improvements at the following intersections:
 - Viking Avenue - Edvard Street
 - Viking Avenue - Lindvig Street
 - Front Street – Jensen Way to Sunset Street
 - 10th Avenue – Forest Rock Lane
 - Caldart Avenue – Hostmark Street

Table ES-1 summarizes accident data for the 2007-2017 period and Figure ES-1 shows accident locations.

Table ES-1. Summary of Serious Injury Accidents By Type, 2007-2017.

Accident Type	Total Serious Accidents	No. Accidents due to Driver Impairment or Defective Equipment ¹	Contributing Factors ²
Pedestrian - Vehicle	7	0	Failure to yield to pedestrian
Bicycle - Vehicle	3	0	Failure to yield to bicycle
Vehicle - Vehicle			
Left Turn	6	3	Failure to yield right of way
Rear End	3		Inattention
Other	1		
Vehicle - Fixed Object	5	2	Inattention, Speeding

¹ Based on WSDOT accident reports between 1/1/2007 and 11/21/2017. Includes specific incidents between Nov 2017 and December 2017.

² Apparent primary Contributing Factor based on WSDOT accident data. Other contributing factors may have been applicable.

Proposed projects are identified in Table ES-2 and are shown in Figure ES-2.

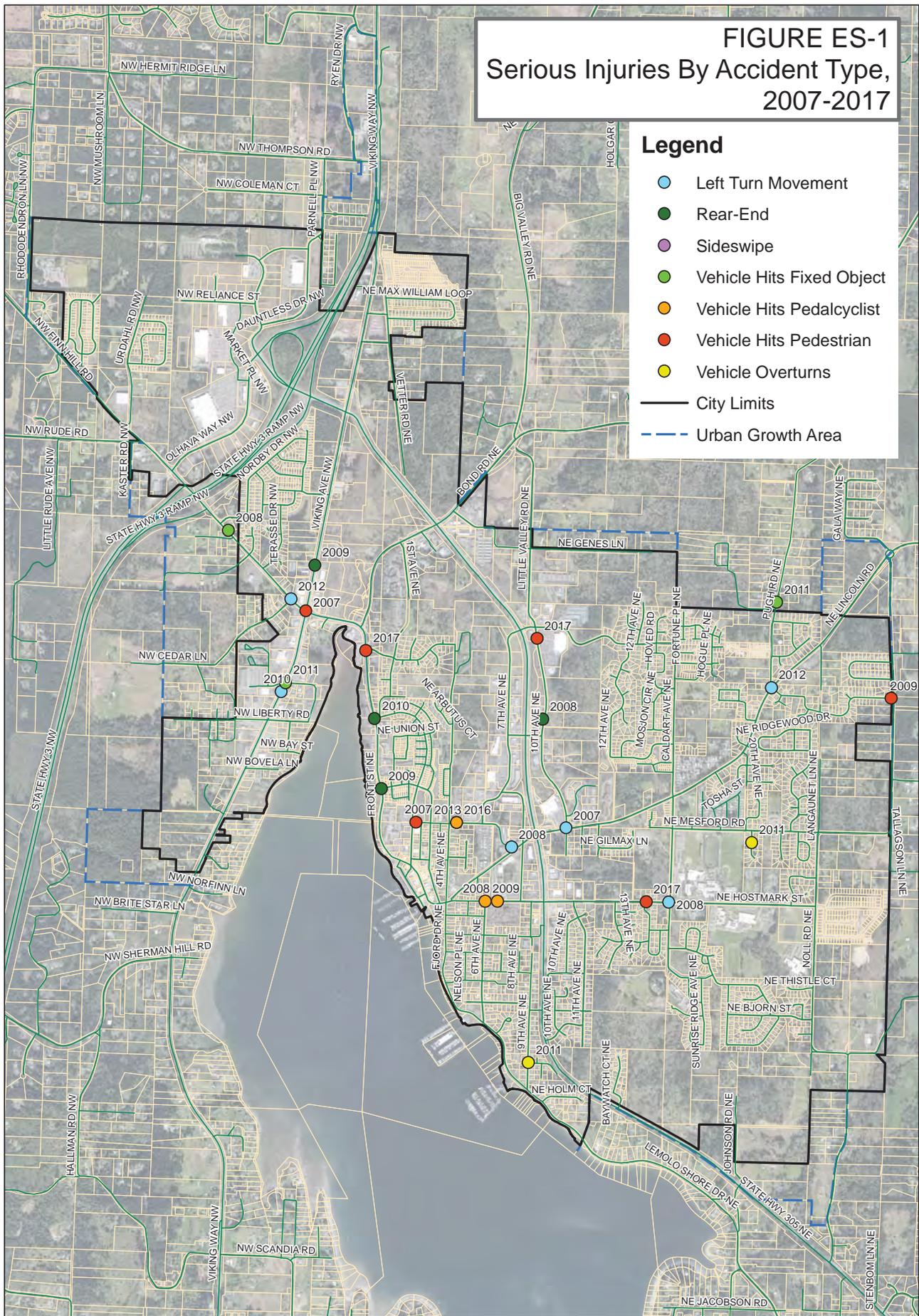
Table ES-2. Proposed Safety Projects.

Location	Potential Risk Factors	Potential Countermeasures	Proposed Countermeasures General Description	Implementation Strategy	Est. Cost
SITE SPECIFIC PROJECT					
Iverson Street between Jensen Street and 4th	Sidewalk gap, site distance, crossing distance	Curb extensions, Road Diet, Access Management, Sidewalks	Sidewalk gaps, curb ramps, curb extensions, striping	Site Specific 2018 safety grant application	\$374,000
SYSTEMIC SAFETY IMPROVEMENT PROJECT SITES					
Viking Ave - Edvard Street	Speeds, Crossing Distance, Site Distance, Driveway Conflicts, Mid-Block Crosswalks	Systemic Improvements	Striping, Leading Pedestrian Interval (LPI), Access Control	Part of 2018 safety grant application	\$35,000
Viking Ave – Lindvig St Road Intersection	Speeds, Crossing Distance	Systemic improvements	LPI, eliminate mid-block crossing at Fish Park	Part of 2018 safety grant application	\$10,000
Forest Rock Lane - 10th Avenue Intersection	Speeds, turning movements	Systemic improvements	Lane Striping, Signs	Potential part of 2018 safety grant application	\$30,000
Hostmark Street and Caldart Ave	Speeds, School Zone, Crossing Location	Systemic improvements	Enhanced signage, curb extension, pedestrian RFB at Caldart Ave	Part of 2018 safety grant application	\$50,000
Front Street, Jensen to Peterson	Mid-Block Crossings	Systemic improvements	Evaluate and remove or enhance existing mid-block crosswalks	Part of 2018 safety grant application	\$75,000
Engineering, Permits, and Project Management and Contingency					\$60,000
Total Systemic Improvements Grant Application					\$260,000
Total Grant Application					\$634,000

FIGURE ES-1
Serious Injuries By Accident Type,
2007-2017

Legend

- Left Turn Movement
- Rear-End
- Sideswipe
- Vehicle Hits Fixed Object
- Vehicle Hits Pedalcyclist
- Vehicle Hits Pedestrian
- Vehicle Overturns
- City Limits
- - - Urban Growth Area



City of Poulsbo
 Street and Pedestrian Safety Plan

Source: WSDOT, 2018. Created 3/15/18

This map is intended for general purposes. Maps are schematic representations of physical features, infrastructure, and land ownership boundaries. The information was derived from available public records and existing sources, not from surveys. Data includes reported accidents on local City roads between 2007 and 2017.

**FIGURE ES-2
Project Locations**

Legend

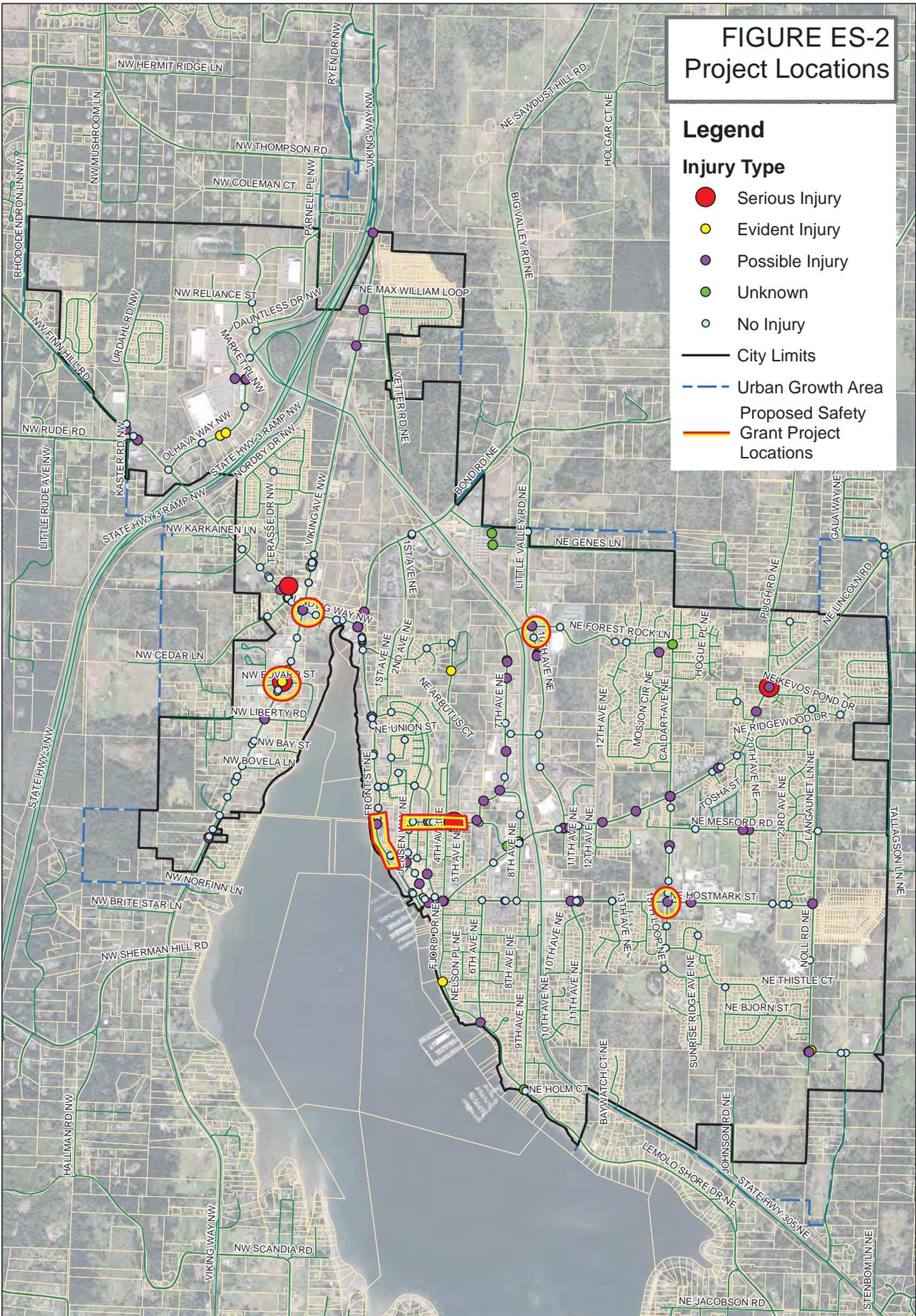
Injury Type

- Serious Injury
- Evident Injury
- Possible Injury
- Unknown
- No Injury

— City Limits

— Urban Growth Area

— Proposed Safety Grant Project Locations



City of Poulsbo
Street and Pedestrian Safety Plan

Source: WSDOT, 2018. Created 3/15/18

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1 INTRODUCTION

The City of Poulsbo is committed to reducing serious accidents on City streets and roads. This street and pedestrian safety plan was prepared to identify potential projects that provide opportunities to improve safety of both vehicle and non-motorized users.

This plan describes the results of accident data analysis, assessment of accident locations, and identification of potential projects. Two periods of accident data were evaluated; 2012 through 2017, and 2007 through 2017. Accident data was provided by the Washington State Department of Transportation (WSDOT), and the data evaluation followed the federal and state guidelines.

The City street system is shown in Figure 1.

1.1. DATA ASSESSMENT METHODS

The accident data and location analysis presented in this report is based on the Federal Highway Administration’s (FHWA) safety project prioritization process. This process uses a data-driven, systemic approach that utilizes a series of steps to develop a Local Road Safety Improvement Plan as shown in the diagram below.

Like the FHWA tool, The City of Poulsbo’s evaluation process utilized the following steps:

1. Identify the crash types and associated risk factors.
2. Screen and prioritize candidate locations including both spot locations and systemic locations.
3. Select specific countermeasures related to candidate locations.
4. Prioritize projects and select countermeasures for locations identified in step 3.

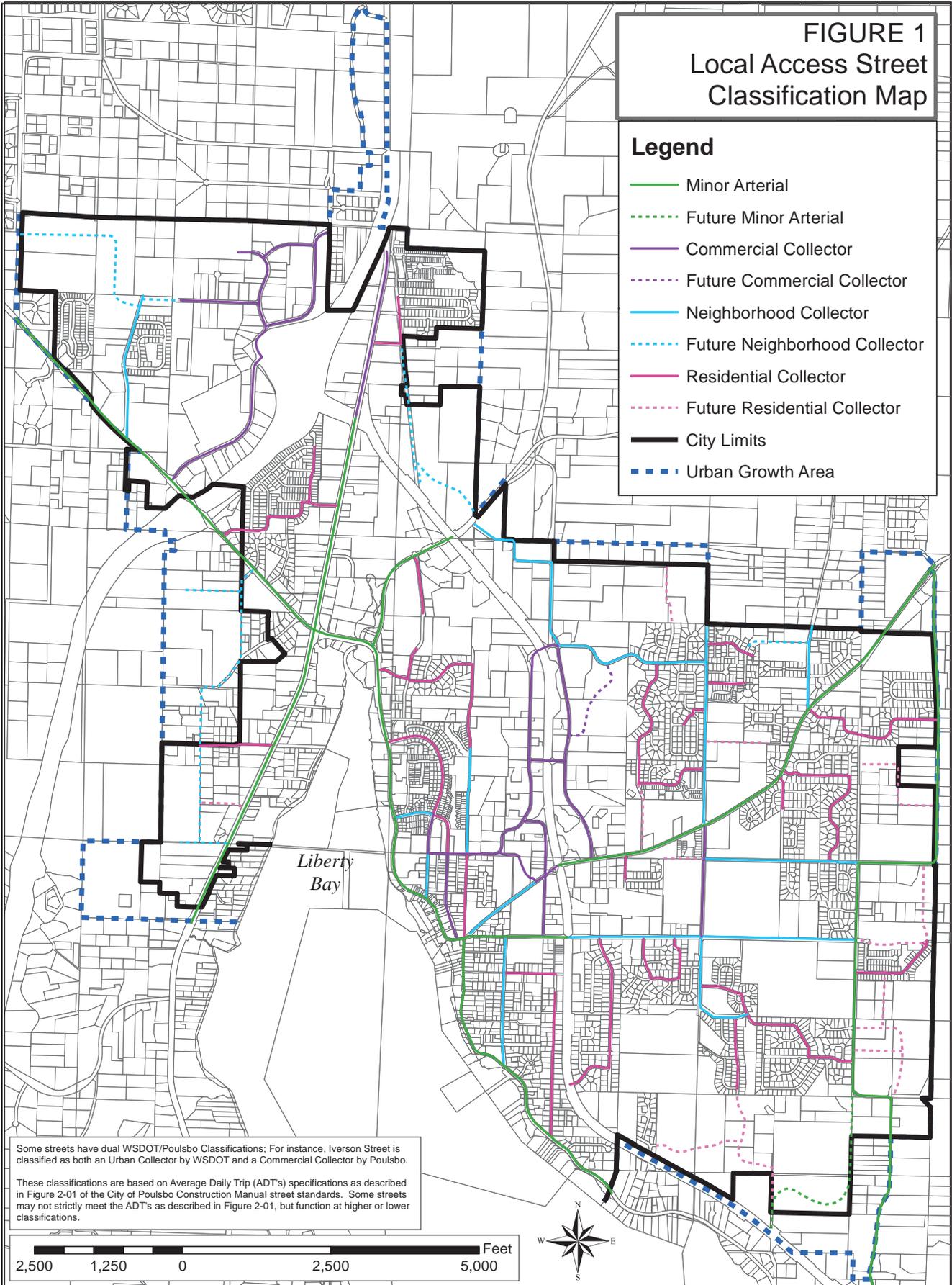
Following completion of the accident and location data assessment, specific countermeasures were identified as well as estimated costs to implement.



FIGURE 1
Local Access Street
Classification Map

Legend

- Minor Arterial
- - - Future Minor Arterial
- Commercial Collector
- - - Future Commercial Collector
- Neighborhood Collector
- - - Future Neighborhood Collector
- Residential Collector
- - - Future Residential Collector
- City Limits
- - - Urban Growth Area



Some streets have dual WSDOT/Poulsbo Classifications; For instance, Iverson Street is classified as both an Urban Collector by WSDOT and a Commercial Collector by Poulsbo.

These classifications are based on Average Daily Trip (ADT's) specifications as described in Figure 2-01 of the City of Poulsbo Construction Manual street standards. Some streets may not strictly meet the ADT's as described in Figure 2-01, but function at higher or lower classifications.



Infrastructure Map Series Primary Map Sources and Original Scales:
 Roadway designations compiled using the Transportation Plan Update, February 2016, from the City of Poulsbo Public Works Department, Engineering Division; Updated February 2016
 Kitsap County Assessor's Tax Maps 1:12,000 (Kitsap County IT, GIS Division)
 * Note: Detailed transportation system mapping is in functional plans included as Appendix B.

This infrastructure map series is intended for general infrastructure planning. These maps are schematic representations of physical features, infrastructure and land ownership boundaries. The map information was derived from available public records and existing sources, not from surveys. Studies may be necessary with project review to verify information.

2 ACCIDENT DATA ANALYSIS

2.1 DATA SOURCE

The accident data for this plan was provided by WSDOT and was extracted from a statewide data repository of crash reports provided by local and state law enforcement officers. The data presented in this plan includes local roads within the City of Poulsbo, and does not include state roads (SR3, SR305 and SR307) as these are state roads and not grant eligible.

WSDOT maintains a portal to access the data repository for the public. It is available at the following website: <https://remoteapps.wsdot.wa.gov/highwaysafety/collision/data/portal/public/>

The accident data repository includes a wide variety of information. Data used in this plan was primarily Location, Date, Type of Collision, Injury, and Contributing Factors. Coordinate locations provided with data were used to create maps.

2.1.1 Injury Classifications

The FHWA defines injuries according to the KABCO classification scale. These classifications include: Fatality (K), Serious Injury (A), Evident Injury (B), Possible Injury (C), and No Injury (O). The purpose of this federal classification is consistency across the nation. The following criteria are used for injury classification:

- **Fatality (K)** – Pronounced dead at scene, pronounced dead at arrival to hospital, or died at hospital.
- **Serious Injury (A)** – also referred to as a disabling injury: Any injury which prevents injured person from walking, driving, or continuing normal activities at the time of the collision. Includes severe lacerations, broken or distorted limbs, skull or chest injuries, abdominal injuries, etc. Excludes momentary unconsciousness, etc.
- **Evident Injury (B)** – also referred to as a non-disabling injury: Any injury other than fatal or disabling at the scene. Includes broken fingers or toes, abrasions, etc. Excludes limping, complaint of pain, nausea, hysteria, etc.
- **Possible Injury (C)** – any injury reported to the officer or claimed by the individual such as momentary unconsciousness, claims of injuries not evident, limping, complaint of pain, nausea, hysteria, etc.
- **No Injury (O)** – Applies when the officer at the scene has no reason to believe that, at the time of the collision, the person received any bodily harm due to the collision.

2.1.2 2012-2016 Data

The City analyzed accident data between 2012 and 2016 as required by the 2018 WSDOT Safety grant program. Over this five-year period, there were 334 total crashes, 4 resulting in serious injuries, 10 involving pedestrians, and 5 involving bicyclists. Table 1 summarizes accidents by general locations, and accident locations are shown in Figure 2.

FIGURE 2
Vehicle and Non-Motorized Accidents
By Injury Type, 2012-2016

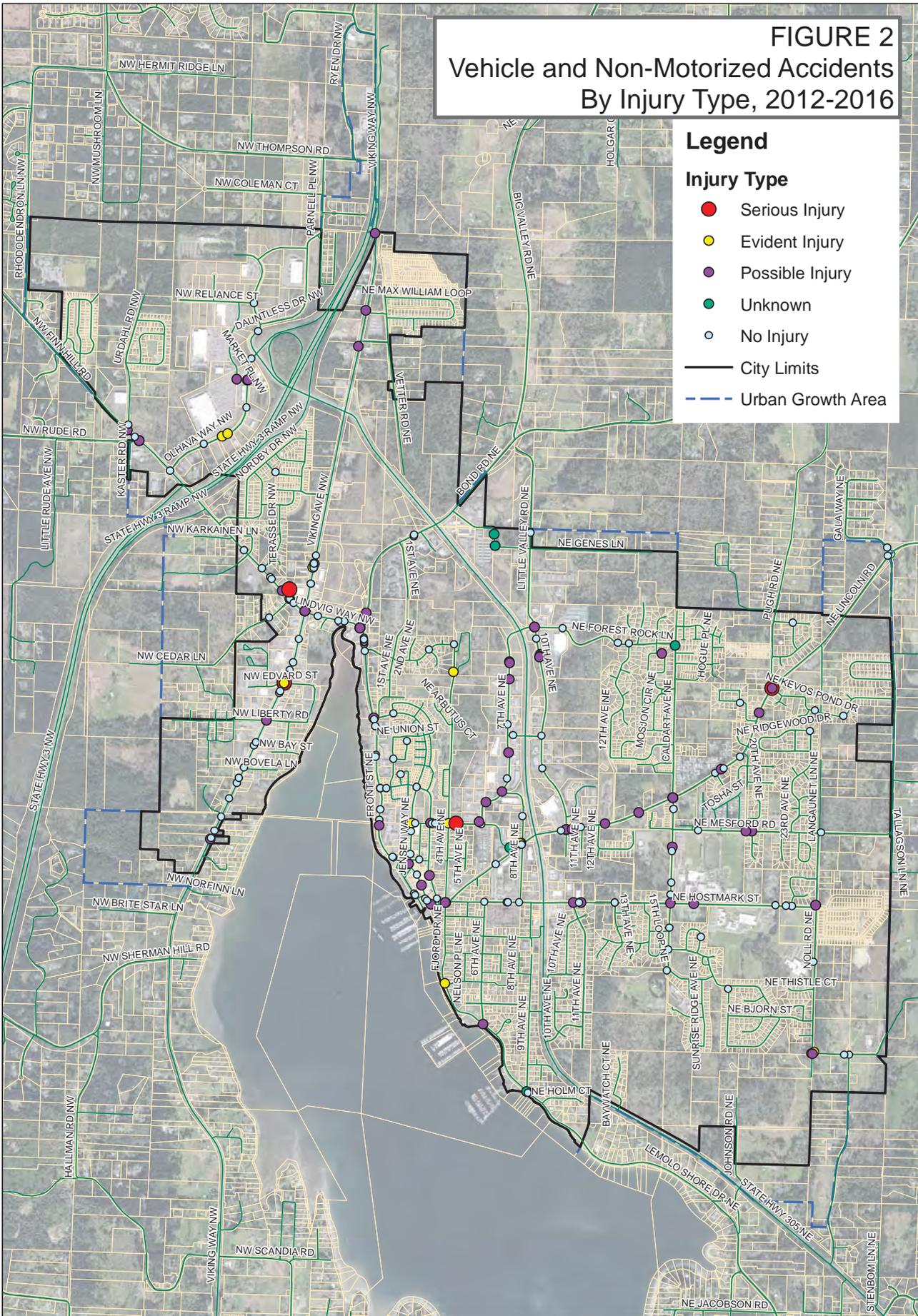
Legend

Injury Type

- Serious Injury
- Evident Injury
- Possible Injury
- Unknown
- No Injury

— City Limits

- - - Urban Growth Area



City of Poulsbo
 Street and Pedestrian Safety Plan

Source: WSDOT, 2018. Created 3/15/18

This map is intended for general purposes. Maps are schematic representations of physical features, infrastructure, and land ownership boundaries. The information was derived from available public records and existing sources, not from surveys. Data includes reported crashes on local City roads between 2007 and 2017.

Table 1. Summary of Accident Data by general locations, 2012-2017.

Location	Total No. of Accidents	Resulting in Injury ¹	Vehicle - Pedestrian	Vehicle - Bicycle
Intersection Total	175	56	6	2
Arterial	106	37	1	1
Collector	62	18	4	1
Local	7	1	1	0
Roadway Segment Total	98	23	3	1
Arterial	55	14	3	0
Collector	29	6	0	1
Local	14	3	0	0
Driveway Total	60	13	1	2
Arterial	31	6	0	1
Collector	23	6	1	1
Local	6	1	0	0

¹Injuries include serious, evident, and possible, between 1/1/2012 - 12/31/2016

2.1.3 2007-2017 Accident Data

The five-year period between 2012 and 2016 provided a limited data set, so the serious accident period of evaluation was expanded from 2007 to 2017. Serious injury accident by type of accident are shown in Table 2 and Figure 3. Vehicle-non-motorized accident locations are shown in Figure 4.

Table 2. Summary of Serious Injury Accidents by Type, 2007 - 2017.

Accident Type	Total No. Accidents	No. Accidents due to Driver Impairment or Defective Equipment ¹	Contributing Factors ²
Pedestrian - Vehicle	7	0	Failure to yield to pedestrian
Bicycle - Vehicle	3	0	Failure to yield to bicycle
Vehicle - Vehicle			
Left Turn	6	3	Failure to yield right of way
Rear End	3		Inattention
Other	1		
Vehicle - Fixed Object	5	2	Inattention, Speeding

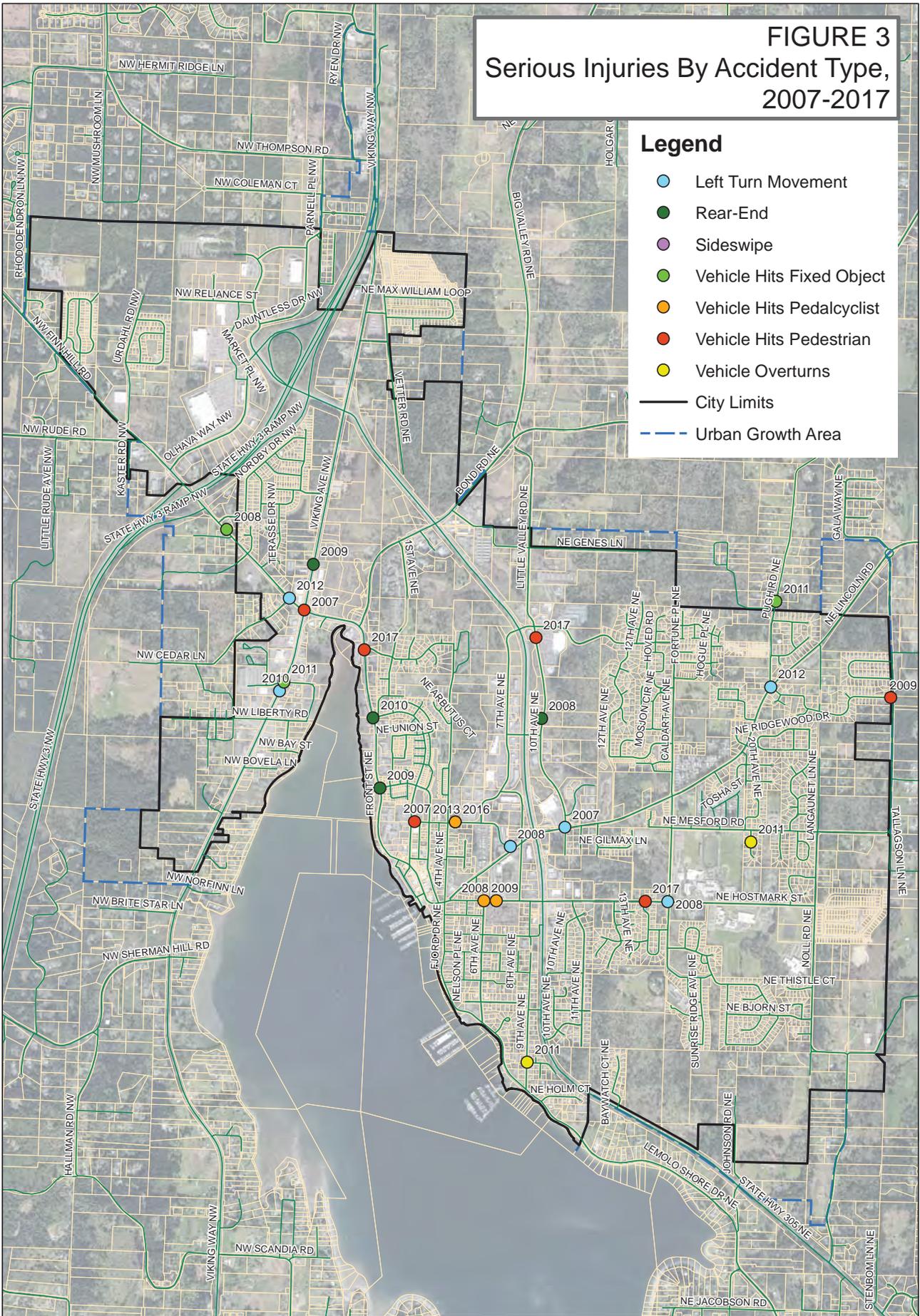
¹Based on WSDOT accident reports between 1/1/2007 and 11/21/2017. Includes specific incidents between Nov 2017 and December 2017.

²Apparent primary Contributing Factor based on WSDOT accident data. Other contributing factors may have been applicable.

FIGURE 3
Serious Injuries By Accident Type,
2007-2017

Legend

- Left Turn Movement
- Rear-End
- Sideswipe
- Vehicle Hits Fixed Object
- Vehicle Hits Pedalcyclist
- Vehicle Hits Pedestrian
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City of Poulsbo
 Street and Pedestrian Safety Plan

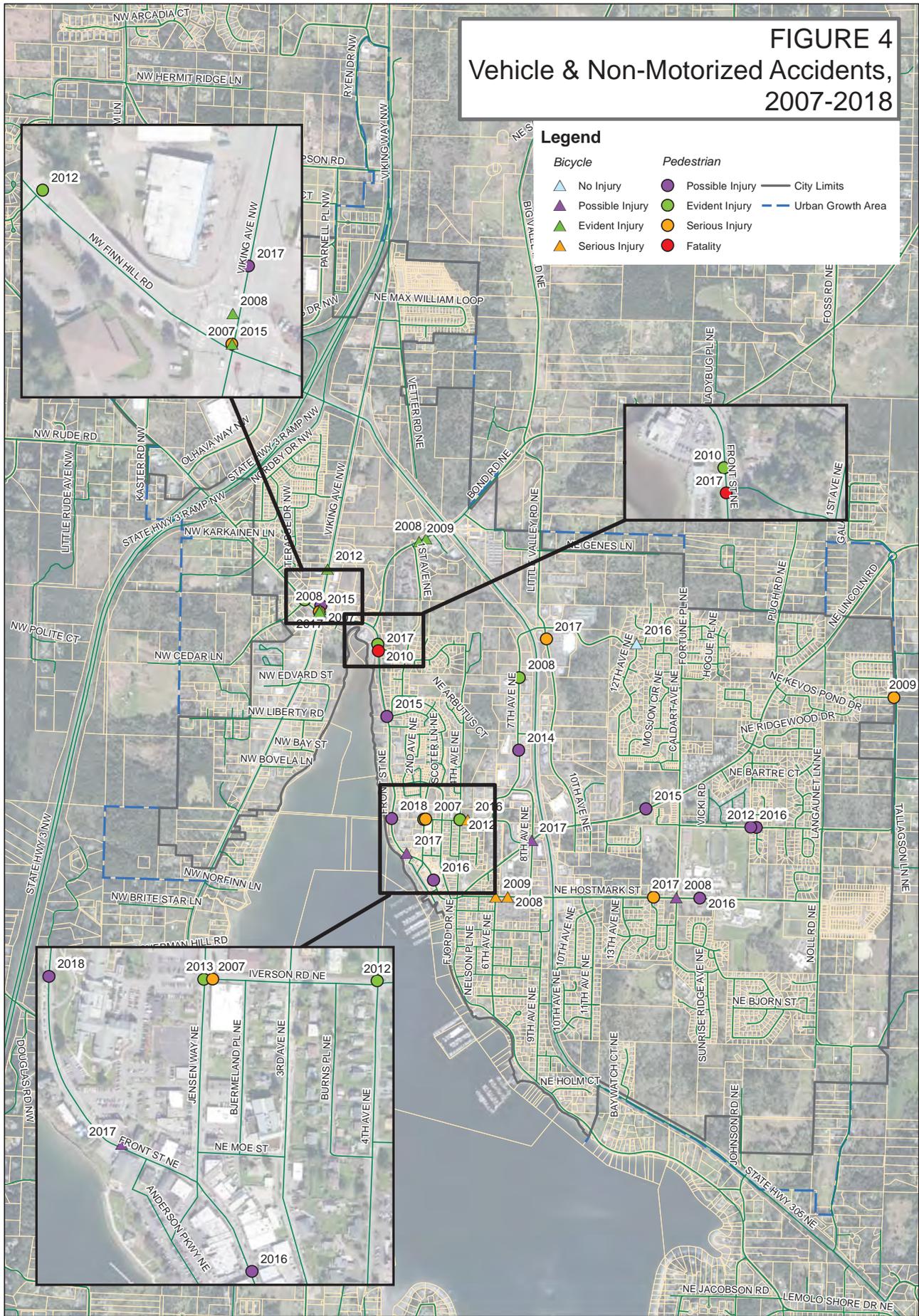
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FIGURE 4 Vehicle & Non-Motorized Accidents, 2007-2018

Legend

- | Bicycle | | Pedestrian | | |
|------------------|-------------------|-------------------|------------------|---------------------|
| ▲ No Injury | ▲ Possible Injury | ● Possible Injury | ● Evident Injury | — City Limits |
| ▲ Evident Injury | ▲ Serious Injury | ● Serious Injury | ● Fatality | — Urban Growth Area |



City of Poulsbo
Street and Pedestrian Safety Plan

Source: WSDOT, 2018. Created 3/15/18

This map is intended for general purposes. Maps are schematic representations of physical features, infrastructure, and land ownership boundaries. The information was derived from available public records and existing sources, not from surveys. Data includes reported collisions involving pedestrians between 1/1/2007 and 2/14/2017.

2.2 DATA SUMMARY

City of Poulsbo accident data is generally summarized as follows:

- There were six serious injury accidents in the 2012- 2017 period, and a total of 22 serious injury accidents in the 2007-2017 period.
- The most prevalent serious accident type was pedestrian-vehicle crash caused by distraction and/or failure to yield.
- The most common accident location was at intersections and driveways (18 of 22) and was associated with a left turn movement.
- Based on accident data, locations recommended for the 2018 WSDOT Safety Grant are Iverson Street between Jensen Way and 4th Avenue, and systemic improvements at the following intersections:
 - Viking Avenue - Edvard Street
 - Viking Avenue - Lindvig Street
 - Front Street – Jensen Way to Sunset Street
 - 10th Avenue – Forest Rock Lane
 - Caldart Avenue – Hostmark Street

2.2.1 Accident Types

More than half (56%) of all accidents were classified as either rear-end, angle (tee), or angle (left turn). A majority of these occurred at stop-controlled intersections and/or driveways. Typically, accidents were most prevalent on arterial or collector streets located in commercial districts with numerous intersections. Viking Avenue and 7th Avenue both have a relatively high number of commercial driveways as well as accidents, however; accidents were typically broadly distributed.

Overall, only one intersection had more than one serious accident (Viking Avenue - Edvard Street). One spot location, Iverson Street between Jensen way and 4th Avenue has had multiple serious injuries.

2.2.2 Accident Locations

Accidents were primarily on arterial/collector streets and at arterial/collector street intersections. Locations were prioritized based on number of serious injury accidents. Ten intersections and five priority roadway segments were identified for location-specific assessments based upon the total number of accidents and number of serious injury accidents. Site-specific analysis is provided in Chapter 4.

2.2.3 Accident Risk Factors

Distracted driving, inattention, and failing to yield were the contributing factors for most of accidents in the City. It is important to note that accident factors identified in the WSDOT data set are somewhat general and based on the law enforcement accident reports. Based on available data, the following risk factors were often associated with serious injury accidents:

- Distraction and inattention of drivers is a significant risk factor in the City of Poulsbo. Distraction such as cell phones, drinking, eating, driving with pets, adjusting vehicle controls on the dash, and similar are common examples.
- Several accidents involving pedestrians were caused by drivers failing to yield to pedestrians in a crosswalk.
- Time of day and light conditions did not appear to be a significant factor. About 72% of accidents occurred during daylight, 6% occurred at either dawn or dusk, and about 22% occurred at night. This is consistent with national trends and according to FHWA about 70% of all accidents occur during daylight hours.
- In general, speeding has not been a common cause of accidents within the City. Speeding was the cause of an accident in about 4.5% of accidents, and 73% of those accidents were a vehicle colliding with a fixed object and not a second vehicle. Additional information regarding speeding is included in Chapter 3.

See Chapter 4 and 5 for site specific location countermeasure assessments.

3 SPEED DATA EVALUATION

Speeding can be a common accident related behavior. To evaluate speeding as a risk factor, historical speed data was tabulated and reviewed. This speed data is routinely collected by the City as part of road studies, development review and transportation facility studies.

Speed limits within Poulsbo are established pursuant to RCW 46.61.400(2) and are reflected in Poulsbo Municipal Code (PMC) Chapter 10.08. The City has three arterial corridors with a speed limit of 35 mph while remaining streets typically have a posted speed limit of 25 mph. There are a few exceptions within the City that have speed limits lower than 25 mph, and typically these areas have more pedestrian use, are City parking lots, or have topographic or geometric features that warrant lower speeds. These streets and corridors are described in PMC 10.08.020.

With wider streets, road users tend to drive at increased speeds, which can contribute to higher speed collisions and result in more serious injuries. In the case of a vehicle to pedestrian collision, the severity of injury can dramatically increase with higher speeds.

The accident data summarized in Table 3 (below) illustrates the 85th percentile of road user's speeds. This data was collected over an 8-year period and illustrates that about 85% of road users are going the posted speed or less. While some road users may exceed the posted speed limit, available data indicates that overall speeding within the City of Poulsbo is not typically a top accident risk factor.

Table 3. Summary of Selected Speed Data, 2009 – 2017.

<i>Street name</i>	<i>Location of test</i>	<i>Month-Year</i>	<i>85th % Speed (mph)</i>	<i>Posted Speed (mph)</i>
Residential Collectors				
<i>Street name</i>	<i>Location of test</i>	<i>Month-Year</i>	<i>85th % Speed (mph)</i>	<i>Posted Speed (mph)</i>
Hostmark Street	Fjord-Lioncoln-4th Intersection	Jan-09	26	25
6 th Ave	N of Harrison ¹	Apr-14	33	25
	S of Summerseth ¹	Apr-14	31	25
Jensen Ave	E of Hamilton	Nov-14	28	25
	S of Iverson	Nov-14	25	25
4 th Ave	Between N and S Willet Ln	Oct-15	33	25
	19117 4 th Ave NE	Oct-15	29	25
7 th Ave	W of SR305	Jun-10	28	25
	N of 8th	Jun-10	24	25
Minor Arterials				
<i>Street name</i>	<i>Location of test</i>	<i>Month-Year</i>	<i>85th % Speed (mph)</i>	<i>Posted Speed (mph)</i>
Viking (south of 305)	S of Liberty	Mar-14	43	35
Viking (north of 305)	Kitsap Transit Bus Wash	Oct-17	37	40
	Kitsap Transit Park and Ride	Oct-17	40	40
Front Street	Between Peterson and Jensen	Nov-14	34	25
	Martha and Mary	Nov-14	30	25
	City Center Clock Tower	Nov-14	20	15
Lincoln Ave	10th Intersection ²	Nov-17	30	25
Fjord Ave	Fjord and 6th Ave	Nov-16	26	25
	Net Shed Vista Park	Aug-17	27	25

LEGEND
>10 mph over posted speed
5 to 9 mph over posted speed
<5 mph over posted speed

Notes:

- 1) Post to traffic calming improvements constructed in 2013.
- 2) Prior to traffic calming improvements in 2014.

4 LOCATION EVALUATION

Locations were selected based on accident data as described in Chapter 2. Intersections and street segments identified for site-specific evaluation are listed in Table 4.

Table 4. Location of site-specific evaluations.

INTERSECTIONS	ROAD SEGMENTS
Viking Avenue – Edvard Street	Front Street, Sunset to Jensen
Viking Avenue – Lindvig Street	Hostmark Street, SR305 to Caldart Avenue
Jensen Way - Iverson Street	Lincoln Road, 10 th Avenue to Caldart Avenue
Jensen Way - Front Street	Iverson Street, Jensen Way to 4 th Avenue
Front Street - Torval Canyon Road	7 th Avenue, Iverson Street to Liberty Road
Lincoln Road – 8 th Avenue	Front Street, Hostmark Street to Jensen Way
Lincoln Road – 10 th Avenue	
Lincoln Road – Caldart Avenue	
10 th Avenue – Forest Rock Lane	
Olhava Way – Market Place	

Site-specific evaluations considered prior safety improvement projects relative to the date of the accident. In multiple cases, accident data at a specific location was for a period the preceded improvements at that location. The location of prior roadway safety projects that were completed by City in the approximate 2007-2017 period are shown on Figure 5. Intersections and street segments identified for site-specific evaluation are shown in Figure 6.

4.1 ASSESSMENT AND PRIORITIZATION

Based on accident data, specific locations were selected for additional assessment. These locations are shown in Figure 6 and include both intersections (Table 5) and roadway segments (Table 6).

Location assessments considered both existing safety features and potential improvements. Assessment results are shown in Table 7.

Table 5. Priority Intersections based on Injuries and Accidents.

Intersection	Injury Breakdown			Accident Type		Vehicle Action	No. Taking Action	Contributing Factors ⁵
	Total No. of Accidents ¹	No. Resulting in Injury ²	No. Resulting in Serious Injury ³	Vehicle - Vehicle	Vehicle - Non motorized ⁴			
Viking Ave and Edvard St	6	3	2	6	0	Left Turn Sideswipe	2 2	Inattention, following too closely
Viking Ave; Lindvig and Finn Hill Rd	22	8	1	21	1	Rear End Sideswipe	8 4	Inattention, following too closely
10th Ave and Lincoln Rd	10	5	1	10	0	Rear End	6	Inattention and disregard traffic signal
Front Street; Torval Canyon Rd to Lindvig Way	10	2	1	8	2	Rear end Left Turn	5 2	Inattention, follow too closely, not granting right of way
Front Street and Jensen Way	7	1	1	6	1	Left Turn Left Turn	3 1	Not granting right of way and following too closely
8th Ave and Lincoln Rd	6	1	1	6	0	Left Turn	6	Inattention and not granting right of way
Iverson St and Jensen Way	5	1	1	4	1	Left Turn	3	Not granting right of way
Olhava Way and Market Place	15	4	0	14	1	Left Turn	12	Inattention and not granting right of way
Forest Rock Lane and 10th Ave	11	2	0	10	0	Left Turn	10	Inattention and not granting right of way
Caldart Ave and Lincoln Rd	9	5	0	9	0	Left Turn	8	Inattention and not granting right of way

¹Includes all accidents, both injury and non-injury, between 1/1/2012 - 12/31/2016.

²Injuries include serious, evident, and possible, between 1/1/2012 - 12/31/2016.

³Serious Injury defined as any injury which prevents injured person from walking, driving, or continuing normal activities at the time of the collision; based on WSDOT accident data between 1/1/2007 - 11/21/2017. Includes specific incidents between November 2017 and December 2017.

⁴Nonmotorized includes both Bicycles and Pedestrians, between 1/1/2012 - 12/31/2016.

⁵Based on WSDOT accident report data, 2012-2016.

Table 6. Priority Road Segments based on Injuries and Accidents.

Roadway Segment	Injury Breakdown			Accident Type		Vehicle Action	No. Taking Action	Contributing Factors ⁵
	Total No. of Accidents ¹	No. Resulting in Injury ²	No. Resulting in Serious Injury ³	Vehicle - Vehicle	Vehicle - Non motorized ⁴			
Front Street between Jensen Way and Hostmark St	4	1	0	3	1	Sideswipe Hit Pedestrian	2 1	Inattention
Hostmark between SR305 and Caldart Ave	4	2	1	4	0	Rear End	4	Inattention
Lincoln Rd between 10 Ave and Caldart Ave	5	3	0	4	1	Left Turn Rear End	2 1	Inattention
Iverson Rd between Jensen Way and 7th Ave	6	2	1	5	1	Left Turn Rear End	2 2	Did not grant right of way, inattention
7th Ave between Iverson Rd and Liberty Rd	4	3	0	3	1	Left Turn	3	Inattention

¹Includes all accidents, both injury and non-injury, between 1/1/2012 - 12/31/2016

²Injuries include serious, evident, and possible, between 1/1/2012 - 12/31/2016

³Serious Injury defined as any injury which prevents injured person from walking, driving, or continuing normal activities at the time of the collision; based on WSDOT accident data between 1/1/2007 - 11/21/2017. Includes specific incidents between November 2017 and December 2017.

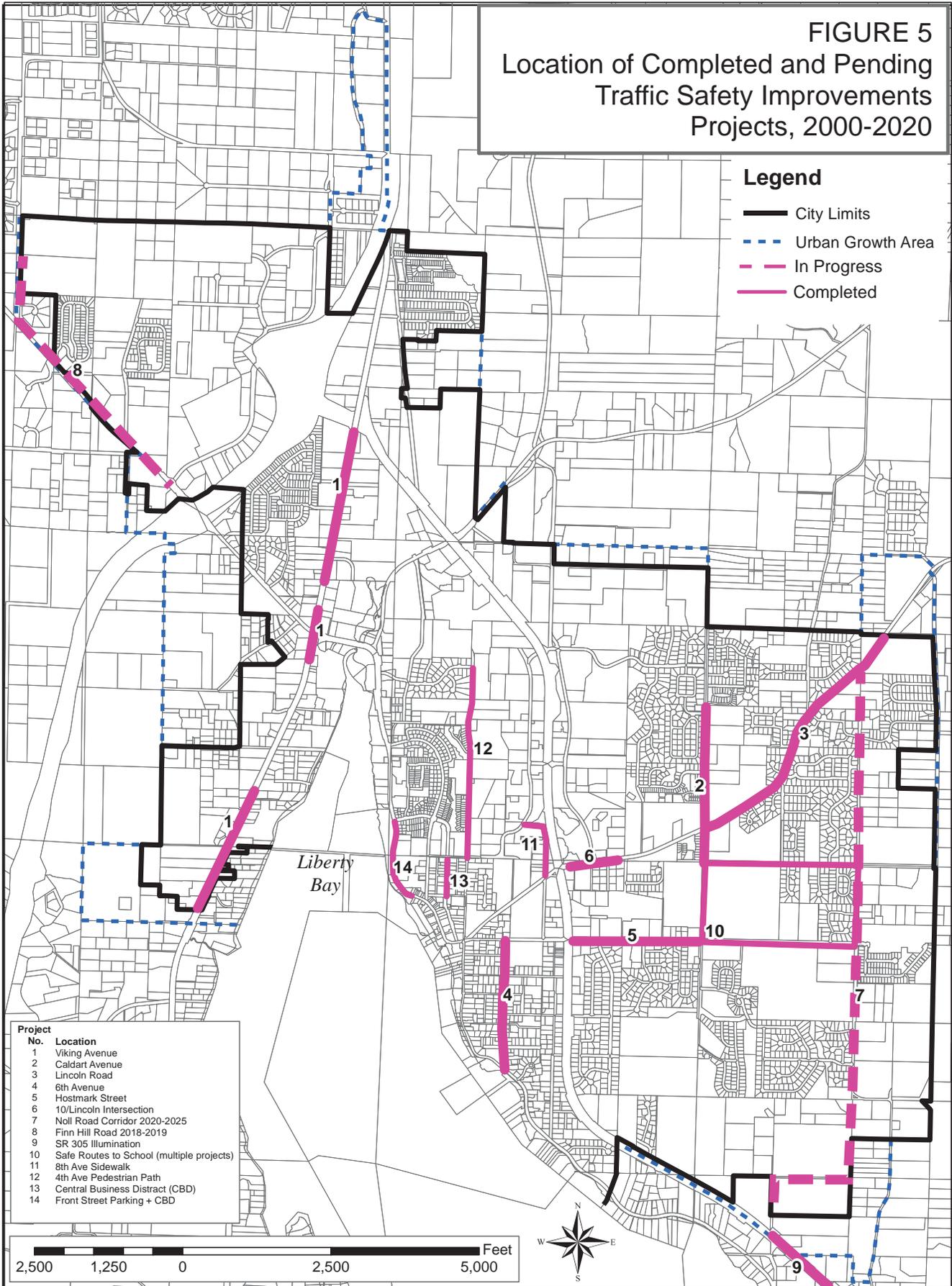
⁴Nonmotorized includes both Bicycles and Pedestrians, between 1/1/2012 - 12/31/2016

⁵Based on WSDOT accident report data, 2012-2016

FIGURE 5
Location of Completed and Pending
Traffic Safety Improvements
Projects, 2000-2020

Legend

-  City Limits
-  Urban Growth Area
-  In Progress
-  Completed



Project No.	Location
1	Viking Avenue
2	Caldart Avenue
3	Lincoln Road
4	6th Avenue
5	Hostmark Street
6	10/Lincoln Intersection
7	Noll Road Corridor 2020-2025
8	Finn Hill Road 2018-2019
9	SR 305 Illumination
10	Safe Routes to School (multiple projects)
11	8th Ave Sidewalk
12	4th Ave Pedestrian Path
13	Central Business Distract (CBD)
14	Front Street Parking + CBD



Infrastructure Map Series Primary Map Sources and Original Scales:
 Kitsap County Assessor's Tax Maps 1:12,000 (Kitsap County IT, GIS Division)
 * Note: Detailed transportation system mapping is in functional plans included as Appendix B.
 2036 Transportation Facilities Improvements are identified in the Comprehensive Plan Section 2 Table S CFP-7 & CFP-8.

This infrastructure map series is intended for general infrastructure planning. These maps are schematic representations of physical features, infrastructure and land ownership boundaries. The map information was derived from available public records and existing sources, not from surveys. Studies may be necessary with project review to verify information.

FIGURE 6
Intersections and Road Segments
Assessed for Safety
Improvement Opportunities

Legend

Injury Type

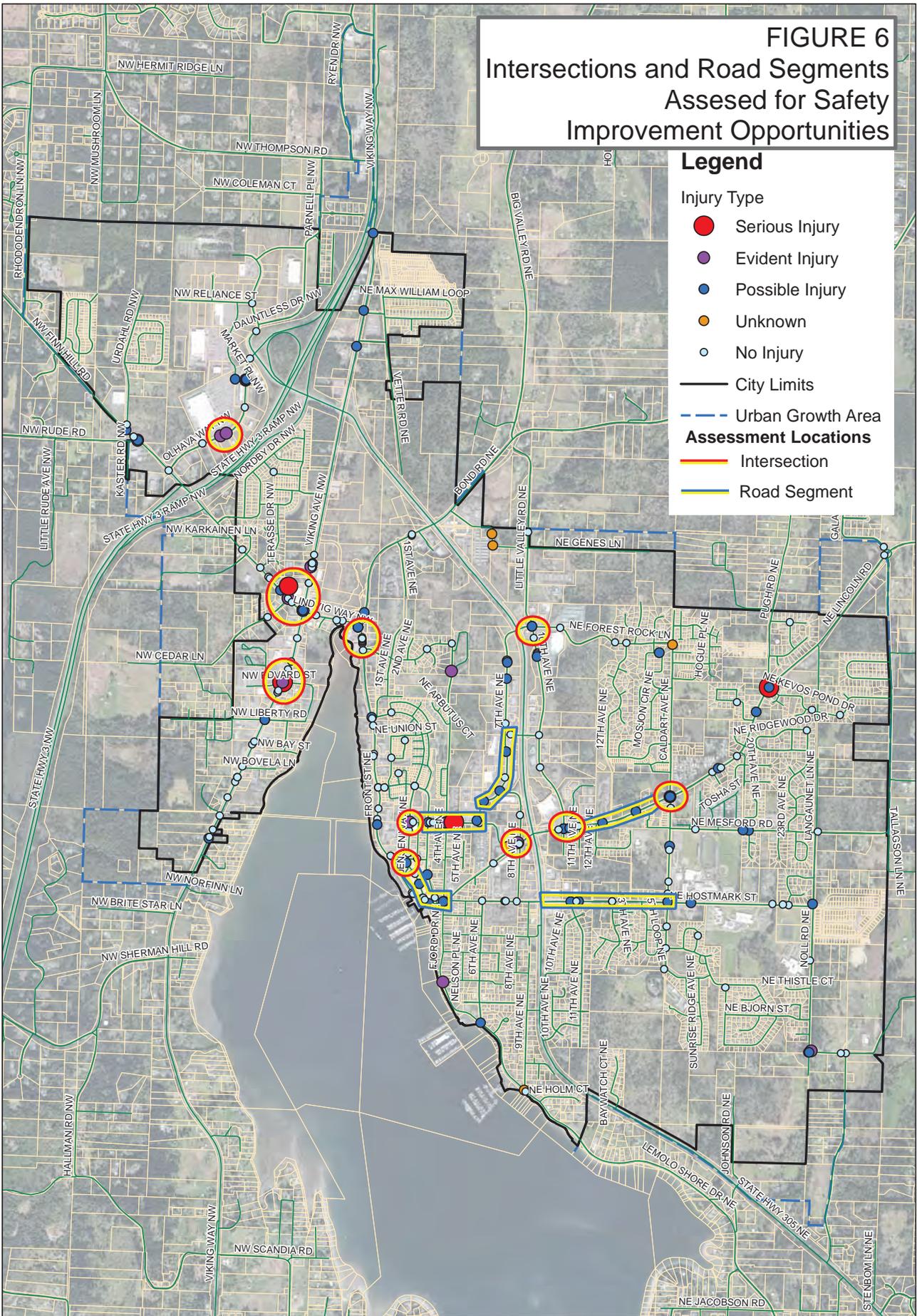
- Serious Injury
- Evident Injury
- Possible Injury
- Unknown
- No Injury

Assessment Locations

- Intersection
- Road Segment

Other Legend Items:

- City Limits
- Urban Growth Area



City of Poulso
 Street and Pedestrian Safety Plan

Source: WSDOT, 2018. Created 3/15/18

This map is intended for general purposes. Maps are schematic representations of physical features, infrastructure, and land ownership boundaries. The information was derived from available public records and existing sources, not from surveys. Data includes reported accidents on local City roads between 1/1/2012 and 12/31/2016.

Table 7. Location Assessment Summary Matrix.

	Signage and Striping										Pedestrian Features							Roadway Features										
	"REDUCE SPEED" Sign	Retroreflective Sign Post Sheets	Hand Held Pedestrian Flags	Pedestrian Area Signs	Sign Backplates w/ retroreflective borders	Radar Speed Sign	Stop Ahead Signs	Crosswalk Placement or Striping	Mid-Block Crosswalk Mitigation	Pedestrian Sidewalk or Walkway	Pedestrian Crossing Refuge Island (LPI)	Pedestrian Light @ Signal	Missing Sidewalk or Gap	Raised Crosswalk	Crosswalk Curb Ramps	Rapid Flashing Beacon	Curb Extensions	Dedicated Left or Right Turn Lane	Roundabout	Road Diet	Site Distance	Crossing Distance	Road grade or slope	Street Parking	Illumination	Access Management/Driveway Conflicts	Constrained Right of Way	Raised Intersection
Intersections																												
Viking Ave and Edvard St ¹																												
Viking Ave; Lindvig and Finn Hill Rd ²																												
10th Ave and Lincoln Rd ³																												
Front Street; Torval Canyon to Lindvig Rd ⁴																												
Front Street and Jensen Way																												
8th Ave and Lincoln Rd ⁵																												
Iverson St and Jensen St ⁶																												
Olhava Way and Market Place ⁷																												
Forest Rock Lane and 10th Ave ⁸																												
Caldart Ave and Lincoln Road																												
Road Segments																												
Front Street between Jensen and Hostmark																												
Hostmark between SR305 and Caldart ⁹																												
Lincoln between 10th Ave and Caldart																												
Iverson between Jensen and 7th ¹⁰																												
7th between Iverson and Liberty																												

Notes:

- ¹ Restripe crosswalk using standard bar pattern for consistency; turn lane striping could be improved; signal backplates with reflective borders could improve visibility; signal phasing/sequence could be evaluated to increase pedestrian crossing interval; Left turn movements yield (amber turn arrow instead of green circle and sign); add dedicated turn lanes and re-stripe. Driveways are close to intersection.
- ² Driveways are close to intersection on SW and NE and NW corners; no Bike Lanes east-west due to constrained right of way and lane configuration.
- ³ Restripe intersection to improve channelization and lane width; consider adding parallel parking to west side of 10th. Missing sidewalk on east side of 10th.
- ⁴ Torval Canyon stop sign could have reflective sleeve. Site distance from Torval leg is potentially limited. Potential curb extension on SE corner of Torval CR along with Front Street parking (road diet), may increase site distance and shorten crossing distance.
- ⁵ Poor Crossing Distance, Site Distance is also an issue. Large amount of traffic across crosswalk to Coffee Oasis.
- ⁶ Corner building restricts pedestrian visibility. Potential curb extensions on SE and SW corner of Jensen could reduce crossing distance and improve pedestrian crossing.
- ⁷ Higher traffic volumes at intersection complicated due to 2 legs of intersection are private (public road is straight through). Site distance may be restricted on private access. Signage and striping could be improved. Intersection control may be warranted. Recommend additional study to identify intersection control and safety improvement options.
- ⁸ Congestion from SR305 extends into and through intersection during peak periods. 10th Ave pedestrian crossing striping could be improved; potential to add dedicated lane or adjust queue length at SR305 signal.
- ⁹ Illumination could be improved between Caldart and SR 305. Enhance signage at Caldart and Hostmark intersection.
- ¹⁰ Illumination could be improved between 4th and 7th Ave. Missing sidewalk on south side between Jensen and 3rd. Potential for road diet on WB Iverson towards 4th from 7th. Additional striping may increase pedestrian comfort along sidewalk.

5 PROPOSED PROJECTS

Proposed projects include one specific spot location, and multiple systemic improvements sites. Figure 7 shows project locations. Table 8 shows a list of projects and estimated costs. Appendix A and B provides additional project details.

5.1 SITE SPECIFIC PROJECT

The Iverson Street Corridor spot location project will focus on improving pedestrian and bicycle safety by installing curb extensions, sidewalks, crosswalk ramps and a pedestrian refuge island. The three block Iverson Street corridor between Jensen Street and 4th Avenue has had the highest incidence in the City of vehicle-pedestrian accidents in the 2007-2017 period, with four separate injury accidents (3 serious, 1 evident).

As described in Chapters 2 and 3, accidents at this location have been due primarily to vehicles failing to yield to pedestrians. The project therefore focuses on providing improved visibility, enhanced crosswalks, and dedicated sidewalks where a gap in the system currently exists.

The project will begin at the intersection of Jensen Way NE and NE Iverson Rd. The intersection will be retrofitted with curb extensions on all four legs, new crosswalk ramps and striping and new stop bars. These improvements will increase pedestrian and vehicle visibility and will reduce crossing distance, as well as provide traffic calming.

The project will also include a road diet for Iverson Street consisting of reducing the lane width from 15-ft to 11-ft and adding about 400-ft of new 6-ft wide sidewalk and curb ramps to the south side from Iverson Road from Jensen Way to 4th Avenue. A short segment (120-ft) of 4-ft wide sidewalk will be replaced with a 6-ft sidewalk. This project element will improve pedestrian safety by getting pedestrians off the asphalt shoulder and onto a sidewalk and will provide improved connectivity in the urban commercial area includes a Post Office, theatre and numerous commercial businesses. The project also includes improvements to a pedestrian refuge island at the intersection of Iverson Rd and 4th Ave NE. No additional right of way is needed to implement these projects.

These countermeasures specifically address the identified risk factors at this. The estimated cost for this project is \$374,000. Refer to the preliminary project plan and cross-section, and engineering design and construction cost estimate in Appendix A for additional detail.

5.2 SYSTEMIC IMPROVEMENTS

The systemic intersection improvements project consists of a combination of striping, leading pedestrian interval (LPI), crosswalk and signage improvements at five intersection locations in the City. Specific countermeasures were identified for each location based on individual site review and analysis. Refer to Appendix B for additional detail on specific potential site improvements and costs. No additional right of way is needed to implement these projects. Systemic improvements are proposed as follows:

Table 8. Proposed Safety Projects.

Location	Potential Risk Factors	Potential Countermeasures	Proposed Countermeasures General Description	Implementation Strategy	Est. Cost
SITE SPECIFIC PROJECT					
Iverson Street between Jensen Street and 4th	Sidewalk gap, site distance, crossing distance	Curb extensions, Road Diet, Access Management, Sidewalks	Sidewalk gaps, curb ramps, curb extensions, striping	Site Specific 2018 safety grant application	\$374,000
SYSTEMIC SAFETY IMPROVEMENT PROJECT SITES					
Viking Ave - Edvard Street	Speeds, Crossing Distance, Site Distance, Driveway Conflicts, Mid-Block Crosswalks	Systemic Improvements	Striping, Leading Pedestrian Interval (LPI), Access Control	Part of 2018 safety grant application	\$35,000
Viking Ave – Lindvig St Road Intersection	Speeds, Crossing Distance	Systemic improvements	LPI, eliminate mid-block crossing at Fish Park	Part of 2018 safety grant application	\$10,000
Forest Rock Lane - 10th Avenue Intersection	Speeds, turning movements	Systemic improvements	Lane Striping, Signs	Potential part of 2018 safety grant application	\$30,000
Hostmark Street and Caldart Ave	Speeds, School Zone, Crossing Location	Systemic improvements	Enhanced signage, curb extension, pedestrian RFB at Caldart Ave	Part of 2018 safety grant application	\$50,000
Front Street, Jensen to Peterson	Mid-Block Crossings	Systemic improvements	Evaluate and remove or enhance existing mid-block crosswalks	Part of 2018 safety grant application	\$75,000
Engineering, Permits, and Project Management and Contingency					\$60,000
Total Systemic Improvements Grant Application					\$260,000
Total Grant Application					\$634,000

5.2.1 Crosswalk and Channelization Restriping

Restriping is proposed at multiple locations to better define travel lanes, improve traffic queueing, implement road diets, better define turning movements, and to upgrade crosswalk striping to be consistent with other areas of the City. Specific locations for this countermeasure are as follows:

5.2.1.1 Priority Location 1: Viking Avenue - Edvard Street Intersection

Proposed improvements at this location consist of the following:

- Restripe stop bar and crosswalks on all legs.
- Restripe left turn channelization on Viking Avenue.
- Add lane extension striping through intersection on Viking Avenue.

5.2.1.2 Priority Location 2: 10th Avenue – Forest Rock Lane Intersection

Proposed improvements at this location consist of the following:

- Restripe stop bar and crosswalks on all legs.
- Restripe left turn channelization on Forest Rock Lane between 10th Avenue and SR305.
- Add lane extension striping through intersection.

5.2.2 Re-program Pedestrian Crossing Signals to include Leading Pedestrian Interval (LPI)

Reprogramming pedestrian crossing for LPI is proposed on Viking Avenue where crossing distances are relatively large, and traffic volumes can be relatively high. The LPI can give the pedestrians a head start across the intersection, which will reduce accidents that may be due to failing to yield. Specific locations for this countermeasure are as follows:

5.2.2.1 Priority Location 1: Viking Avenue - Edvard Street Intersection

Proposed improvements at this location consist of the following:

- Evaluate traffic volumes and turning movements.
- Reprogram pedestrian signal for leading pedestrian interval.

5.2.2.2 Priority Location 2: Viking Avenue – Lindvig Road Intersection

Proposed improvements at this location consist of the following:

- Evaluate traffic volumes and turning movements.
- Reprogram pedestrian signal for leading pedestrian interval.

5.2.3 Replace/relocate Crosswalks

Crosswalk replacement or relocation are proposed at multiple locations to reduce crossing distances, increase visibility and provide refuge opportunities. Specific locations for this countermeasure are as follows:

5.2.3.1 Priority Location 1: Viking Avenue - Edvard Street Intersection

Proposed improvements at this location consist of the following:

- Remove mid-block crosswalk east of intersection.

5.2.3.2 Priority Location 2: Viking Avenue – Lindvig Road Intersection.

Proposed improvements at this location consist of the following:

- Remove mid-block crosswalk north of intersection.

5.2.3.3 Priority Location 3: Front Street -Jensen Street

Proposed improvements at this location consist of the following:

- Remove two mid-block crosswalks between Jensen Street and Sunset Street.
- Add two refuge islands to remaining two mid-block crosswalks.

5.2.3.4 Priority Location 4: Hostmark Street – Caldart Street Intersection

Proposed improvements at this location consist of the following:

- Relocate crosswalk ramps and replace stop bar location on east side of Hostmark Street at Caldart Avenue.

5.2.4 Pedestrian and Vehicle Signage Improvements

Signage improvements are proposed to provide improved warnings to vehicles of the presence of pedestrians, and to reduce left turn vehicle conflicts at intersections with driveway spacing conflicts. Specific locations for this countermeasure are as follows:

5.2.4.1 Priority Location 1: Front Street - Jensen Street

Proposed improvements at this location consist of the following:

- Add pedestrian activated Rapid Flashing Beacons at two mid-block crosswalks.

5.2.4.2 Priority Location 2: Hostmark Street – Caldart Street Intersection

Proposed improvements at this location consist of the following:

- Add pedestrian activated Rapid Flashing Beacons at the intersection.

5.2.4.3 Priority Location 3: Viking Avenue - Edvard Street Intersection

Proposed improvements at this location consist of the following:

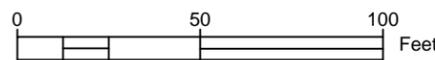
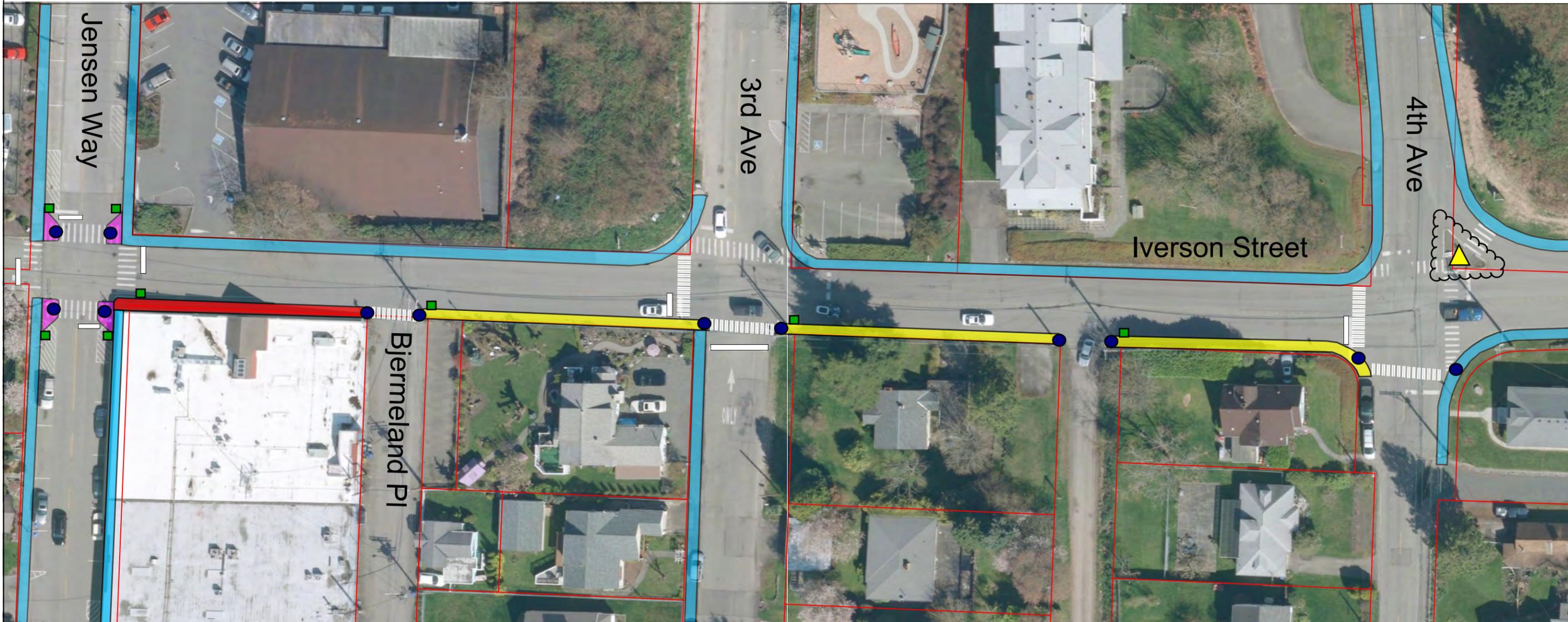
- Add turning movement and pedestrian signs.

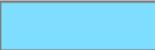
5.2.4.4 Priority Location 4: 10th Avenue – Forest Rock Lane Intersection

Proposed improvements at this location consist of the following:

- Add turning movement and pedestrian signs.

APPENDIX A – IVERSON STREET SPOT LOCATION DETAILS



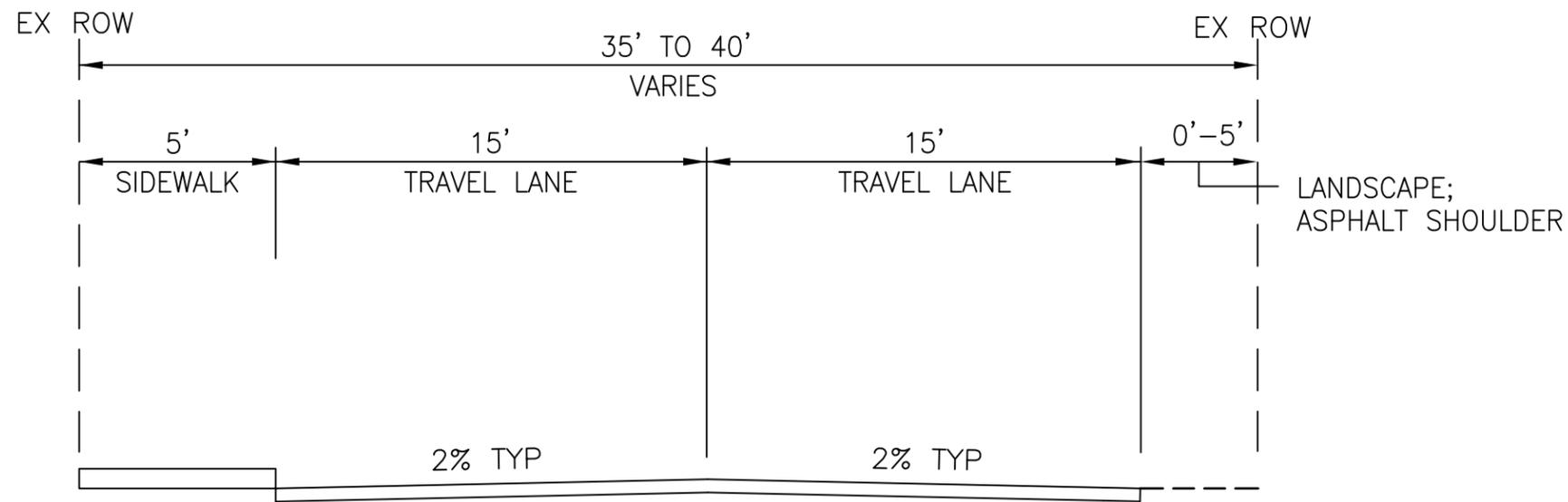
-  Existing Sidewalk
-  Proposed New Sidewalk
-  Proposed Replaced Sidewalk
-  Proposed Curb Extension
-  Proposed New Sidewalk
-  Proposed New Stop Bar
-  Proposed New Type 1 CB
-  Proposed New Curb Ramp
-  Proposed New Median Island

DRAWN:
C. ROBERTS

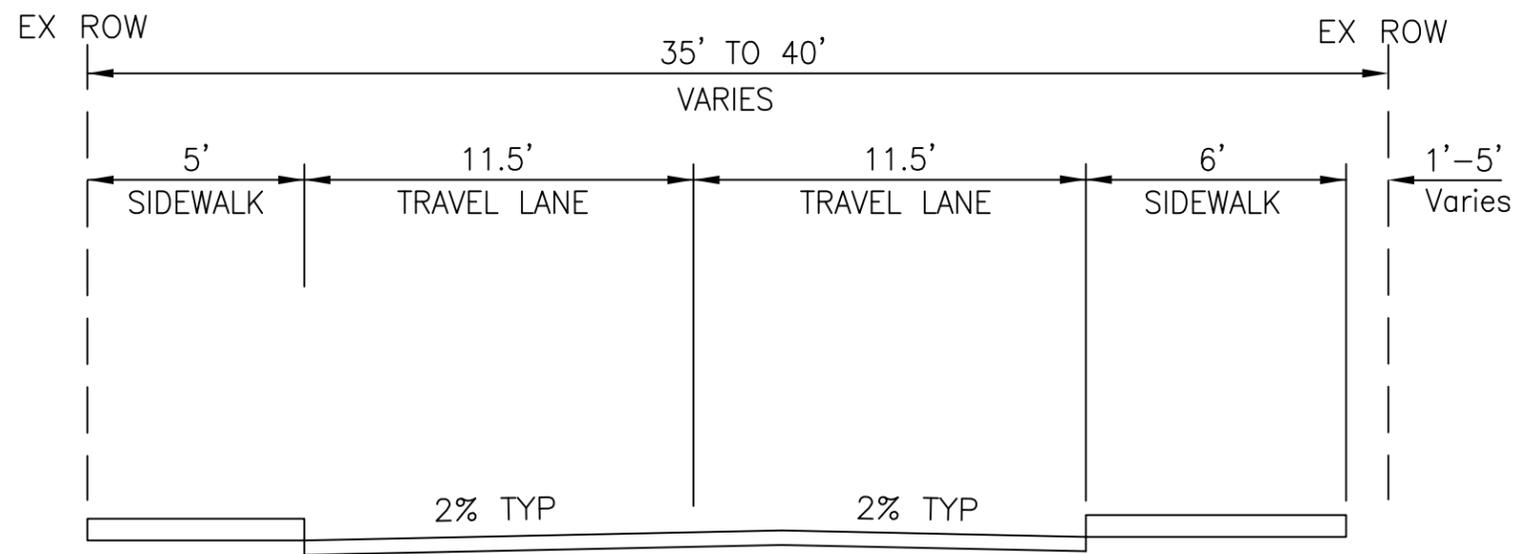
SCHEMATIC PLAN
APRIL 2018



EXHIBIT 1
IVERSON STREET CORRIDOR
SAFETY IMPROVEMENTS



IVERSON STREET EXISTING
TYPICAL SECTION
NTS



IVERSON STREET PROPOSED
TYPICAL SECTION
NTS

DRAWN:
C. ROBERTS

TYPICAL SECTIONS
APRIL 2018



EXHIBIT 4
IVERSON STREET CORRIDOR
SAFETY IMPROVEMENTS

SHEET
2 OF 2

CITY OF POULSBO
2018 WSDOT SAFETY GRANT
4/9/2018



PROJECT: Iverson Street Corridor Safety Improvements
Preliminary Construction Cost Estimate

Description: Add curb extensions to all 4 legs of the Iverson Street-Jensen Street intersection, replace crosswalk ramps and intersection striping. Add sidewalk to south side Iverson Street between Jensen Street and 4th Avenue. Install curb ramps on south side of Iverson at street crossings. Narrow and restripe Iverson Street vehicle lanes.

Item	Description	Unit	No.	Unit Cost	Total
1	Mobilization	LS	1	\$23,000	\$23,000
2	Remove Conc. Sidewalk	SY	100	\$15	\$1,500
3	Saw Cut Asphalt	LF	900	\$10	\$9,000
4	Remove Asphalt	SY	500	\$10	\$5,000
5	Traffic Curb and Gutter	LF	700	\$35	\$24,500
6	6-ft conc. sidewalk	SY	300	\$60	\$18,000
7	Crosswalk Ramps	EA	12	\$2,500	\$30,000
8	Crosswalks Striping	EA	12	\$400	\$4,800
9	Stop Bar Striping	EA	7	\$400	\$2,800
10	HMA	TON	200	\$100	\$20,000
11	Striping	LS	1	\$4,000	\$4,000
12	Signage	LS	1	\$3,000	\$3,000
13	Type 1 CB	EA	8	\$1,500	\$12,000
14	Storm pipe 8-in dia.	LF	200	\$100	\$20,000
15	Landscape	LS	1	\$4,000	\$4,000
16	Adjust/Relocate Utilities	LS	1	\$15,000	\$15,000
17	Traffic Control	LS	1	\$30,000	\$30,000
18	Concrete Driveway Ramp	EA	3	\$2,500	\$7,500
19	Median Island	LS	1	\$15,000	\$15,000
				<i>Subtotal</i>	<i>\$249,100</i>
21	Survey and Engineering			15.0%	\$37,500
22	Pro Mgmt and CM			10.0%	\$24,910
23	Management Reserve and Cont.			25.0%	\$62,275
				Total Est Cost	\$373,785

CITY OF POULSBO
2018 WSDOT SAFETY GRANT
 4/9/2018



PROJECT: Iverson Street Corridor Safety Improvements
Preliminary Engineering Design Budget

Description: Add curb extensions to all 4 legs of the Iverson Street-Jensen Street intersection, replace crosswalk ramps and intersection striping. Add sidewalk to south side Iverson Street between Jensen Street and 4th Avenue. Install curb ramps on south side of Iverson at street crossings. Narrow and restripe Iverson Street vehicle lanes.

Task	Description	Unit	No.	Unit Cost	Total
1	Survey	EA	1	\$7,000	\$7,000
2	30% Design	HR	80	\$75	\$6,000
3	Environmental review and Permits	HR	40	\$75	\$3,000
4	60% Plans and Cost Estimate	HR	80	\$75	\$6,000
5	90% Plans, Specifications and Cost Estimate	HR	80	\$75	\$6,000
6	Final Bid Documents	HR	40	\$75	\$3,000
7	Stakeholder Coordination	HR	40	\$75	\$3,000
8	Project Management	EA	40	\$75	\$3,000
	Direct Expenses	LS	1	\$500	\$500
Total Est Cost					\$37,500

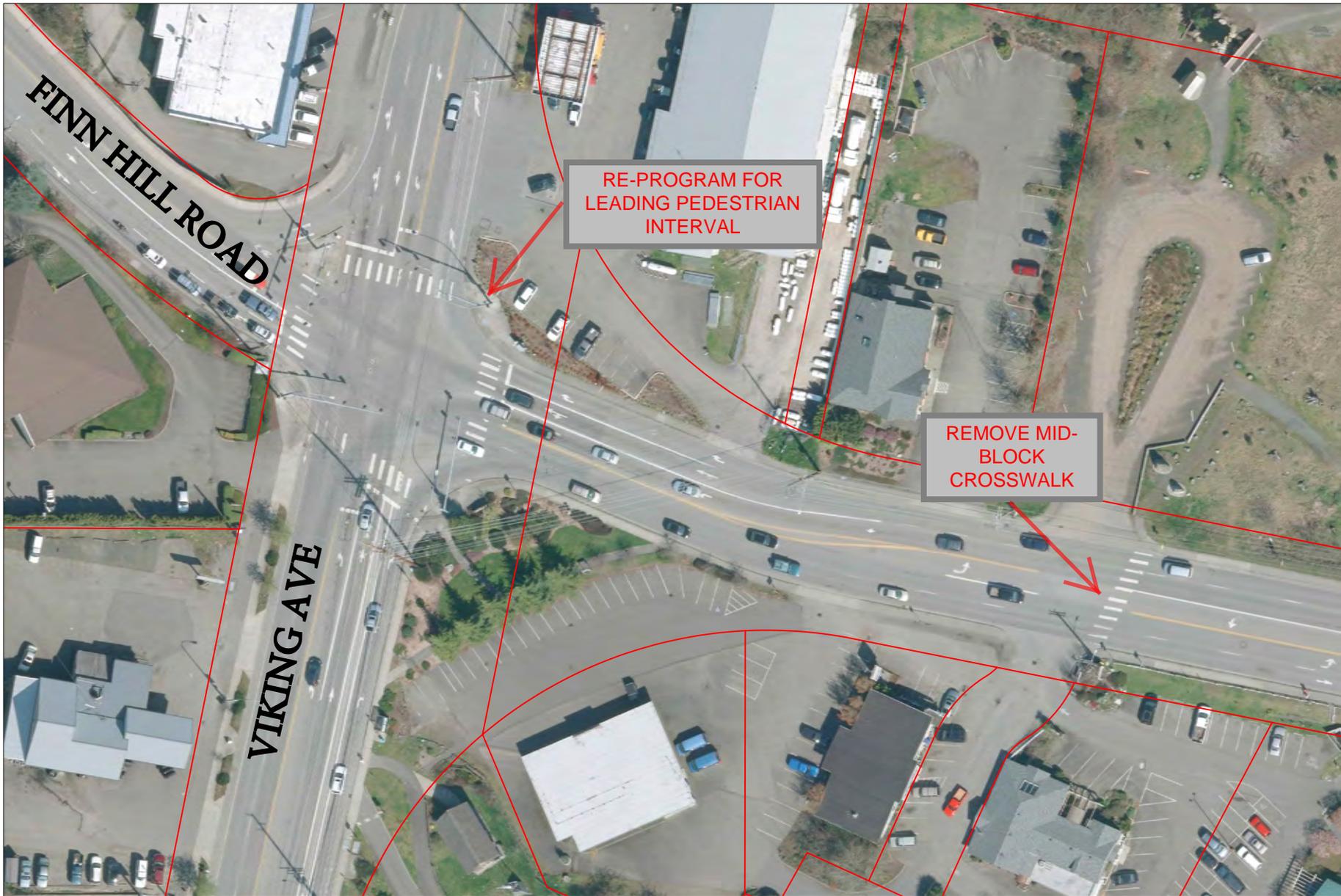
APPENDIX B – SYSTEMIC IMPROVEMENT DETAILS



NOT TO
SCALE

EXHIBIT 1
CITY OF POULSBO
SYSTEMIC INTERSECTION
SAFETY IMPROVEMENTS

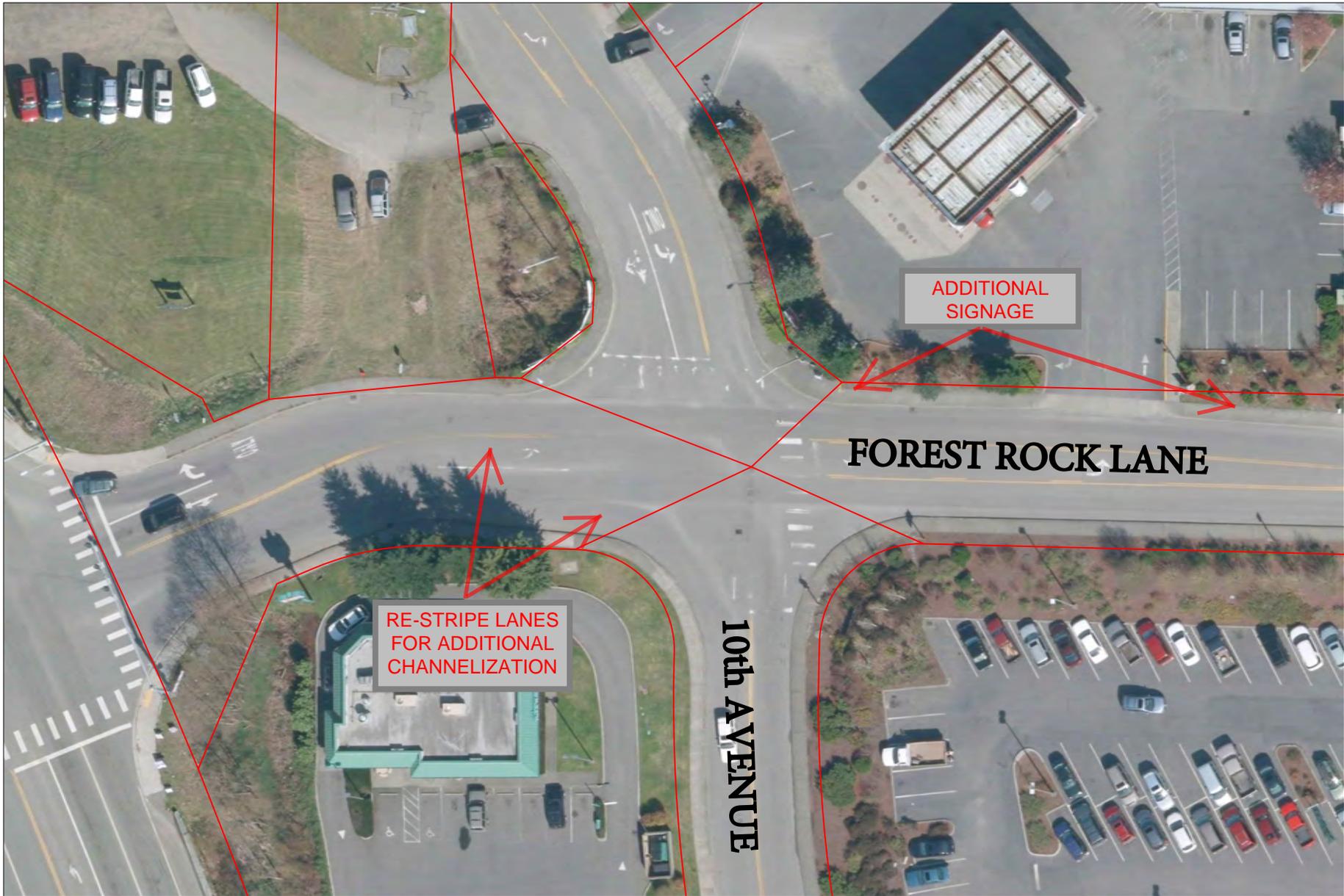
**VIKING AVE AND EDVARD
STREET INTERSECTION SAFETY
IMPROVEMENTS
CONCEPT PLAN**



NOT TO
SCALE

EXHIBIT 2
CITY OF POULSBO
SYSTEMIC INTERSECTION
SAFETY IMPROVEMENTS

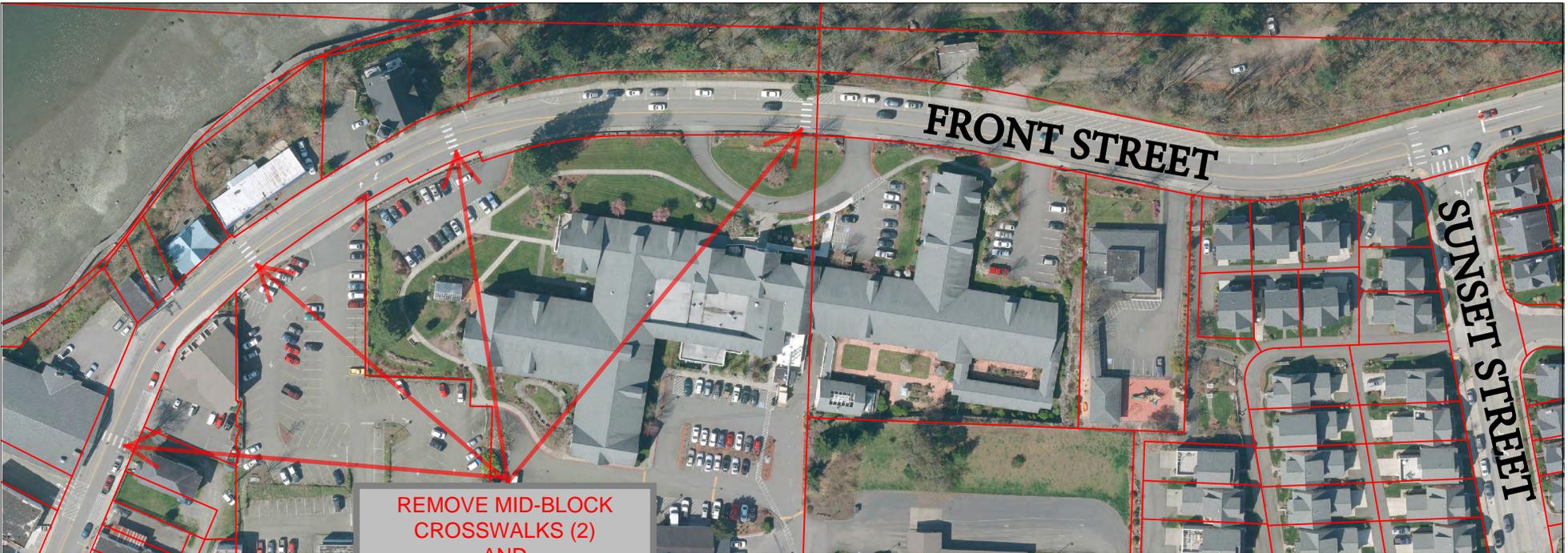
**VIKING AVE - FINN HILL RD
STREET INTERSECTION SAFETY
IMPROVEMENTS
CONCEPT PLAN**



NOT TO
SCALE

EXHIBIT 3
CITY OF POULSBO
SYSTEMIC INTERSECTION
SAFETY IMPROVEMENTS

**FOREST ROCK LANE AND 10th
AVE INTERSECTION SAFETY
IMPROVEMENTS
CONCEPT PLAN**



REMOVE MID-BLOCK
CROSSWALKS (2)
AND
ADD REFUGE ISLAND (2)
AND
INSTALL RAPID FLASHING
BEACON (2)



NOT TO
SCALE

EXHIBIT 4
CITY OF POULSBO
SYSTEMIC INTERSECTION
SAFETY IMPROVEMENTS

**FRONT STREET - SUNSET
STREET SAFETY
IMPROVEMENTS
CONCEPT PLAN**



NOT TO
SCALE

EXHIBIT 5
CITY OF POULSBO
SYSTEMIC INTERSECTION
SAFETY IMPROVEMENTS

**HOSTMARK STREET - CALDART
AVE INTERSECTION SAFETY
IMPROVEMENTS
CONCEPT PLAN**



PROJECT: Systemic Intersection Safety Improvements
Preliminary Cost Estimate

Description: Systemic Improvements at multiple intersections consisting of restriping, mid-block crosswalk removal, signs, and leading pedestrian interval signal upgrades.

Item	Description	Unit	No.	Unit Cost	Total
1	Cross Walk and Channelization Restriping				
1.1	Viking Avenue - Edvard Street Intersection Restripe all Legs	LS	1	\$10,000	\$10,000
1.2	10th Avenue - Forest Rock Lane Intersection Restripe to SR305	LS	1	\$10,000	\$10,000
				Subtotal	\$20,000
2	Reprogram Signals for Leading Pedestrian Interval				
2.1	Viking Avenue - Edvard Street Intersection	LS	1	\$7,000	\$7,000
2.2	Viking Avenue - Lindvig Street Intersection	LS	1	\$7,000	\$7,000
				Subtotal	\$14,000
3	Replace/Relocate Crosswalks				
3.1	Viking Avenue - Edvard Street Intersection Remove Mid Block	LS	1	\$15,000	\$15,000
3.2	Viking Avenue - Lindvig Street Intersection Remove Mid Block	LS	1	\$15,000	\$15,000
3.3	Hostmark Street- Caldart Avenue Relocate Crosswalk	LS	1	\$15,000	\$15,000
3.4	Front Street - Sunset Street Remove Mid Block	EA	2	\$10,000	\$20,000
3.5	Front Street - Sunset Street Refuge Islands	EA	2	\$10,000	\$20,000
				Subtotal	\$85,000
4	Pedestrian and Vehicle Sign Improvements				
4.1	Hostmark Street- Caldart Avenue Solar RFB	LS	1	\$18,000	\$18,000
4.2	Front Street - Sunset Street Solar RFB, two locations	EA	2	\$15,000	\$30,000
4.3	10th Avenue - Forest Rock Lane Intersection, warning signs	LS	1	\$2,000	\$2,000
4.4	Viking Avenue - Edvard Street Intersection, turning signs	LS	1	\$2,000	\$2,000
				Subtotal	\$52,000
				TOTAL CONSTRUCTION	\$171,000
5	Survey and Engineering			15.0%	\$29,500
6	Pro Mgmt and CM			10.0%	\$17,100
7	Management Reserve and Cont.			25.0%	\$42,750
				Total Est Cost	\$260,350

CITY OF POULSBO
2018 WSDOT SAFETY GRANT
 4/9/2018



PROJECT: Systemic Intersection Safety Improvements
Preliminary Engineering Design Budget

Description: Add curb extensions to all 4 legs of the Iverson Street-Jensen Street intersection, replace crosswalk ramps and intersection striping. Add sidewalk to south side Iverson Street between Jensen Street and 4th Avenue. Install curb ramps on south side of Iverson at street crossings. Narrow and restripe Iverson Street vehicle lanes.

Task	Description	Unit	No.	Unit Cost	Total
1	Survey	EA	1	\$8,000	\$8,000
2	30% Design	HR	80	\$75	\$6,000
3	Environmental Review and Permits	HR	20	\$75	\$1,500
4	60% Plans and Cost Estimate	HR	60	\$75	\$4,500
5	90% Plans, Specifications and Cost Estimate	HR	40	\$75	\$3,000
6	Final Bid Documents	HR	40	\$75	\$3,000
7	Stakeholder Coordination	HR	20	\$75	\$1,500
8	Project Management and Admin	EA	20	\$75	\$1,500
	Direct Expenses	LS	1	\$500	\$500
				Total Est Cost	\$29,500