

UMATILLA RIVER BRIDGE
PRELIMINARY ENGINEERING REPORT

JULY 2022



Prepared for
City of Hermiston, Oregon
City of Umatilla, Oregon
Umatilla County, Oregon

DRAFT

**UMATILLA RIVER BRIDGE
PRELIMINARY ENGINEERING REPORT**

FOR

**CITY OF HERMISTON, OREGON
CITY OF UMATILLA, OREGON
UMATILLA COUNTY, OREGON**

2022



ANDERSON PERRY & ASSOCIATES, INC.

**La Grande, Redmond, and Hermiston, Oregon
Walla Walla, Washington**

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Executive Summary

A. Introduction

This Executive Summary briefly presents the results of the Umatilla River Bridge Preliminary Engineering Report (PER) prepared by Anderson Perry & Associates, Inc., for the City of Hermiston, Oregon, in partnership with the City of Umatilla and Umatilla County. The findings outlined herein have been developed in cooperation with each of these three benefitting jurisdictions. The focus of this PER is to compare two potential locations for a bridge crossing the Umatilla River. The two locations considered are at W. Punkin Center Road and W. Elm Avenue. This PER includes a high-level analysis of the existing transportation system and how the construction of a bridge would affect the system. This PER discusses recommended improvements to the transportation system based on the traffic analysis and bridge location and provides high-level project cost estimates for each project necessitated by bridge construction for comparison purposes. Additionally, it includes a discussion of the impacts to land use and acquisition and explores environmental, permitting, and cultural resource requirements and recommendations. This Executive Summary includes a brief discussion of the transportation system analysis; recommended improvements to the transportation system; and permitting, environmental, and cultural resource requirements. This PER also includes a summary of the bridge location selected by the benefitting jurisdictions as a result of this PER. For a more detailed discussion of the information presented in this Executive Summary, refer to the individual chapters of this PER.

The benefitting jurisdictions recognize the need for this PER, as installation of an additional bridge over the Umatilla River has been included in the City of Hermiston's Transportation System Plan (TSP) since 1997. Hermiston's TSP has never identified which of the two proposed locations is the best option. This PER will act as a guide to enable the benefitting jurisdictions to ultimately select the most appropriate location for the Umatilla River Bridge.

B. Transportation System

Because constructing a new bridge across the Umatilla River will significantly impact traffic flow conditions, a transportation system analysis was conducted by Kittelson & Associates, Inc. Four scenarios were analyzed, including existing traffic conditions, projected traffic conditions in the future with no bridge constructed, projected traffic conditions in the future with a bridge constructed in line with W. Elm Avenue, and projected traffic conditions in the future with a bridge constructed in line with W. Punkin Center Road. The travel corridors are depicted on Figures 4-1A through 4-1D and 4-2A through 4-2C in Chapter 4. The Interstate 82 interchange on Powerline Road and U.S. Highway 395 is at the end of the travel corridors and is generally excluded from the scope of this PER. The analysis found that future conditions would exceed the capacity of much of the existing infrastructure. Improvements recommended in this PER include turning lanes, traffic signals, new sections of roadway, and the bridge structure itself. Furthermore, infrastructure improvements necessitate the acquisition of additional right-of-way (ROW). Total estimated project costs, including ROW acquisition, construction, engineering fees, contingencies, etc., for the various improvements discussed in this PER total approximately \$48.82 million for the Elm Avenue option and approximately \$43.6 million for the Punkin Center Road option. These costs do not include costs associated with permitting, environmental, and cultural resource requirements.

C. Land Use and Acquisition

A new bridge across the Umatilla River would fundamentally change traffic patterns and future land use. ROW acquisition would be needed to enable construction of the recommended improvements. Estimated costs discussed above include ROW acquisition and are based on properties' real market values. The recommended ROW width of the travel corridor was assumed to be 90 feet. Figures 4-1A through 4-1D and 4-2A through 4-2C in Chapter 4 show ROW acquisition locations for properties adjacent to potential future travel corridors.

Properties adjacent to each potential travel corridor have various zoning designations. Zoning designations encompass the zones identified by the City of Hermiston, City of Hermiston Comprehensive Use Plan, and Umatilla County. In Chapter 4, Figure 4-5A, City of Hermiston Zoning, shows the zoning designations of the land within city limits; Figure 4-5B, Umatilla County Zoning, shows the zoning designations of the land outside city limits and the urban growth boundary (UGB); and Figure 4-5C, Comprehensive Land Use Map, shows the zoning designations of the land outside of city limits but within the UGB. Each potential bridge location would provide access to the west side of the river and has substantial potential to encourage development along the new travel corridor. Much of the new travel corridor would pass through what is now mostly rural farmland. To further encourage development, land use and zoning designations would need to be modified to allow for more urbanized land use types such as commercial, industrial, and residential. The Elm Avenue option would provide a more direct path to the heart of the City of Hermiston, which could be advantageous for connectivity, but would come at the cost of significantly increased traffic. Although connectivity to the city center would not be directly achieved with the Punkin Center Road option, this option would generally provide more favorable traffic conditions than the Elm Avenue option.

D. Permitting, Environmental, and Cultural Resources

New bridge construction, to some extent, will impact local natural resources as defined and discussed in Goal 5 of Umatilla County's Comprehensive Land Use Plan. Goal 5 resources include riparian corridors, wetlands, wildlife habitat, and cultural areas. A new bridge is anticipated to impact wetlands, waterways, floodplains, and farmland. Endangered Species Act-listed species occur within the project corridor options. A new bridge would result in new impervious surfaces. Two parks, Butte Park, which is funded by the Land and Water Conservation Fund, and the disc golf course, are located adjacent to the Elm Avenue option. Several Oregon Department of Environmental Quality permitted sites are located adjacent to the project corridor options, resulting in a chance of contaminated soils being encountered during construction. A Bureau of Land Management (BLM)-owned natural area is located adjacent to the Punkin Center Road option.

Estimated costs for potential permits and environmental clearances that could be required for the new bridge total \$574,000 for the Elm Avenue option and \$624,000 for the Punkin Center Road option. The funding agency will determine which environmental permits and consultation will be required for the proposed project. If federal funding is utilized, an Environmental Assessment will be required. Since a portion of the Punkin Center Road option corridor occurs on BLM-owned land, the project may be subject to BLM National Environmental Policy Act requirements and an extensive environmental review process.

E. Selected Improvements and Project Implementation

Forthcoming.

Chapter 1 - Introduction and Background

A. Introduction

The purpose of this Preliminary Engineering Report is to identify and compare the strengths, weaknesses, requirements, high-level planning costs, and implications for constructing a bridge across the Umatilla River in one of two locations. Because inflation is currently unpredictable, all estimated costs are given for the year 2022. Inflation will need to be accounted for depending on the year the bridge is constructed. The two bridge crossing locations considered are at W. Elm Avenue and W. Punkin Center Road. See Figure 1-1 for the location and vicinity maps and Figure 1-2 for an aerial view of the potential project locations. The two bridge options were chosen based on the City of Hermiston's Transportation System Plan (TSP), which identified these locations for potential bridge options. A specific option was not selected in the TSP likely because there was not enough information readily available at the time to make an informed decision. This document will aid all benefitting jurisdictions involved in making an informed decision when selecting a bridge option.

B. Historical Background

In 1985 the U.S. Congress passed a law that created the Chemical Stockpile Emergency Preparedness Program (CSEPP) and directed the Army to dispose of stored aging chemical weapons. This was done with the protection of the public and environment as its primary objective. Federal funding through the CSEPP was available for projects related to stored chemical weapons at the Umatilla Army Depot, approximately 4 miles west of Hermiston. A bridge across the Umatilla River was originally proposed as an emergency evacuation route sometime during the 1990s. The proposal was ultimately not supported by the CSEPP, and a bridge was not constructed at that time. Although construction did not occur during that period, the two bridge options were adopted as part of Hermiston's original TSP in 1997. Although low on the priority list in the 1997 TSP, a bridge across the Umatilla River has become increasingly important as time has passed and urban growth has continued.

C. Demand for Umatilla River Bridge

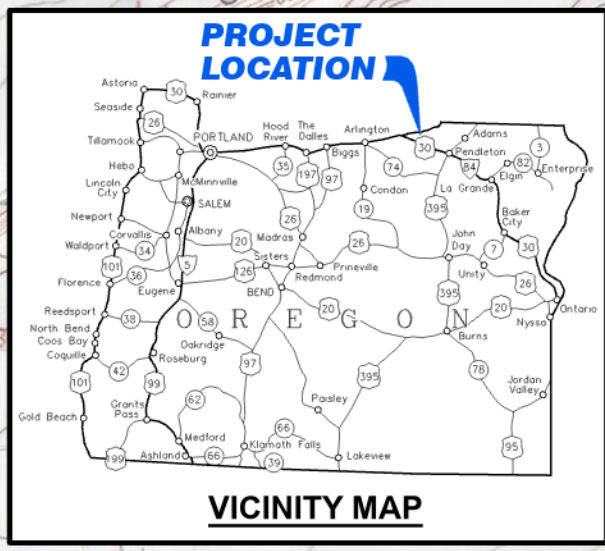
Although not immediately necessary, the forecasted urban growth within Umatilla County has made apparent the need to plan for an additional bridge across the Umatilla River in the future. As part of this planning, it is prudent that one of the two options for the bridge location be selected well in advance of actual project initiation. Although a time frame for bridge construction is difficult to determine, local officials estimate that bridge construction will not occur until at least the year 2032. Selecting the location this far in advance will enable local officials to make informed decisions about growth and development in Umatilla County.

The City of Hermiston anticipates that their urban growth boundary will eventually include sections of land west of the Umatilla River. A second bridge spanning the Umatilla River would reduce the likelihood of bottlenecks at the current bridge location where Bridge Road becomes West Highland Avenue and would favorably alter local traffic conditions in the City of Hermiston and Umatilla County. The second bridge would also encourage growth on the west side of the Umatilla River. Because growth, especially urban growth, is usually associated with strong economic conditions, growth on the west side of the Umatilla River would benefit both Umatilla County and the City of Hermiston.

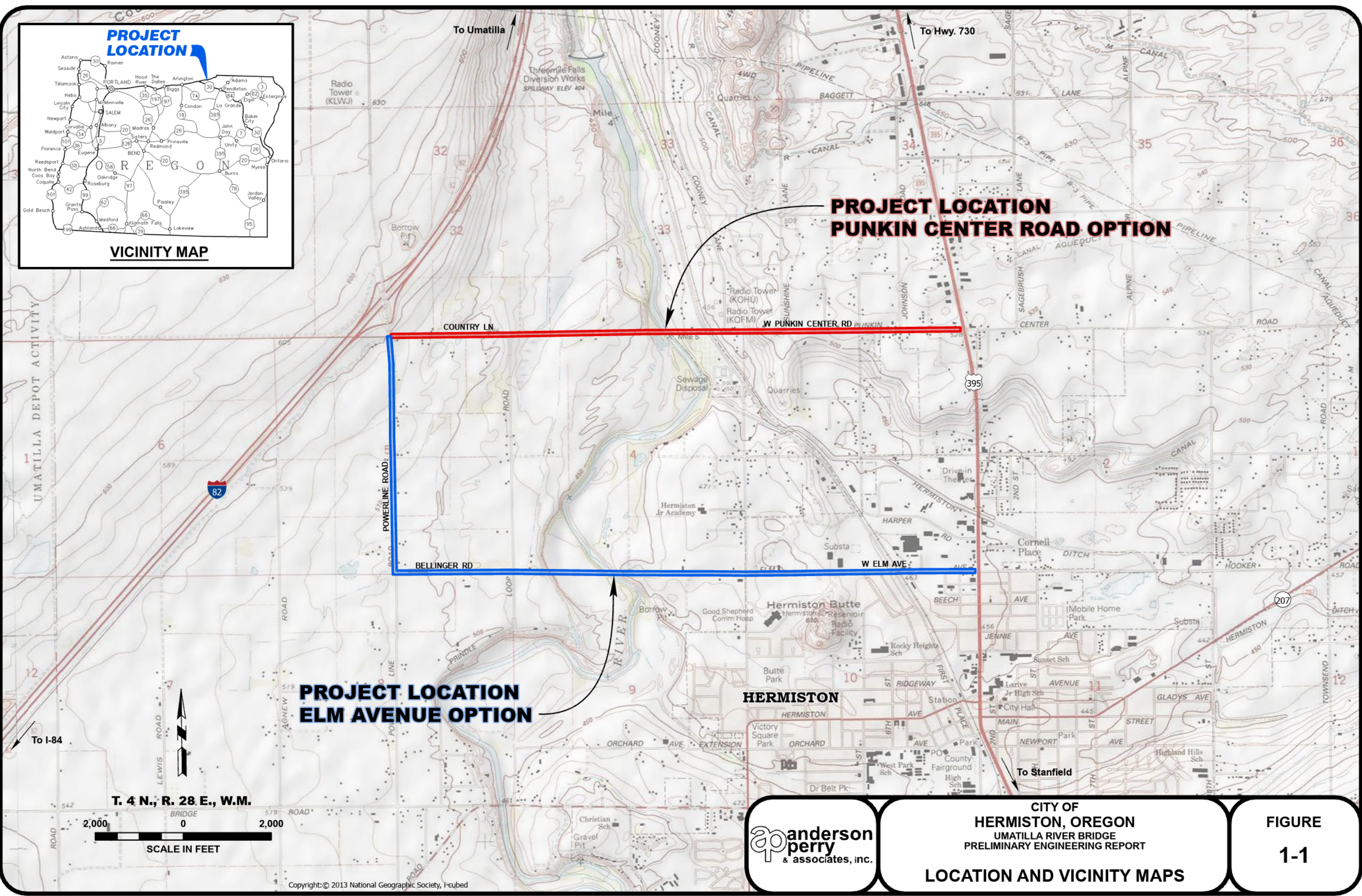
Adding a bridge crossing over the Umatilla River would be beneficial to the City of Umatilla because it would encourage further growth, especially at the south end of the City. Many City of Umatilla residents work, shop, recreate, and generally use the amenities available in Hermiston. A bridge would provide another travel route between the two cities that would likely be more direct and lead to decreased travel time. In addition to enabling and promoting growth on the west side of the Umatilla River and in the City of Umatilla, the bridge would also help alleviate current traffic congestion on U.S. 395 and N. 1st Place. Mitigating traffic congestion on U.S. 395 and N. 1st Place is in the best interest of Umatilla County, the City of Umatilla, and the City of Hermiston because it would increase safety and allow better traffic conditions for local residents.

D. Summary

This planning document presents information needed to make a more informed decision on which of the two proposed bridge locations is most appropriate. A bridge crossing the Umatilla River has been discussed since the CSEPP began funding projects in the area, and the need for a bridge has become increasingly important. Selecting a bridge location will help local jurisdictions plan for growth and development. Benefits of the bridge include, but are not limited to, promoting growth in the City of Hermiston, the City of Umatilla, and Umatilla County; decreasing traffic congestion; and increasing traffic safety.



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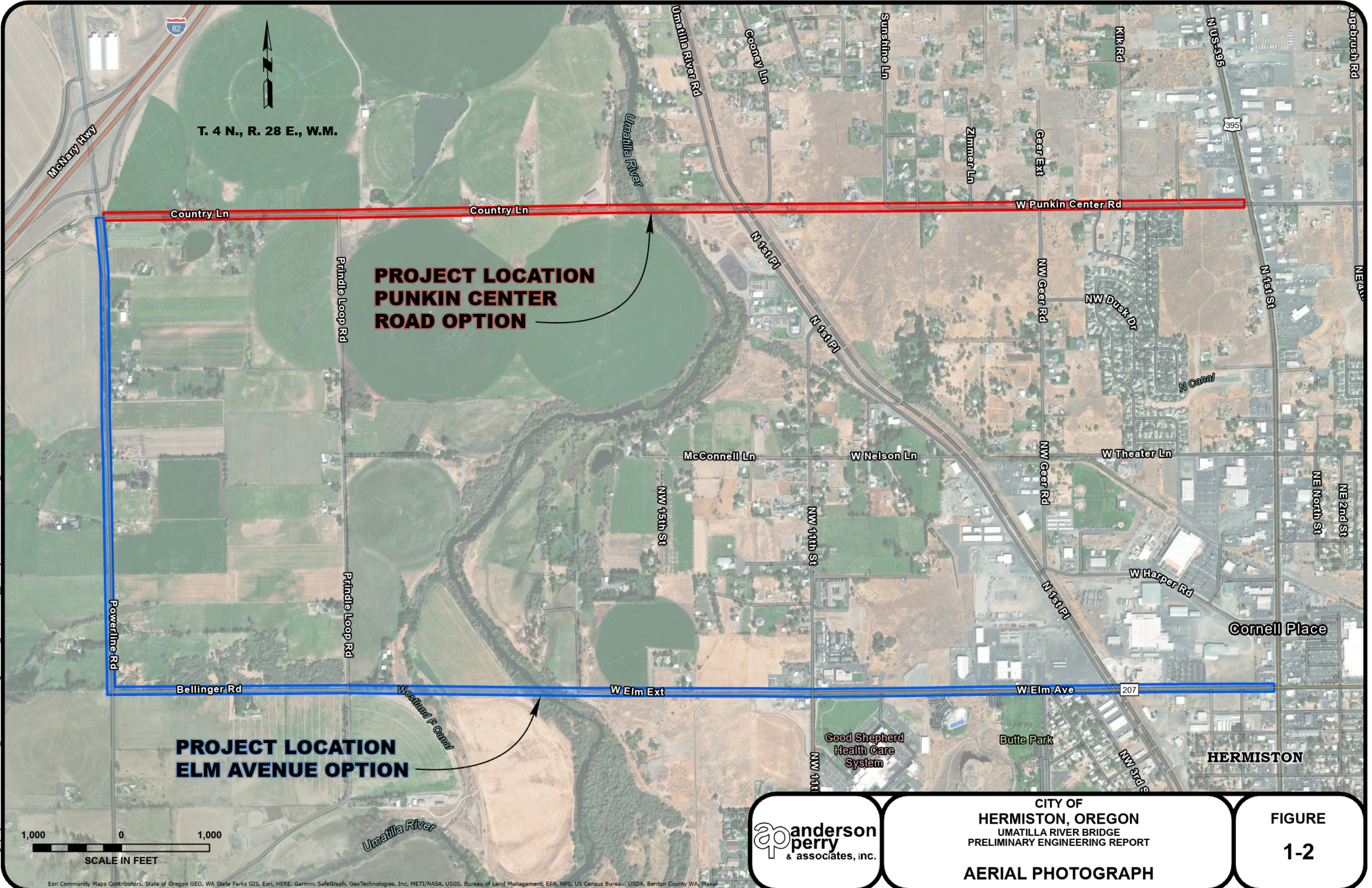
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LOCATION AND VICINITY MAPS

**FIGURE
1-1**

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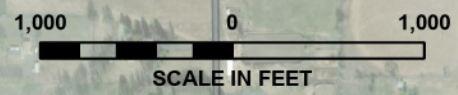
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T. 4 N., R. 28 E., W.M.

**PROJECT LOCATION
PUNKIN CENTER
ROAD OPTION**

**PROJECT LOCATION
ELM AVENUE OPTION**



<p>anderson perry & associates, inc.</p>	<p>CITY OF HERMISTON, OREGON UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT</p> <p>AERIAL PHOTOGRAPH</p>	<p>FIGURE 1-2</p>
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Esri Community Maps Contributors, State of Oregon GEO, WA State Parks GIS, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc., METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, Benton County WA, Maxar

Chapter 2 - Transportation Impact Analysis

A. Introduction

Constructing a new bridge across the Umatilla River will have a significant impact on traffic flow conditions. As such, Kittelson & Associates, Inc., conducted an analysis of the transportation system. This chapter summarizes their analysis as described in a technical memo dated March 4, 2022, included in Appendix A of this Preliminary Engineering Report (PER), and hereinafter referred to as the Kittelson technical memo. This analysis is intended as a high-level analysis only, and future traffic patterns, traffic volumes, required infrastructure improvements, etc., may differ from those identified herein.

As discussed in Chapter 1, two options exist for the construction of a new bridge. The impacts to the transportation system likely reach far beyond the area of proposed improvements. To maintain cost effectiveness, the analysis area was confined to the major travel corridors that the project will directly affect, with the assumption that impacts on other areas will be minor. The Elm Avenue option consists of a travel corridor beginning at the intersection of Elm Avenue and U.S. 395. The corridor would proceed west of the intersection, span the Umatilla River with a new bridge, extend across what is currently private property, connect to Bellinger Road, turn north at Powerline Road, and terminate at the interchange of Powerline Road and Interstate 82 (I-82). The Punkin Center Road option consists of a travel corridor beginning at the intersection of Punkin Center Road and U.S. 395. The corridor would proceed west of the intersection until intersecting with Sunshine Lane, where it would continue west through what is currently private property. The corridor would continue west, crossing the Union Pacific Railroad and Umatilla River Road, then proceed west, spanning the Umatilla River and connecting with Country Lane, then turn north at Powerline Road and terminate at the same interchange as the Elm Avenue option.

These two options were analyzed under four scenarios, as follows:

- 2021 existing traffic conditions
- 2032 with neither option being constructed (No-Build Condition)
- 2032 with the Punkin Center Road option constructed
- 2032 with the Elm Avenue option constructed

These analyses were used to provide insight on resulting traffic conditions and to determine what improvements may be necessary as part of the bridge construction project. This chapter summarizes the analysis and the insights derived therefrom. Chapter 3 discusses recommended improvements based on the results of the traffic analysis.

B. Data Collection Summary

To analyze existing and future traffic conditions, data were collected to form a basis for the analysis. Manual turning/movement counts were collected at key intersections in October 2021. See Appendix A of the Kittelson technical memo for count data at various key intersections. Counts were collected on a typical weekday (while schools were in session) from 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. These

times were selected to capture anticipated weekday morning and afternoon peak hour operation conditions.

This information was utilized to assess existing intersection adequacy based on applicable Oregon Department of Transportation (ODOT) mobility targets. After projecting growth and using reasonable traffic redistribution assumptions, this information was used to assess intersection adequacy in the year 2032 under the various conditions previously described.

C. Existing Traffic Conditions

After collecting needed data and accounting for seasonal adjustments using industry standard methods, existing intersections were evaluated. Appendix C of the Kittelson technical memo contains the operations analysis of existing intersections. Four intersections currently experience substantial traffic movements: U.S. 395 and Punkin Center Road, N.W. 11th Street and W. Elm Avenue, N. 1st Place and W. Elm Avenue, and U.S. 395 and W. Elm Avenue, with volume to capacity ratios of 0.55, 0.66, 0.66, and 0.64, respectively. While these intersections do not exceed their ODOT mobility target of 0.9, they will be critical intersections to analyze under future conditions. ODOT has indicated they are aware of and are anticipating necessary upgrades to the intersections of U.S. 395 and W. Elm Avenue and N. 1st Place and W. Elm Avenue. All other existing intersection studies had volume to capacity ratios of less than or equal to 0.26. All study intersections meet applicable ODOT mobility targets during the weekday morning and afternoon study hours.

D. Projected Traffic Conditions

To determine needed improvements to the travel corridors for each option, an understanding of future traffic conditions was needed. To accomplish this task, practicable growth assumptions were used in conjunction with assumed traffic redistribution to project existing traffic counts into the year 2032. This year was chosen based on conversations with the City of Hermiston, the City of Umatilla, and Umatilla County and represents a reasonable near-term horizon year for this project. Each scenario was investigated as follows.

No-Build Condition (2032 Projection)

Future traffic was first analyzed assuming no bridge is constructed. Only traffic growth was accounted for, and redistribution of traffic does not occur since the fundamental path of travel does not change in this scenario. Annual traffic growth rates between 1.5 and 3 percent were conservatively applied to account for anticipated local and regional growth. Projected traffic demands associated with several approved development projects listed below were also incorporated into the analysis.

- Ambience Homes Traffic Impact Analysis in Umatilla
- Umatilla Residential Development Traffic Impact Analysis for Vandelay Meadows, Cheryl's Place, and Ballard Property
- McClannahan Summit subdivision

Under projected traffic flow conditions in the year 2032, all intersections except one are anticipated to meet applicable ODOT mobility targets during the weekday morning and afternoon study hours. The single exception is the intersection of U.S. 395 and W. Elm Avenue, which exceeds the required ODOT mobility target by approximately 3.3 percent.

Punkin Center Road Option (2032 Projection)

Using the No-Build Condition scenario as a baseline for projected traffic growth, redistribution assumptions were then made assuming a new bridge is constructed spanning the Umatilla River in line with Punkin Center Road. See pages 17 through 19 of the Kittelson technical memo for traffic redistribution assumptions.

Only one intersection was found to exceed its ODOT mobility target, the intersection of U.S. 395 and W. Elm Avenue. Since the intersection does not meet the required ODOT mobility target in the No-Build Condition, it follows that construction of the Punkin Center Road option would increase intersection traffic movements, lead to a higher volume to capacity ratio, and further exceed the ODOT mobility target. The intersection is projected to exceed the required ODOT mobility target by approximately 6.7 percent, which represents a slight degradation compared to the No-Build Condition.

The intersection of Powerline Road and Country Lane is approximately 275 feet south of the I-82/Powerline Road interchange. Although not exceeding its ODOT mobility target, this intersection is problematic because the existing spacing of 275 feet does not meet ODOT requirements. ODOT spacing standards require public street intersections to be a minimum of 0.25 mile (1,320 feet) from the interchange ramp terminal. Relocating the intersection farther away from the interchange would have a substantial impact on private landowners and would also need to be coordinated with ODOT and local jurisdictions.

A new intersection would be necessitated if Punkin Center Road is extended to span the Umatilla River. It is anticipated that the new intersection of Umatilla River Road and Punkin Center Road would be located at the existing intersection of Umatilla River Road and Cooney Lane. Since this would be a new intersection, it would have to be constructed to meet an applicable mobility target and operating standards.

While not anticipated to exceed its ODOT mobility target, the intersection of U.S. 395 and Punkin Center Road is projected to have significantly increased turning movements, resulting in long vehicle queues, especially for right-turn movements on the eastbound approach. It would be prudent, but not required, to consider upgrades to this intersection as set forth in Chapter 3.

Although the I-82/Powerline Road interchange is not considered within the scope of this PER, Kittelson & Associates, Inc., noted that, under this option, the applicable ODOT mobility target would be exceeded by approximately 11.8 percent.

Elm Avenue Option (2032 Projection)

Using the No-Build Condition scenario as a baseline for projected traffic growth, redistribution assumptions were then made assuming a new bridge is constructed spanning the Umatilla River in

line with W. Elm Avenue. See pages 27 through 33 of the Kittelson technical memo for traffic redistribution assumptions.

Under this scenario, several intersections were found to exceed applicable ODOT mobility targets. First, the intersection of U.S. 395 and W. Elm Avenue is projected to have significantly increased traffic movements and is anticipated to exceed its ODOT mobility target by approximately 13.3 percent. This is a substantial increase when compared to the No-Build Condition of 3.3 percent.

Another key intersection that exceeds its mobility target is the intersection of W. Elm Avenue and N.W. 11th Street. Significantly increased traffic, especially on the currently underutilized eastbound approach, is predicted. The intersection is projected to exceed its ODOT mobility target by approximately 4.4 percent.

Analysis indicates that the intersection of W. Elm Avenue and N. 1st Place will operate at 99 percent of its ODOT mobility target with a volume to capacity ratio of 0.89. Because this intersection will only narrowly operate within the acceptable ODOT mobility target, the intersection has limited long-term flexibility to accommodate additional traffic growth.

The intersection at Powerline Road and Bellinger Road, while not expected to exceed its ODOT mobility target, is expected to see significantly increased turning movements. The Kittelson technical memo indicates that to accommodate increased turning movements and create a safe and efficient intersection, the intersection will need to be upgraded to urban travel standards as set forth in Chapter 3.

Although the I-82/Powerline Road interchange is not considered within the scope of this PER, Kittelson & Associates, Inc., noted that its estimated volume to capacity ratio of 0.71 would not exceed the applicable ODOT mobility target of 0.85.

E. Summary

Traffic counts were collected at key intersections to serve as a basis for analyzing existing and projected traffic conditions. After analyzing the current transportation system, reasonable growth rates were applied to project traffic conditions in the year 2032 assuming no bridge is constructed. Reasonable traffic redistribution was then applied to the No-Build Condition to analyze the transportation system under each bridge option.

Projected traffic for the Punkin Center Road option is expected to exceed the applicable ODOT mobility target at the intersection of U.S. 395 and W. Elm Avenue; however, the volume to capacity ratio is only marginally higher than the No-Build Condition scenario. The I-82 interchange is also expected to exceed its ODOT mobility target. The intersection of Country Lane and Powerline Road will have to be reconfigured to meet ODOT spacing requirements. Although meeting its ODOT mobility target, significant queue lengths and delay times are expected for the west leg of the intersection at U.S. 395 and Punkin Center Road unless improvements to the intersection are constructed. A new intersection must be constructed to meet applicable standards at the extension of Punkin Center Road and Umatilla River Road.

Projected traffic for the Elm Avenue option is expected to significantly exceed the ODOT mobility target at the intersection of U.S. 395 and W. Elm Avenue. Traffic at the N.W. 11th Street and W. Elm Avenue

intersection is also expected to exceed its ODOT mobility target. Although not actually exceeding its ODOT mobility target, the intersection of W. Elm Avenue and N. 1st Place is expected to operate at 99 percent of capacity and will not have much flexibility to accommodate increased traffic demands as growth occurs in the surrounding area. In addition, operating standards would necessitate the upgrade of the intersection of Bellinger Road and Powerline Road.

**TABLE 2-1
 TRANSPORTATION ANALYSIS SUMMARY**

Existing (2021)	<ul style="list-style-type: none"> No intersections exceed ODOT mobility targets.
No-Build (2032)	<ul style="list-style-type: none"> All intersections meet applicable ODOT mobility targets except one. The U.S. 395/Elm Avenue intersection exceeds the required ODOT mobility target by 3.3 percent.
Punkin Center Bridge (2032)	<ul style="list-style-type: none"> The U.S. 395/Elm Avenue intersection exceeds the ODOT mobility target by 6.7 percent. The Powerline Road/Country Lane intersection violates the ODOT spacing requirement of being farther than 0.25 mile from the nearest interchange ramp terminal. A new Umatilla River Road/Punkin Center Road intersection is needed. U.S. 395/Punkin Center Road does not exceed its ODOT mobility target but will likely experience long vehicles queues for right-turn movements on the east-bound approach. The I-82/Powerline Road interchange exceeds the ODOT mobility target by 11.8 percent.
Elm Avenue Bridge (2032)	<ul style="list-style-type: none"> The U.S. 395/W. Elm Avenue intersection exceeds the ODOT mobility target by 13.3 percent. The W. Elm Avenue/N.W. 11th Street intersection exceeds the ODOT mobility target by 4.4 percent. The W. Elm Avenue/N. 1st Place intersection will operate at 99 percent of its ODOT mobility target. Powerline Road/Bellinger Road will not exceed its ODOT mobility target but will require improvements to create a safe and efficient intersection. The I-82/Powerline Road interchange does not exceed the ODOT mobility target.

Chapter 3 - Transportation System Improvements

A. Overview

The intent of this chapter is to identify required improvements to the transportation system for each bridge option. The travel corridor, intersections, bridge structure, grading, and other improvements are considered. Project costs for each improvement are estimated to provide a comparison between bridge options and to aid in the selection process. Estimated project costs in this chapter are high level and are intended for comparison purposes only. They are inclusive of construction costs, engineering fees, land acquisition costs, and other legal and administrative costs. Estimates in this chapter include only right-of-way (ROW) acquisition for intersection improvements when the additional ROW to be acquired is not parallel with the travel corridors. All other ROW acquisition costs are discussed in Chapter 4. Because the year of construction is unknown, inflation is difficult to predict in the current market, and cost estimates are for comparison purposes only, all costs are given in 2022 dollars and are not projected into the future. High-level cost estimates are located in Appendix B of this Preliminary Engineering Report (PER). Detailed cost estimates should be completed as part of the future bridge project.

Ordinary High Water

The ordinary high water (OHW) of a river is the typical or ordinary level that the water surface achieves during a typical year. It is generally determined by locating an OHW mark on the shore. OHW marks are typically identified in the field based on observations such as a clear, natural line impressed on the bank, silt stain lines on trees or leaves, the presence of litter or debris, the lowest extent of woody vegetation, etc. The ordinary high water elevation (OHWE) is the measured elevation at the surface of the OHW. The OHW width is the width of the river measured perpendicular to the banks at the OHWE. The Oregon Department of Fish and Wildlife typically requires a clear span equal to or greater than the OHW width with no bridge element or riprap within this span. If consultation under Section 7 of the Endangered Species Act (ESA) is required for the proposed project, the bridge span, as projected along the OHW width, would need to be 1.5 times the OHW width for a single span structure or 2.2 times the OHW width for a multi-span structure. Additional discussion regarding consultation under Section 7 of the ESA is included in Chapter 5. It is important to note that, for both options, the bridge is assumed to span the entire floodway utilizing a multi-span structure with intermediate supports. Spanning the floodway is a more stringent requirement than spanning 2.2 times the OHW width as discussed in the bridge section of each option below.

Federal Emergency Management Agency Floodplain and Floodway

The Federal Emergency Management Agency (FEMA) is currently in the process of analyzing the Umatilla River reach to revise their Flood Insurance Study (FIS) and corresponding Flood Insurance Rate Map (FIRM). The new FIS and FIRM will adjust flood boundaries, floodway widths, and other characteristics to reflect current topography, hydraulic data, and other items that may be in different conditions than existed at the time the last FIS and FIRM were completed. According to FEMA, the updated FIS is not anticipated to have a significant impact on current boundaries within

this section of the Umatilla River. However, minor changes are likely and large changes are possible. Although not expected, the results of the new FIS could alter some of the recommendations and findings contained in this PER. The most current FIS and corresponding FIRM should be utilized when the bridge design project is initiated.

According to FEMA FIRM Panel No. 41059C0577G, the Elm Avenue and Punkin Center Road bridge options would include infrastructure located within the 500- and 100-year floodplains and within the floodway. Therefore, FEMA development standards apply, and a Floodplain Development Permit would be required. Because typical concrete and steel bridges would not be able to span the large floodway widths at both locations without intermediate supports, bridge piers and associated footings would need to be constructed within the floodway. Any fill, bridge pier, or footing placed within the floodway triggers the requirement for a no-rise certification that must show a 0.00 foot change in the effective 100-year water surface elevation based on a hydraulic analysis. Based on discussions with FEMA representatives, it is unlikely that a no-rise condition can be demonstrated. Because bridge construction will preclude demonstration of a 0.00 foot change in the effective 100-year flood water surface elevation, the project will require a Conditional Letter of Map Revision (CLOMR) and, following construction of the bridge, a Letter of Map Revision (LOMR). Each of these requires a hydraulic/stream analysis that determines where the new flood boundaries will be located based on the increase in the surface water elevation of the 100-year flood. This process, including engineering documentation and agency fees, will be required for both options and is estimated to cost approximately \$150,000. It is important to note that the process of obtaining a CLOMR and a LOMR will likely be lengthy. It would be prudent to budget at least two years before construction to complete the CLOMR process and another two years after construction to complete the LOMR process.

B. Elm Avenue Option

Bridge Structure

Based on a desktop review, the OHW width for the river at the Elm Avenue Bridge crossing is approximately 120 feet. The bridge is anticipated to cross the river at an approximate 45-degree skew. The floodway measured along the line of travel is approximately 600 feet wide. The spans for this bridge were chosen based on several criteria. First, the spans had to be symmetrical, which usually lends to a more economical design. Second, the bridge had to cross the entire floodway to minimize environmental impacts and ensure that travel ways would not be damaged during a typical flood event. Third, a single segment of the bridge had to completely span across the OHW width portion of the river (no piers or abutments were assumed to be located in the OHW area). The bridge must also span 2.2 times the OHW width as discussed at the beginning of this chapter, and 2.2 times the OHW width of 120 feet projected onto the bridge travel corridor is approximately 375 feet. Since the total floodway width of approximately 600 feet is much larger than the required span of 375 feet, both span requirements are easily met by spanning the entire floodway. Three equal 250-foot spans were selected to meet these criteria, as shown on Figure 3-1. The total span of this bridge option is 750 feet.

The approximate bridge profile as shown on Figure 3-1 was determined based on two criteria. First, the bottom (low chord) of the bridge had to be a minimum of 3 feet above the 100-year flood elevation. This is an Oregon Department of Transportation (ODOT) requirement that is typically

deferred to when the local jurisdiction does not have a specific separation requirement. The 3 feet of separation provides sufficient space to enable floating debris to pass under the bridge during the 100-year flood event. Second, the approximate bridge profile was selected to effectively transition into the existing topography to provide smooth passage for vehicular traffic and to minimize the amount of cut/fill that will be required.

Bridge width was determined assuming two 12-foot travel lanes, two 6-foot wide bike/shoulder lanes, and two 6-foot wide sidewalks. This totals a width of 48 feet. Note that the bike/shoulder lane is one foot wider on the bridge than the rest of the travel corridor. This increased width is intended to create an increased buffer space between pedestrians and vehicular traffic so neither feel constricted as they navigate across the bridge.

Although bridge type was not specifically selected as part of this PER, the bridge is anticipated to be either prestressed concrete or steel. Bridge type should be selected when a preliminary design is completed as part of the actual design process. A planning-level cost of \$490 per square foot was used to conservatively estimate bridge project costs. The total area of the bridge, given a span of 750 feet and a width of 48 feet, is 36,000 square feet. At \$490 per square foot, the total project cost for the bridge structure is estimated to be \$17.7 million. Adding approximately \$1.7 million for the earthwork required for the roadway on either side of the river brings the total estimated project cost to \$19.4 million.

Although this PER assumes that the bridge crosses the river at a 45-degree skew to keep the travel corridor straight, other options exist where the bridge could cross at a much smaller skew provided that the travel corridor geometry is permitted to deviate from a straight line. Decreasing the skew angle means that the floodway width would also be lessened, which would lead to a shorter total bridge span and a reduced cost for the bridge structure.

Roadway Improvements

Chapter 2 discusses impacts to the transportation system from an analysis perspective. Based on those analyses, recommendations to improve the travel corridor were made. Many of the recommended improvements occur at intersections. Additional improvements are needed where no ROW currently exists. Improvements to the driving surface will also be required to increase roadway durability to account for increased traffic.

Discussions with ODOT revealed that this travel corridor is unlikely to ever become a state highway. They indicated that the only way the travel corridor could ever become a state route would be if Umatilla County took over other existing state routes as a trade for ODOT taking over the Elm Avenue option travel corridor. Because this is highly unlikely to occur, City of Hermiston standards were used as a basis for recommended travel corridor improvements.

Intersections

U.S. 395/W. Elm Avenue (OR 207)

Although this intersection was found to exceed capacity, the intersection is anticipated to exceed capacity regardless of a bridge being constructed. However, unlike the Punkin Center

Road option, construction of a bridge under the Elm Avenue option is estimated to significantly worsen capacity deficiencies. Regardless of whether a bridge is constructed, this intersection would need several improvements to the northbound, southbound, and westbound approaches. A northbound right-turn lane, a southbound right-turn lane, and a westbound right-turn lane would result in satisfactory traffic conditions. It is important to note that these improvements would produce an intersection that would meet the ODOT mobility target, but the intersection would be operating at full capacity. This means that any further growth would push the mobility target above acceptable values. All properties abutting the intersection are currently developed, which means acquiring additional ROW for turning lanes would be costly. The estimated project cost for upgrading this intersection is \$11.1 million. This includes ROW acquisition; see Chapter 4 for a discussion of ROW acquisition. Further improvements may be prudent to plan for further growth; however, they are not considered to contribute to the cost of this project since the improvements, as stated, create an acceptable intersection that will meet the ODOT mobility target.

W. Elm Avenue (OR 207)/N.W. 11th Street

Because this intersection was found to exceed its ODOT mobility target, improvements to the intersection would be needed. Since analysis found that the eastbound approach movements would be significantly increased, an eastbound right-turn lane would be required to enable the intersection to operate within acceptable capacity limits. The estimated project cost for this improvement is \$810,000.

W. Elm Avenue (OR 207)/N. 1st Street

With a projected volume to capacity ratio of 99 percent of the ODOT mobility target, this intersection would need enhanced to accommodate further traffic growth. The Kittelson technical memo indicates that this intersection would benefit from the construction of a southbound left-turn lane on N. 1st Place and construction of an eastbound right-turn lane on W. Elm Avenue. ODOT is aware that this intersection will need upgraded regardless of whether a new bridge is constructed. They have investigated upgrade options and completed preliminary designs. Based on those preliminary designs, in 2021 ODOT estimated the total project cost for the intersection improvements to be \$6,000,000.

Powerline Road/Bellinger Road

This intersection will change from a rural intersection to a much more heavily used intersection. Since southbound left-turn movements and westbound right-turn movements are expected to substantially increase, construction of a dedicated southbound left-turn lane and a dedicated westbound right-turn lane would be required. The estimated project cost for these upgrades is \$295,000.

I-82/Powerline Road Interchange

Construction of a bridge on W. Elm Avenue is anticipated to generate increased traffic on the I-82 interchange. While improvements to the interchange are beyond the scope of this project, Kittelson & Associates, Inc., recommends a study effort called an Interchange Area

Management Plan (IAMP) be completed. The IAMP would formally identify a preferred interchange improvement plan and recommend improvements to the I-82/Powerline Road interchange. The estimated fee for developing an IAMP is \$140,000.

Travel Corridor

The Kittelson technical memo states that a two-lane travel corridor (one lane each way) would be sufficient to accommodate projected traffic demands. Exceptions would occur at intersections requiring additional lanes for turning movements, which were previously discussed. Although a full buildout to an urban major arterial standard per City of Hermiston Standard Drawing ST07, as shown in Appendix C, is not required to meet projected traffic demands, it is prudent to plan for future roadway expansion since this travel corridor would essentially operate like a major arterial. As such, it is recommended that sufficient ROW be acquired as part of this project to plan for future road expansion. ROW acquisition for this purpose is discussed in Chapter 4, and anticipated cultural and environmental requirements are discussed in Chapter 5.

W. Elm Avenue Extension and Bellinger Road are currently gravel roads with no curb, gutter, or sidewalk. Powerline Road is currently a chip-sealed road and also has no curb, gutter, or sidewalk. The rest of the travel corridor along W. Elm Avenue is paved in asphalt concrete pavement (ACP) and has a mixture of areas with and without curb, gutter, and sidewalk. For the purposes of this PER, it was assumed that the travel corridor would be improved to two 12-foot travel lanes and two 5-foot bike lanes with curb/gutter and a 5-foot sidewalk. Full street improvements would be needed beginning just west of the intersection of N.W. 11th Street and W. Elm Avenue. From there, improvements would be needed west to Powerline Road and then north to the I-82/Powerline Road interchange. Furthermore, infill of curb, gutter, and sidewalk would be needed in some areas along W. Elm Avenue east of N.W. 11th Street. The estimated project cost for these road improvements, including ROW acquisition, is \$11.1 million.

C. Punkin Center Road Option

Bridge Structure

Based on a desktop review, the OHW width for the river at the Punkin Center Road Bridge crossing is approximately 100 feet. The bridge is anticipated to cross the river at an approximate 35-degree skew. The floodway measured along the line of travel is approximately 350 feet wide. The spans for this bridge were chosen based on several criteria. First, the spans had to be symmetrical, which usually lends to a more economical design. Second, the bridge had to cross the entire floodway to minimize environmental impacts and ensure that travel ways would not be damaged during a typical flood event. Third, a single segment of the bridge had to completely span across the OHW width portion of the river (no piers or abutments were assumed to be located in the OHW area). The bridge must also span 2.2 times the OHW width as discussed at the beginning of this chapter, and 2.2 times the OHW width of 100 feet projected onto the skewed bridge travel corridor is approximately 270 feet. Since the total floodway width of approximately 350 feet is much larger than the required span of 270 feet, both span requirements are easily met by spanning the entire floodway. Three equal 200-foot spans were selected to meet these criteria, as shown on Figure 3-2. The total span of this bridge option is estimated to be 600 feet.

The approximate bridge profile as shown on Figure 3-2 was determined based on two criteria. First, the bottom (low chord) of the bridge had to be a minimum of 3 feet above the 100-year flood elevation. This is an ODOT requirement that is typically deferred to when the local jurisdiction does not have a specific separation requirement. The 3 feet of separation provides sufficient space to enable floating debris to pass under the bridge in the 100-year flood event. Second, the approximate bridge profile was selected to effectively daylight into the existing topography to provide smooth passage for vehicular traffic and to minimize the amount of cut/fill that will be required.

Bridge width was determined assuming two 12-foot travel lanes, two 6-foot wide bike/shoulder lanes, and two 6-foot wide sidewalks. This totals a width of 48 feet. Note that the bike/shoulder lane is one foot wider on the bridge than the rest of the travel corridor for the same reasons discussed previously under the Elm Avenue Option section above. Although a bridge type was not specifically selected as part of this PER, the bridge is anticipated to be either prestressed concrete or steel. Bridge type should be selected when a preliminary design is completed as part of the actual design process. A planning-level cost of \$490 per square foot was used to conservatively estimate bridge project costs. The total area of the bridge, given a span of 600 feet and a width of 48 feet, is 28,800 square feet. At \$490 per square foot, the total cost for the bridge structure is estimated to be approximately \$14.1 million. Adding approximately \$450,000 for the earthwork required for the roadway on either side of the river brings the total estimated project cost to \$14.5 million.

Although this PER assumes that the bridge crosses the river at a 35-degree skew to keep the travel corridor straight, other options exist where the bridge could cross at a smaller skew provided that the travel corridor geometry is permitted to deviate from a straight line. Decreasing the skew angle would lead to a shorter total bridge span and a reduced cost for the bridge structure. Although this could generate some cost savings, the floodway width would be decreased by a much smaller amount than is the case with the Elm Avenue option.

Roadway Improvements

Chapter 2 discusses the impacts to the transportation system from an analysis perspective. Based on those analyses, recommendations to improve the travel corridor were made. Many of the recommended improvements occur at intersections. Additional improvements are needed where no ROW currently exists. Improvements to the driving surface will also be required to increase roadway durability to account for increased traffic.

Discussions with ODOT revealed that this travel corridor is unlikely to ever become a state highway. They indicated that the only way the travel corridor could ever become a state route would be if Umatilla County took over other existing state routes as a trade for ODOT taking over the Punkin Center Road option travel corridor. Because this is highly unlikely to occur, City of Hermiston standards were used as a basis for recommended travel corridor improvements.

Intersections

U.S. 395/Punkin Center Road

Although analysis of this intersection did not project it to exceed capacity, it was found that significant delays were expected for eastbound right-turn movements. To better manage this issue, an eastbound right-turn lane is recommended. The property on the southwest corner of the intersection is currently vacant. Utility pedestals would likely need to be relocated as part of this project. Depending on the design, the new turn lane could pass behind the traffic signals to preclude their relocation and save cost. The estimated project cost for these improvements is \$260,000, not including ROW acquisition.

U.S. 395/W. Elm Avenue (OR 207)

Similar to the Elm Avenue option, this intersection was found to exceed capacity regardless of a bridge being constructed in line with W. Punkin Center Road. Although construction of a bridge under the Punkin Center Road option is estimated to worsen capacity deficiencies, when compared to the Elm Avenue option, capacity deficiencies are only slightly affected. Regardless of whether a bridge is constructed, this intersection would need the same improvements as if the bridge for the Elm Avenue option were constructed. These improvements were discussed in the Elm Avenue Option section above and, similar to the Elm Avenue option, they would result in satisfactory traffic conditions. However, unlike the Elm Avenue option, the intersection would not operate at full capacity after the completion of these improvements, which means that some amount of future growth could be accommodated. ROW acquisition would be the same as for the Elm Avenue option and would be costly. Because the intersection would need upgrading regardless of whether the Punkin Center Bridge is constructed, and because the bridge would have only a slight effect on traffic congestion, it is anticipated that ODOT would need to upgrade this intersection. The estimated project cost for upgrading this intersection is \$11.0 million. This includes ROW acquisition; see Chapter 4 for a discussion of ROW acquisition.

Umatilla River Road/W. Punkin Center Road

Extending the existing W. Punkin Center Road west to the bridge construction site would form a new intersection at Umatilla River Road and would replace the existing intersection of Cooney Lane and Umatilla River Road. A conceptual illustration of this intersection is shown in Exhibit A (page 22) of the Kittelson technical memo. This illustration depicts dedicated left-turn lanes and shared through/right-turn lanes on all approaches. The illustration also shows an S-curve travel corridor between the bridge and the current end of W. Punkin Center Road. Based on projected traffic movements, volumes, and a planning-level signal warrant analysis, this intersection would need traffic control measure beyond two-way stop control. Installing a traffic signal would be the most likely option. A roundabout could be considered, but the proximity to the railroad would make this difficult without additional ROW acquisition and the demolition of some adjacent residential structures. Regardless of which traffic control measures are constructed, the Union Pacific Railroad (UPRR) crossing will need to be upgraded and Cooney Lane will need to be modified to intersect the new extension of W. Punkin Center Road. Exhibit A in the Kittelson technical

memo shows the railroad crossing remaining in the same location. If alternative alignments are considered, a new railroad crossing may be needed at a different location than the existing crossing. For each new railroad crossing constructed, the UPRR requires that three other existing crossings be closed. For this reason, it would be disadvantageous to construct a new crossing. The alignment of the proposed Punkin Road extension between Sunshine Lane and the railroad is discussed later in this chapter, in the Travel Corridor section, as is the modification to Cooney Lane. The estimated project cost of a traffic signal-controlled intersection with turn lanes as described and an upgrade to the railroad crossing is \$4.8 million. This cost may vary depending on the final design configuration of this intersection.

Powerline Road/Country Lane

As previously stated, ODOT requires intersections to be located at least 0.25 mile away from any highway interchange. Currently, the intersection of Powerline Road and Country Lane is approximately 275 feet south of the I-82/Powerline Road interchange. The intersection would need to be moved farther south to meet ODOT's minimum spacing requirements, which would entail realigning a section of Country Lane to deflect traffic farther south before intersecting Powerline Road. Because of the complexity resulting from proximity to the highway interchange and because this would involve many different stakeholders (potentially including the City of Hermiston, ODOT, private landowners, Umatilla County, and the City of Umatilla), Kittelson & Associates, Inc., recommends a separate IAMP study effort. The IAMP would formally identify a preferred interchange improvement plan including the design, timing, and ROW needs for a relocated intersection. Estimated fees for developing an IAMP are discussed in the I-82/Powerline Road Interchange section for the Elm Avenue option.

Although many options exist, one potential concept for the realignment of Country Lane to create a new intersection is illustrated in Exhibit B (page 24) of the Kittelson technical memo. This configuration includes closing off the existing Country Lane/Powerline Road intersection and realigning Country Lane to create a new intersection at Powerline Road approximately 1,500 feet south of the I-82 interchange. Regardless of where the new intersection along Powerline Road is created, a southbound left-turn lane and westbound right- and left-turn lanes would be needed. Although an IAMP would be needed to formally assess cost, a planning-level project cost estimate is \$290,000.

I-82/Powerline Road Interchange

Similar to the Elm Avenue option, construction of a bridge on W. Punkin Center Road is anticipated to generate increased traffic on the I-82 interchange. While improvements to the interchange are beyond the scope of this project, Kittelson & Associates, Inc., recommends an IAMP study effort be completed. The IAMP would include recommended improvements to the interchange and formally identify a preferred interchange improvement plan. The main difference from the Elm Avenue option is that this IAMP would provide recommendations for improvements to the Powerline Road/Country Lane intersection. The estimated fee for developing an IAMP is \$140,000.

Travel Corridor

The Kittelson technical memo states that a two-lane travel corridor (one lane each way) is sufficient to accommodate projected traffic demands. Exceptions would occur at intersections requiring additional lanes for turning movements, which were discussed previously. Although a full buildout to an urban major arterial standard per City of Hermiston Standard Drawing ST07 (see Appendix C of this PER) is not required to meet projected traffic demands, it would be prudent to plan for future roadway expansion since this travel corridor would essentially operate like a major arterial. As such, it is recommended that sufficient ROW be acquired as part of this project to plan for future road expansion. ROW acquisition for this purpose is discussed in Chapter 4.

W. Punkin Center Road from U.S. 395 to Sunshine Lane is currently a chip seal road. An approximately 1,130-foot long half street improvement was completed on the southern half of W. Punkin Center Road as part of the Overlook Ridge subdivision. The half street improvement included ACP with curb, gutter, and sidewalk. This is the only section along the entire corridor that does not require improvements.

From the intersection of Sunshine Lane and W. Punkin Center Road, W. Punkin Center Road would need to be extended west through what is currently private property. The extension of W. Punkin Center Road would continue until it crosses the railroad intersection near Umatilla River Road, where the intersection of Cooney Lane and Umatilla River Road currently exists. Requirements for this intersection and the railroad crossing were previously discussed. Cooney Lane would need to be reconfigured to connect to the new extension of W. Punkin Center Road. The road would then cross the Umatilla River Bridge and continue west until it connects to Country Lane. This entire section of new road would be built on what is now almost exclusively privately owned property. Since no road currently exists in these locations, full improvements would be required as previously discussed.

Once connected to Country Lane, the travel corridor would continue west along Country Lane until it intersects Powerline Road. From that intersection it would turn north and continue until it connects to the I-82/Powerline Road interchange. Country Lane is currently a gravel road, and Powerline Road is a chip seal road. Both roads would need to be improved to the standards discussed above. The estimated project cost for upgrading the travel corridor to two asphalt paved travel lanes with paved shoulders, curb, gutter, and sidewalk, is \$12.6 million, including ROW acquisition.

D. Summary

This chapter discusses needed improvements to the transportation system. The bridge structure is the critical improvement that drives all other necessary system improvements. The OHWE and the OHW width were defined and their effect on bridge span was discussed. The floodplain and floodway were characterized and their impacts on bridge span were examined. For both bridge options, it was determined that spanning the floodway utilizing a multi-span structure with one single bridge section clear-spanning the OHW width is recommended.

It was noted that FEMA is currently in the process of analyzing the Umatilla River reach to revise their FIS and corresponding FIRM. Changes to floodplains in the potential project areas are not likely to be

significant. Because the potential project areas are located within the floodplain and floodway, FEMA development standards will apply. Because intermediate bridge supports will need to be located within the floodway, a no-rise certification would typically be required; however, it is unlikely that a no-rise situation can be demonstrated for either bridge option. Thus, a hydraulic analysis will need to be completed along with a CLOMR and a LOMR, regardless of which bridge option is selected.

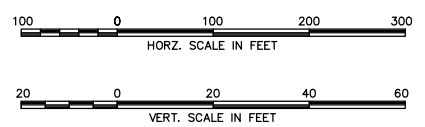
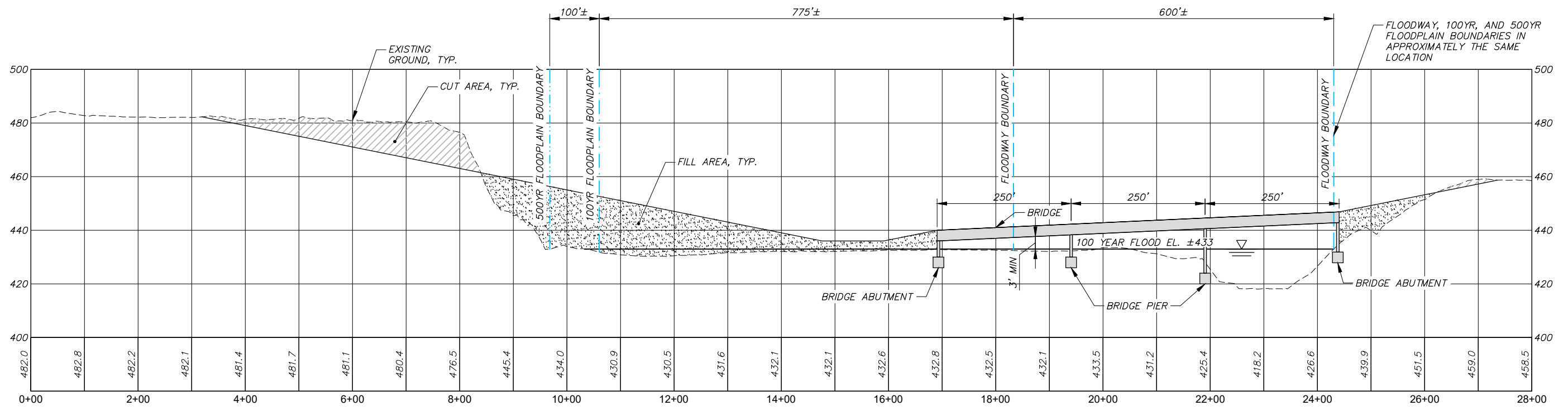
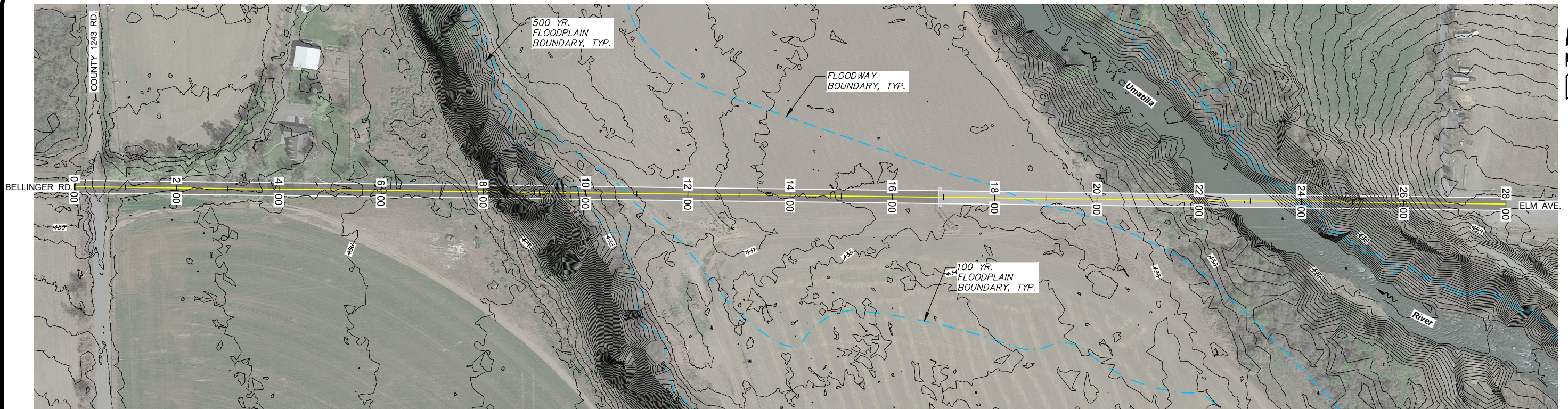
For the Elm Avenue option, the bridge is expected to be approximately 750 feet long. Upgrades to many of the intersections along the travel corridor are required. The majority of the travel corridor itself would need to be upgraded to current standards with two travel lanes, paved shoulders, and curb, gutter, and sidewalk on each side of the corridor. Specific upgrades and associated costs are summarized on the table below.

For the Punkin Center Road option, the bridge is expected to be approximately 600 feet long. Upgrades to many of the intersections along the travel corridor are required, and several intersections would need to be relocated or newly constructed. The existing railroad crossing would need to be upgraded. Most of the travel corridor itself would need to be upgraded to current standards with two travel lanes, paved shoulders, and curb, gutter, and sidewalk on each side of the corridor. Specific upgrades and associated costs are summarized on the table below.

**TABLE 3-1
 TRANSPORTATION SYSTEM IMPROVEMENTS SUMMARY**

Elm Avenue Option		Punkin Center Road Option	
Improvement	Cost	Improvement	Cost
<ul style="list-style-type: none"> Bridge (750 feet long) 	\$19,400,000	<ul style="list-style-type: none"> Bridge (600 feet long) 	\$14,500,000
U.S. 395/W. Elm Avenue (OR 207) <ul style="list-style-type: none"> Northbound right-turn lane, a southbound right-turn lane, and a westbound right-turn lane Improvements would meet mobility target but not provide room for future traffic growth ROW acquisition is costly (see Chapter 4) ODOT is aware this intersection will need upgraded regardless of bridge construction 	\$11,000,000	U.S. 395/W. Elm Avenue (OR 207) <ul style="list-style-type: none"> Northbound right-turn lane, a southbound right-turn lane, and a westbound right-turn lane Improvements would meet mobility target and allow for some future traffic growth ROW acquisition is costly (see Chapter 4) ODOT is aware that this intersection will need upgraded regardless of bridge construction 	\$11,000,000
W. Elm Avenue (OR 207)/N.W. 11th Street <ul style="list-style-type: none"> Eastbound right-turn lane 	\$810,000	U.S. 395/Punkin Center Road <ul style="list-style-type: none"> Eastbound right-turn lane recommended 	\$260,000
W. Elm Avenue (OR 207)/N. 1st Street <ul style="list-style-type: none"> Southbound left-turn lane and an eastbound right-turn lane ODOT is aware that this intersection needs upgraded regardless of bridge construction 	\$6,000,000	Umatilla River Road/W. Punkin Center Road <ul style="list-style-type: none"> Traffic-signal Dedicated left-turn lane and shared through/right-turn lane on all approaches Upgrade to railroad crossing 	\$4,800,000

Elm Avenue Option		Punkin Center Road Option	
Improvement	Cost	Improvement	Cost
Powerline Road/Bellinger Road <ul style="list-style-type: none"> Southbound left-turn lane and westbound right-turn lane 	\$295,000	Powerline Road/Country Lane <ul style="list-style-type: none"> Intersection needs relocated per ODOT requirements 	\$290,000
I-82/Powerline Road Interchange <ul style="list-style-type: none"> Improvements are beyond the scope of this PER An IAMP would be required 	\$140,000 (IAMP only)	I-82/Powerline Road Interchange <ul style="list-style-type: none"> Improvements are beyond the scope of this PER An IAMP would be required 	\$140,000 (IAMP only)
Travel Corridor <ul style="list-style-type: none"> Corridor from I-82 to U.S. 395 upgraded to two 12-foot travel lanes, two 5-foot bike lanes, curb, gutter, and 5-foot sidewalks 	\$11,100,000	Travel Corridor <ul style="list-style-type: none"> Corridor from I-82 to U.S. 395 upgraded or newly constructed to two 12-foot travel lanes, two 5-foot bike lanes, curb, gutter, and 5-foot sidewalks 	\$12,600,000
Total:	\$48,745,000	Total:	\$43,590,000



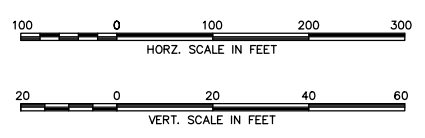
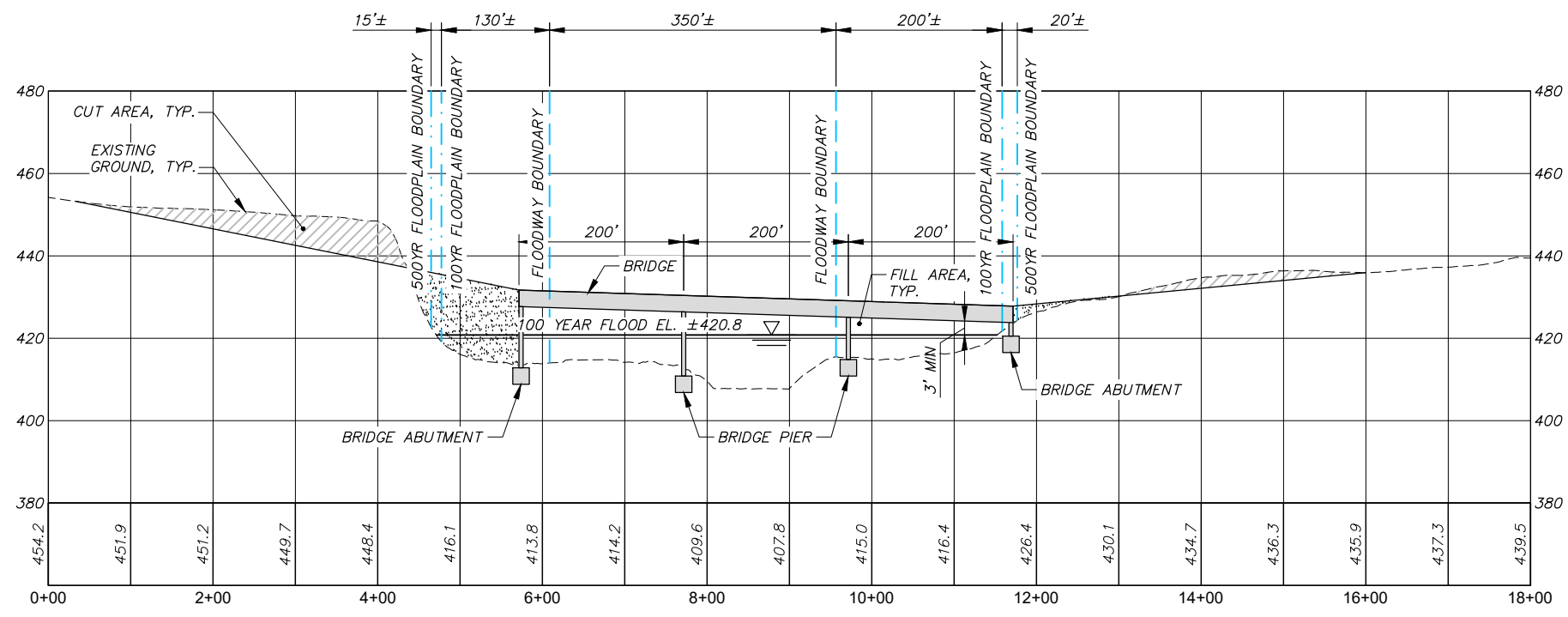
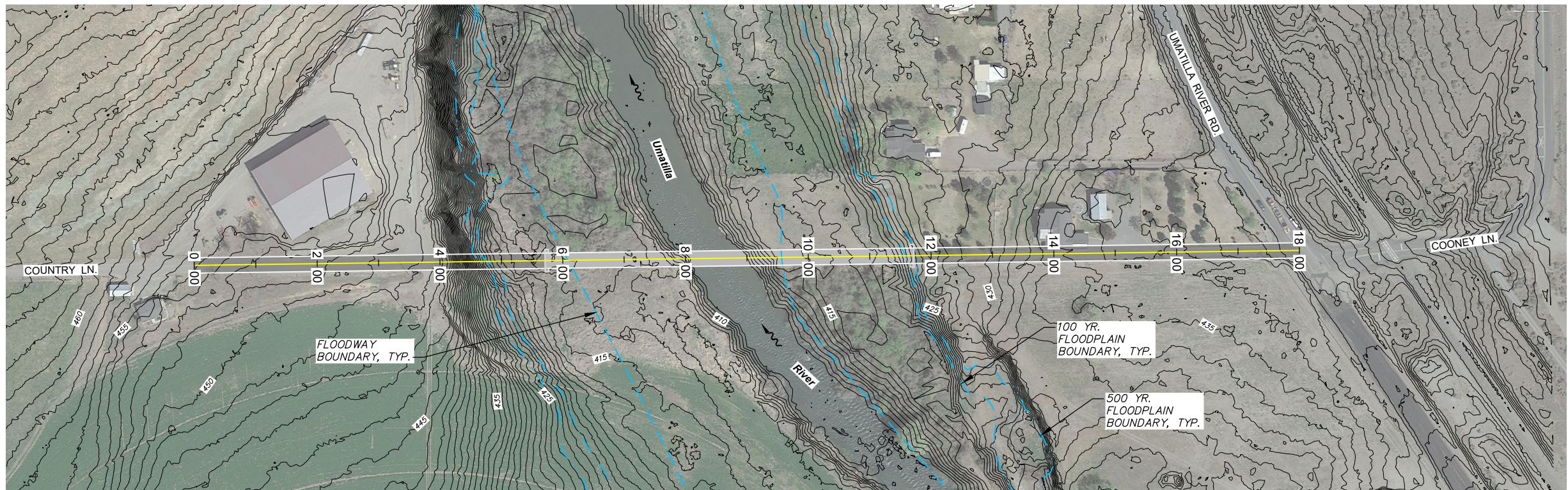
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**CITY OF
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UMATILLA RIVER BRIDGE
PRELIMINARY ENGINEERING REPORT

**RIVER CROSSING PLAN AND PROFILE
ELM AVENUE OPTION**

**FIGURE
3-1**



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**CITY OF
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PRELIMINARY ENGINEERING REPORT

**RIVER CROSSING PLAN AND PROFILE
PUNKIN CENTER ROAD OPTION**

**FIGURE
3-2**

Chapter 4 - Land Use and Acquisition

A. Overview

Because a new bridge across the Umatilla River would fundamentally change traffic patterns and future land use, it is imperative that additional right-of-way (ROW) be acquired. ROW acquisition and careful planning are essential to successfully develop a new travel corridor across the Umatilla River that would accommodate future growth, increased traffic flows, and changes in land use. This chapter discusses needed ROW acquisition and existing land use. ROW acquisition required for intersection improvements is included in the estimated costs for improvements in Chapter 3.

The size and locations of properties discussed in this chapter were determined from the Umatilla County Assessor's maps. The information from the Umatilla County Assessor's website was assumed to be correct for the purposes of this Preliminary Engineering Report (PER). Figures 4-1A through 4-1D and 4-2A through 4-2C show ROW acquisition locations for properties adjacent to potential future travel corridors. Figures 4-3 and 4-4 summarize the cost of ROW acquisition from each property in tabular form.

B. Elm Avenue Option

Land and Right-of-Way Acquisition

The Elm Avenue option consists of approximately 3.5 miles of roadway stretching from Interstate 82 (I-82) to U.S. 395. According to the Umatilla County tax lot maps, the existing ROW within the City of Hermiston on Elm Avenue is 66 feet wide. The ROW in the County along Powerline Road and Bellinger Road is 40 feet wide. East of N.W. 7th Street, Elm Avenue is currently classified as an urban minor arterial. West of N.W. 7th Street, Elm Avenue is classified as a rural arterial. Because land use and development would be drastically impacted by construction of a new bridge, it is prudent to assume that the travel corridor would eventually become an urban major arterial and to plan for future road expansion.

The City of Hermiston's Transportation System Plan (TSP) and City of Hermiston Standard Drawing ST07 (see Appendix C) indicate that ROW widths for an urban major arterial are 86 feet to 98 feet. Assuming that future sidewalk will abut the back of curb, a ROW width of approximately 90 feet would be needed. Because the proposed ROW is larger than the existing ROW, additional ROW would need to be acquired. Furthermore, there are areas where no ROW currently exists, and completely new ROW would need to be acquired. Figures 4-1A through 4-1D show the Elm Avenue travel corridor from I-82 to U.S. 395. Additional ROW would need to be acquired from most tax lots adjacent to this travel corridor as shown on these figures.

The tax lot numbers shown on Figures 4-1A through 4-1D correspond with the tax lots listed on Figure 4-3. Figure 4-3 documents how much area would need to be acquired from each tax lot. Approximate costs for ROW acquisition from each lot are also calculated. For the purposes of estimating costs, current real market values for each property were used. Real market values were divided by total tax lot area to estimate a price per square foot. That price per square foot was then multiplied by the area of ROW that would be acquired from that tax lot. A multiplier of 1.5 was used

to increase the cost estimates for acquiring the ROW. The multiplier is not intended to increase the estimate of the actual sale price of the land; rather, it is intended to account for other factors in the land acquisitions process including, but not limited to, legal fees, administrative costs, coordination efforts, property functionality conflicts, and other contingency items. The estimated total cost, in 2022 dollars, for ROW acquisition for the Elm Avenue option is \$2.27 million.

In addition to road widening, the Oregon Department of Transportation (ODOT) has indicated that if the Elm Avenue option is used, the intersection at U.S. 395 and W. Elm Avenue would need to be upgraded significantly. This is further discussed in Chapter 3. Additional space would be needed in an already tight intersection. Likely, the only viable way to acquire the space necessary to upgrade the intersection would be to acquire the properties on all four corners of the intersection. McDonald's is located on Tax Lot 4N2802C001402, which has a real market value of \$1,677,470. Shiki Hibachi Sushi is located on Tax Lot 4N2811BB00600, which is currently owned by Wadekamper Investments, LLC, and has a real market value of \$531,700. Starbucks is located on Tax Lot 4N2810AA00300, which is currently owned by Legacy Pacific, LLC, and has a real market value of \$794,720. Jack in the Box is located on Tax Lot 4N2803D002502, which is also currently owned by Legacy Pacific, LLC, and has a real market value of \$753,640. Applying the same 1.5 multiplier as previously mentioned, the cost of acquiring these four properties amounts to approximately \$5.64 million.

Chapter 3 indicates that right-turn lanes would be needed for the northbound, southbound, and westbound approaches at the intersection of U.S. 395 and W. Elm Avenue. It is possible that the required design length for the northbound and southbound right-turn lanes would exceed the existing dimensions of the properties discussed in the previous paragraph. This PER assumes turn lane lengths are capped by the existing corner property dimensions. The cost estimate in Chapter 3 reflects this assumption.

Land Use (Zoning)

Land within the project corridor has various zoning designations, as the corridor encompasses the City of Hermiston, the Hermiston urban growth boundary (UGB), and Umatilla County. Figure 4-5A, City of Hermiston Zoning, shows the zoning designations of the land within city limits; Figure 4-5B, Umatilla County Zoning, shows the zoning designations of the land outside city limits and the UGB; and Figure 4-5C, Comprehensive Land Use Map, shows the zoning designations of the land within the UGB but outside the city limits. The zoning designations within the project corridor includes Exclusive Farm Use (EFU)-20, EFU-40, Open Space (OS), City Future Residential (F-R), City Multi-Structure Residential (R-4), City Outlying Commercial (C-2), City Low Density Residential (R-1), and City Light Industrial (M-1).

One advantage of the Elm Avenue option is that it would provide for increasing development along a travel corridor that is more directly centrally connected to the City of Hermiston. The City of Hermiston and Umatilla County would need to carefully plan for increased development on the west side of the Umatilla River. Permitting, environmental, and cultural resource requirements are discussed in Chapter 5.

C. Punkin Center Road Option

Land and Right-of-Way Acquisition

The Punkin Center Road option consists of approximately 2.5 miles of roadway stretching from I-82 to U.S. 395. According to the Umatilla County tax lot maps, the existing ROW on Punkin Center Road is 66 feet wide. The existing ROW in the County along Cooney Lane is 60 feet wide, and Country Lane is 40 feet wide. Punkin Center Road is currently classified as an urban major collector. Country Lane is classified as a rural arterial. Because land use and development would be drastically impacted by the construction of a new bridge, it is prudent to assume that the travel corridor would eventually become an urban major arterial and plan for future road expansion.

The City of Hermiston's TSP and City of Hermiston Standard Drawing ST07 (see Appendix C) indicate that ROW widths for an urban major arterial are 86 feet to 98 feet. Assuming that future sidewalk would abut the back of curb, a ROW width of approximately 90 feet would be needed. Because the proposed ROW is larger than the existing ROW, additional ROW would need to be acquired. Furthermore, there are areas where no ROW currently exists, and completely new ROW would need to be acquired. Figures 4-2A through 4-2C show the Punkin Center Road option travel corridor. Additional ROW would need to be acquired from most tax lots that are adjacent to this travel corridor, as shown on these figures.

The tax lot numbers shown on Figures 4-2A through 4-2C correspond with the tax lots listed on Figure 4-4. Figure 4-4 documents how much area would need to be acquired from each tax lot. Approximate costs for ROW acquisition from each lot are also calculated. The same process used to estimate ROW acquisition costs for the Elm Avenue option was used for the Punkin Center Road option. The estimated total cost, in 2022 dollars, for ROW acquisition for the Punkin Center Road option is \$3.65 million.

Although ODOT did not explicitly indicate the intersection at U.S. 395 and W. Elm Avenue would need to be upgraded as a result of constructing a bridge in line with W. Punkin Center Road, the Kittelson technical memo shows that the intersection would need to be upgraded as discussed in Chapter 3. Property acquisition at this intersection would cost the same as it would for the Elm Avenue option (approximately \$5.64 million). The main difference from the Elm Avenue option is that the bridge for the Punkin Center Road option would not be a significant catalyst for increased traffic congestion. Forecasted population growth and thus an increase in the number of vehicles on public roadways contribute significantly more to traffic congestion at this intersection than does bridge construction for the Punkin Center Road option. See Chapters 2 and 3 for further discussion on this topic. As such, there is potential for these intersection upgrades to be excluded from the overall bridge project costs. However, costs for upgrades to this intersection are still included with the Punkin Center Road option for planning purposes.

Land Use (Zoning)

Land within the project corridor has various zoning designations, as the corridor encompasses the City of Hermiston, the Hermiston UGB, and Umatilla County. Figure 4-5A, City of Hermiston Zoning, shows the zoning designations of the land within city limits; Figure 4-5B, Umatilla County Zoning, shows the zoning designations of the land outside of the city limits and the UGB; and Figure 4-5C,

Comprehensive Land Use Map, shows the zoning designations of the land within the UGB but outside the city limits. The zoning designations within the project corridor includes EFU-20, EFU-40, Rural Residential-2 (RR-2), Retail/Service Commercial (RSC), Light Industrial (LI), Low Density Residential (L), Medium Density Residential/Mobile Home (MH), City Multi-Structure Residential (R-4), Commercial (C), City Low Density Residential (R-1), and City Future Industrial (F-I).

A disadvantage of the Punkin Center Road option is that it provides for increasing development along a travel corridor that is not centrally connected to the City of Hermiston, although this would become less of an issue as the northwestern corner of Hermiston within the UGB continues to develop. The City of Hermiston and Umatilla County would need to carefully plan for increased development along the Punkin Center Road option travel corridor if this option is selected. Permitting, environmental, and cultural resource requirements are discussed in Chapter 5.

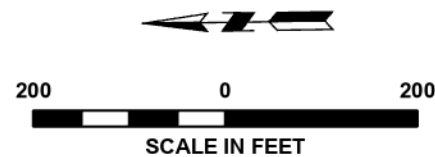
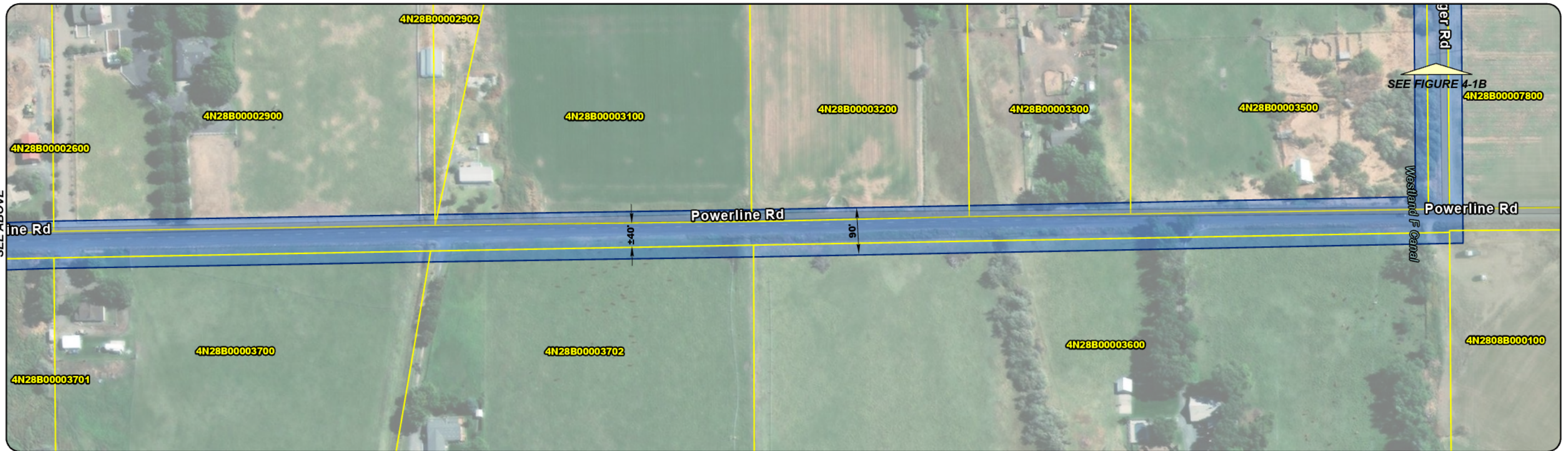
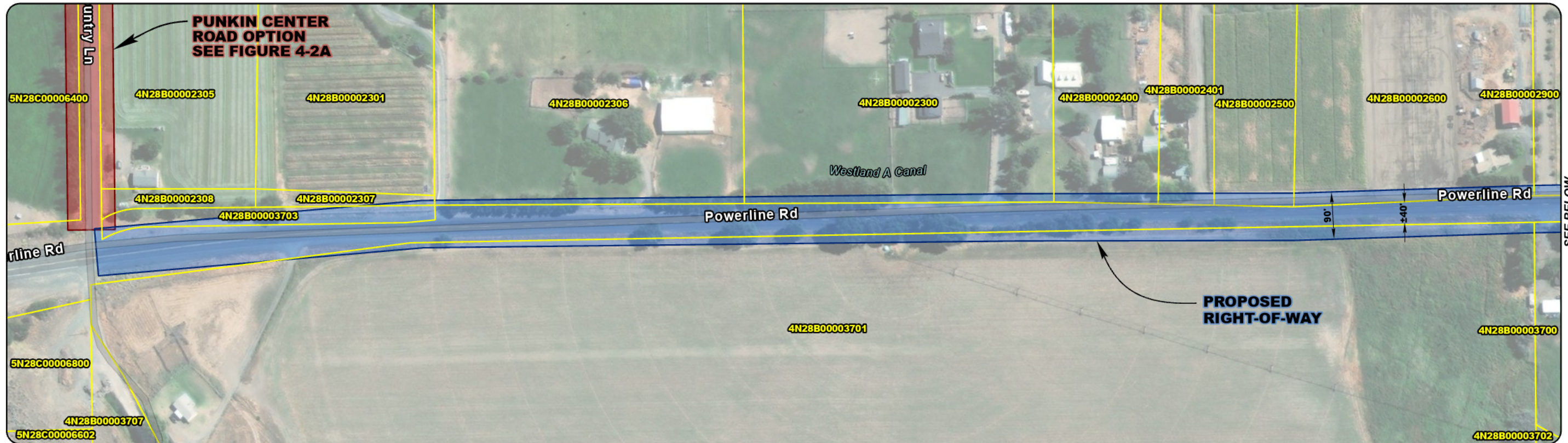
D. Summary

**TABLE 4-1
 LAND USE AND ACQUISITION SUMMARY¹**

Elm Avenue Option	Punkin Center Road Option
<ul style="list-style-type: none"> • Travel corridor is linked more closely to the city center. • More ROW acquisition (3.5-mile travel corridor) than the Punkin Center Road option • High ROW acquisition costs around the OR 207/ U.S. 395 intersection (\$5.64 million), which includes several businesses 	<ul style="list-style-type: none"> • Less ROW acquisition (2.5-mile travel corridor) than the Elm Avenue option • High ROW acquisition costs around the OR 207/ U.S. 395 intersection (\$5.64 million), which includes several businesses, could be excluded from the bridge project • Encourages development in an area not closely linked to the city center

¹ See Table 3-1 for a summary of estimated costs for both land acquisition and transportation system improvements.

\\GIS\GIS\projects\Hermiston\736-123 UmatillaRiverBridge\736-123-FIG4-1A TaxlotElm1_6/23/2022 2:02 PM, dchristman

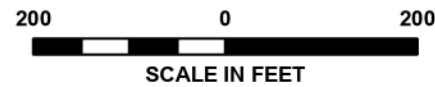
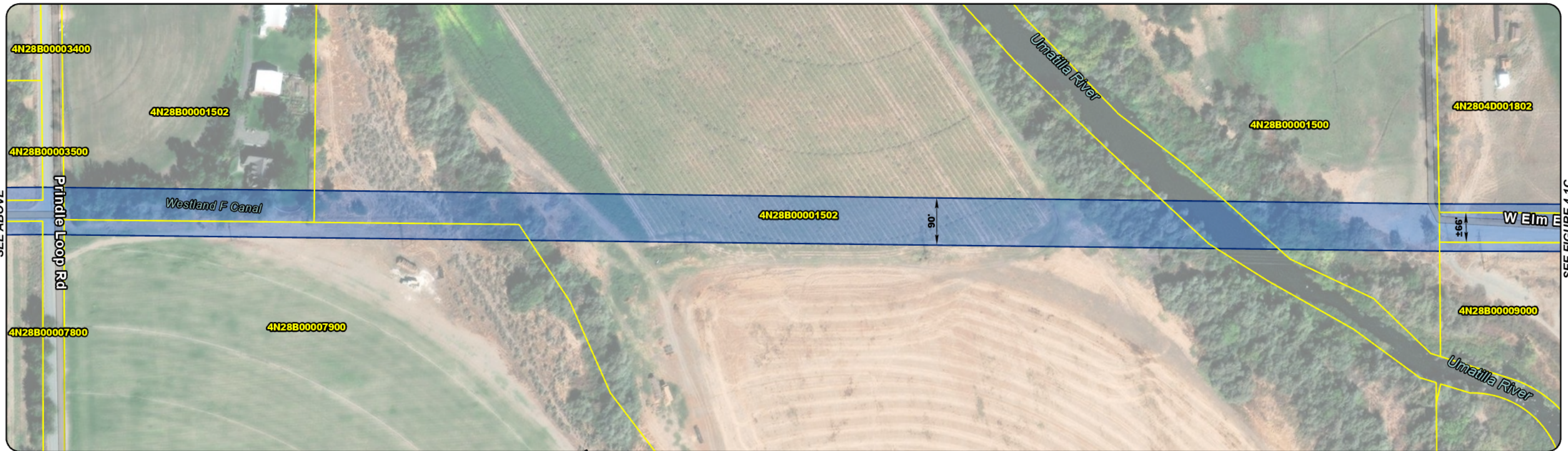
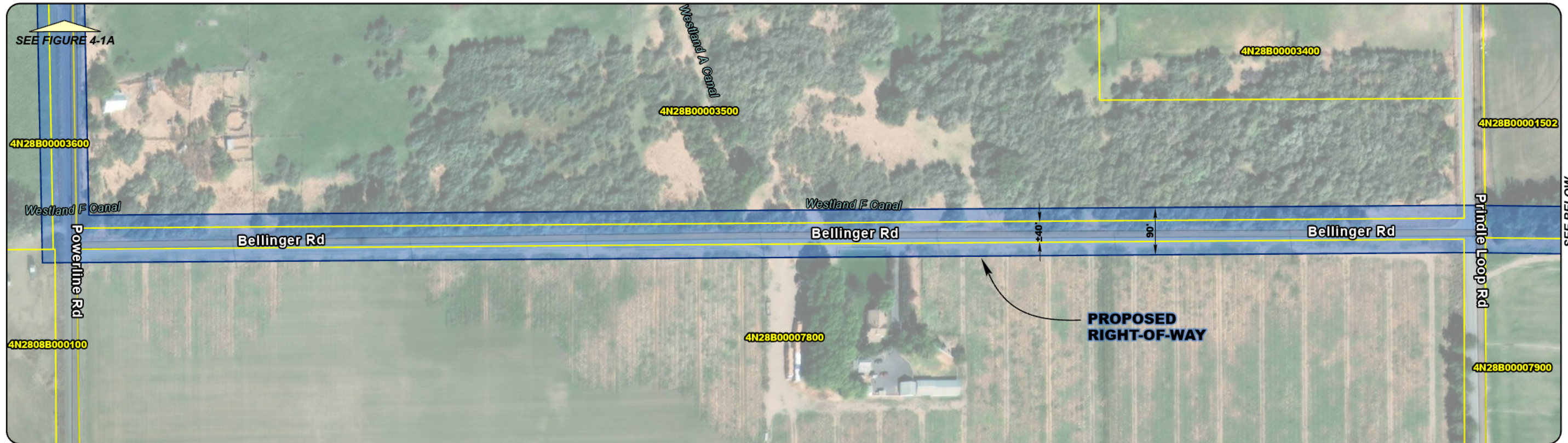


CITY OF
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TAX LOT MAP
ELM AVENUE OPTION

FIGURE
4-1A

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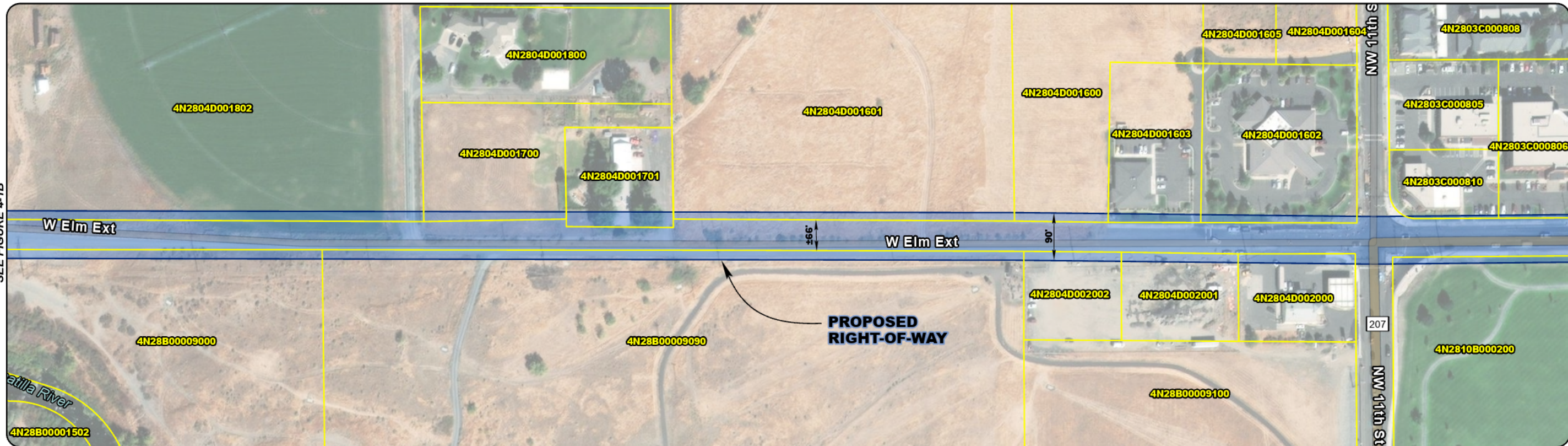


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CITY OF
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UMATILLA RIVER BRIDGE
PRELIMINARY ENGINEERING REPORT
TAX LOT MAP
ELM AVENUE OPTION

FIGURE
4-1B

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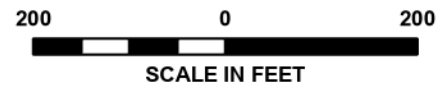
SEE FIGURE 4-1B

SEE BELOW



SEE ABOVE

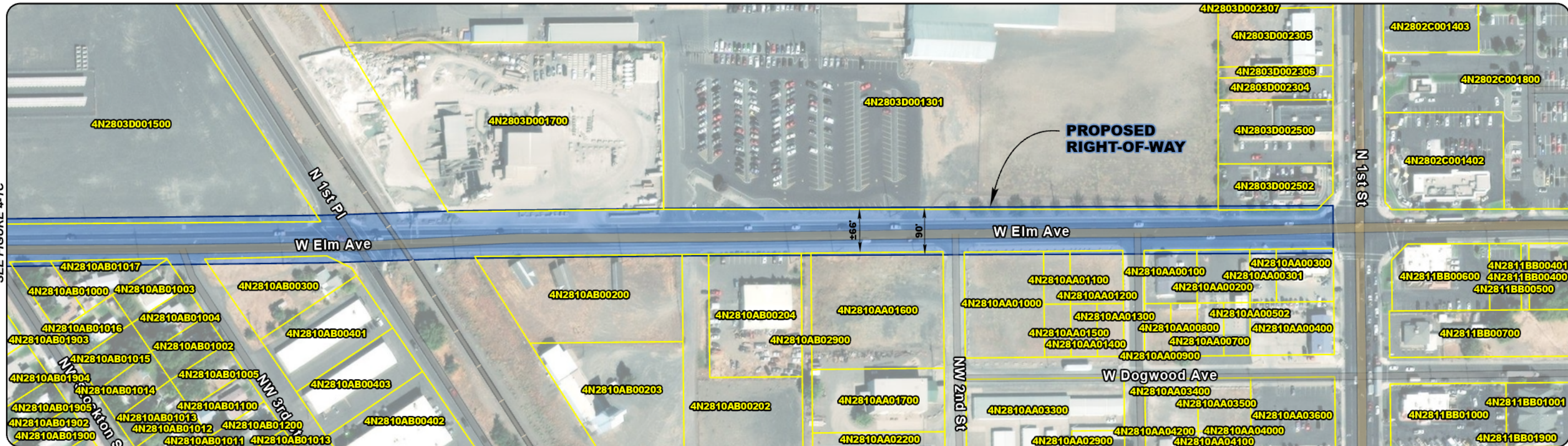
SEE FIGURE 4-1D



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TAX LOT MAP
ELM AVENUE OPTION

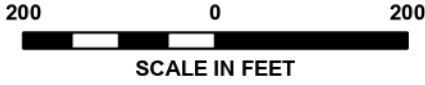
FIGURE
4-1C

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SEE FIGURE 4-1C

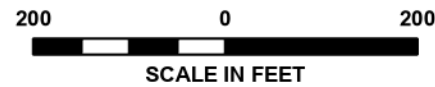
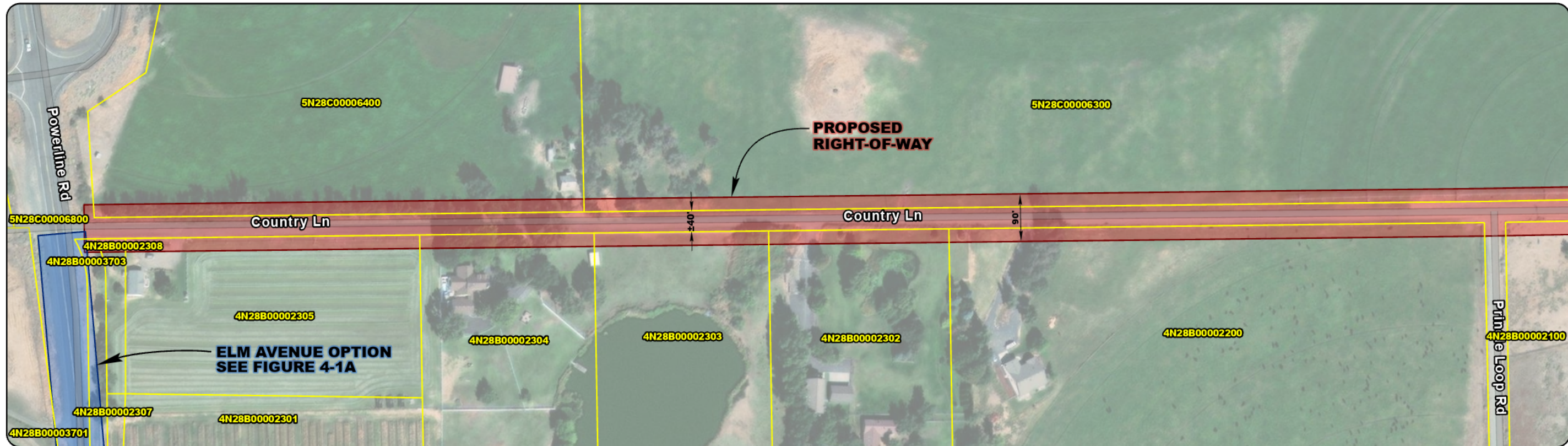
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	<p>CITY OF HERMISTON, OREGON UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT TAX LOT MAP ELM AVENUE OPTION</p>	<p>FIGURE 4-1D</p>
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\\GIS\GIS\projects\Hermiston\736-123_UmatillaRiverBridge\736-123_UmatillaRiverBridge\736-123-FIG4-2A_TaxlotPC1_6/23/2022 2:08 PM_dchristman

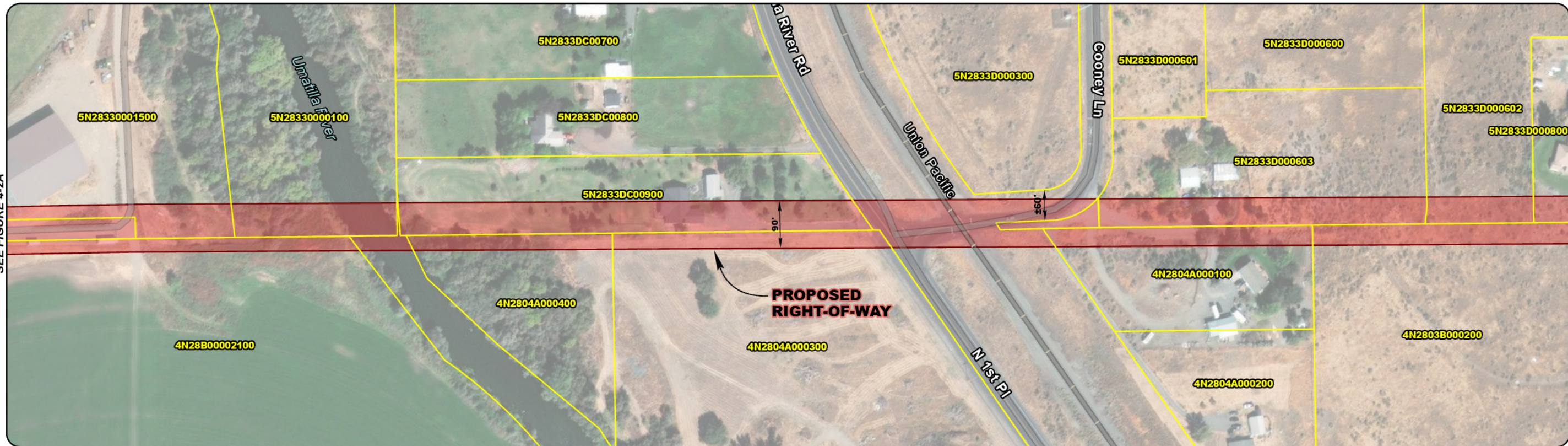


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PRELIMINARY ENGINEERING REPORT
TAX LOT MAP
PUNKIN CENTER ROAD OPTION

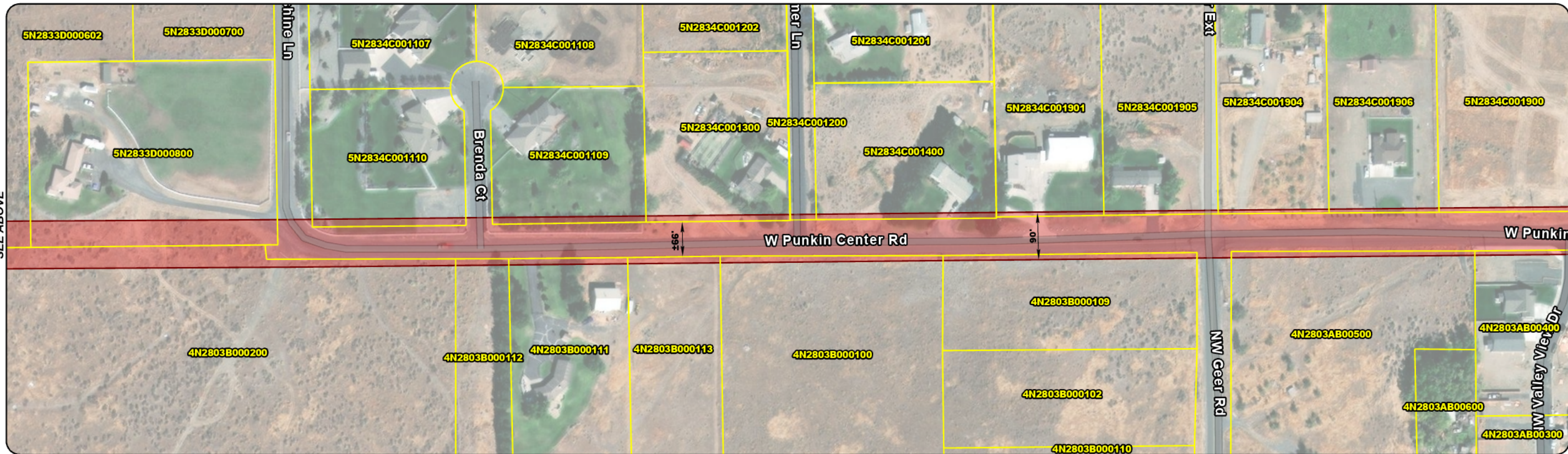
FIGURE
4-2A

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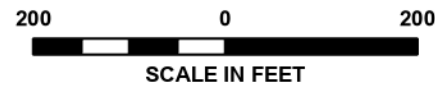
SEE FIGURE 4-2A

SEE BELOW



SEE ABOVE

SEE FIGURE 4-2C

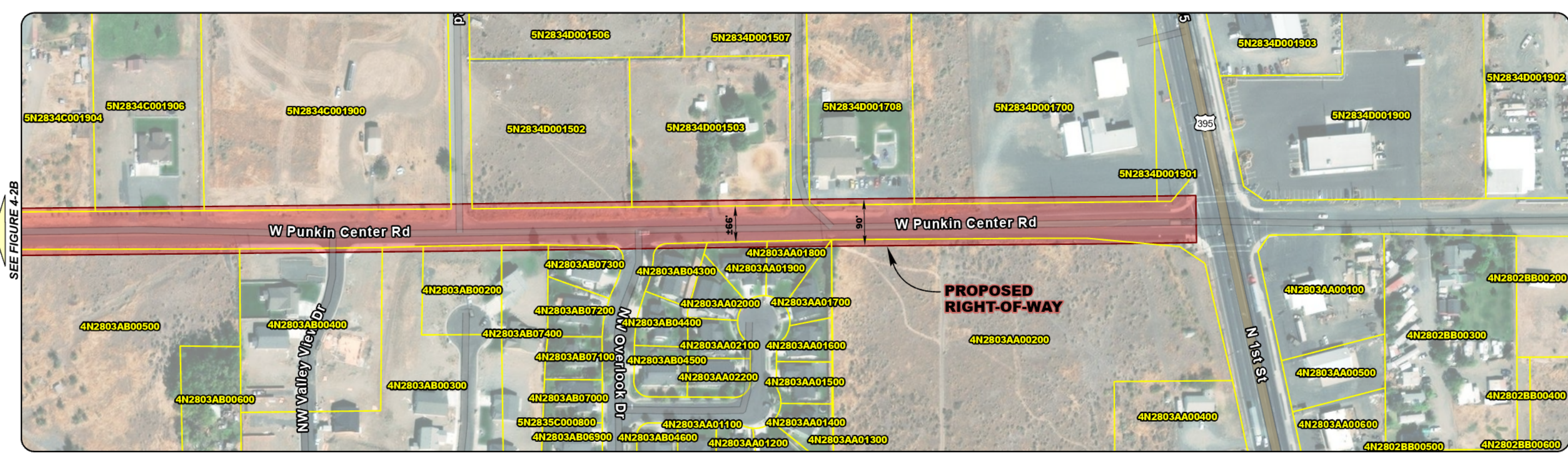


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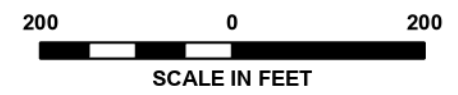
CITY OF
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PRELIMINARY ENGINEERING REPORT
TAX LOT MAP
PUNKIN CENTER ROAD OPTION

FIGURE
4-2B

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SEE FIGURE 4-2B



	<p>CITY OF HERMISTON, OREGON UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT TAX LOT MAP PUNKIN CENTER ROAD OPTION</p>	<p>FIGURE 4-2C</p>
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CITY OF HERMISTON, OREGON
 UMATILLA RIVER BRIDGE
 PRELIMINARY ENGINEERING REPORT
 ELM AVENUE OPTION RIGHT-OF-WAY ACQUISITION COST

Tax Lot Map #	Account #	Property			Real Market Value ⁴	Tax Lot Size ⁵		Real Market Value per SF ⁶	Estimated Cost ⁷
		Frontage (ft) ¹	Length	Property Width Required (ft) ²		Area Required (SF) ³	(Acres)		
4N28B00001500	117258	300		45	\$ 263,610	19.27	839,401	\$ 0.31	\$ 6,400
4N28B00002300	117269	540		25	422,370	20.39	888,188	0.48	9,700
4N28B00002400	117278 ⁸	240		25	6,000			3.17	28,600
4N28B00002401	117280	100		25	2,500	1.20	52,272	3.17	11,900
4N28B00002500	117281	300		25	7,500	4.93	214,751	0.12	1,400
4N28B00002600	117282	360		25	9,000	14.78	643,817	0.37	5,000
4N28B00002900	117286	690		25	17,250	20.37	887,317	0.68	17,700
4N28B00003100	117289	635		25	15,875	16.21	706,108	0.28	6,700
4N28B00003200	117290	326		25	8,150	29.55	1,287,198	0.13	1,600
4N28B00003300	117292	340		25	8,500	14.85	646,866	0.28	3,600
4N28B00003500	117294	3,314		25	82,850	33.36	1,453,162	0.16	20,500
4N28B00003600	117295	1,320		25	33,000	39.39	1,715,828	0.22	11,100
4N28B00003700	117297	720		25	18,000	8.78	382,457	0.75	20,300
4N28B00003701	117298	2,500		25	62,500	78.31	3,411,184	0.14	13,000
4N2808B000100	117352	25		25	625	39.39	1,715,828	0.21	200
4N28B00007800	117389	2,670		25	66,750	57.71	2,513,848	0.20	19,600
4N28B00007900	117391	800		25	20,000	30.49	1,328,144	0.10	3,000
4N2804D002000	117423	222		12	2,664	0.83	35,969	20.99	83,900
4N2803C000900	118727	277		12	3,324	5.33	232,175	7.58	37,900
4N2803D001301	118739	1,049		12	12,588	40.32	1,756,339	4.11	77,600
4N2803D001500	118747	942		12	11,304	5.33	232,175	1.32	22,300
4N2803D001700	118751	379		12	4,548	4.12	179,467	1.76	12,000
4N2810AA00200	119476	100		12	1,200	0.23	10,000	16.87	30,400
4N2810AA00300	119478	108		12	1,296	0.25	10,836	73.34	142,600
4N2810AA00301	119480	50		12	600	0.11	5,000	13.22	12,000
4N2810AA01000	119495	150		12	1,800	0.69	30,000	7.39	20,000
4N2810AA01100	119496	50		12	600	0.11	5,000	8.24	7,500
4N2810AA01200	119498	100		12	1,200	0.23	10,000	8.24	14,900
4N2810AA01600	119504	250		12	3,000	1.26	55,000	2.86	12,900
4N2804D001600	119812	176		12	2,112	3.88	169,013	2.51	8,000
4N2804D001700	119813	273		12	3,276	1.65	71,874	0.82	4,100
4N2804D001701	119816	208		12	2,496	0.91	39,640	6.58	24,700
4N2810B000200	120050	1,275		12	15,300	5.06	220,415	9.10	209,000
4N2810AB00200	120250	402		12	4,824	1.29	56,192	1.36	9,900
4N2810AB00202	120263	25		12	300	2.29	99,752	1.97	900
4N2810AB00204	120270	225		12	2,700	0.94	40,946	10.70	43,400
4N2810AB00300	120273	260		12	3,120	0.59	25,530	4.62	21,700
4N2810AB01000	120304	90		12	1,080	0.21	9,148	8.62	14,000
4N2810AB01017	120352	441		12	5,292	0.25	10,890	9.32	74,100
4N2810AB01903	120398	20		12	240	0.27	11,976	23.61	8,500
4N2810AB02900	120440	18		12	216	0.42	18,295	0.29	100
4N2810AA00100	135304	100		12	1,200	0.23	10,000	20.27	36,500
4N2810B000100	135318	275		12	3,300	9.20	400,752	1.13	5,600
4N2810B000101	135320	1,000		12	12,000	25.79	1,123,412	4.45	80,200
4N28B00009000	135648	700		12	8,400	20.17	878,605	0.26	3,300
4N28B00009090	135650	1,300		12	15,600	19.19	835,916	0.24	5,700
4N28B00002306	137608	540		25	13,500	20.40	888,624	0.45	9,100
4N2803C001000	139652	812		12	9,744	14.54	633,362	3.89	56,900
4N28B00003702	142520	600		25	15,000	23.50	1,023,660	0.38	8,600
4N28B00001502	143077	495		65	32,175	31.75	1,383,030	0.57	27,500
4N2803C000801	144018	215		12	2,580	1.48	64,469	7.51	29,100
4N28B00001502	144264	1,620		45	72,900	150.67	6,563,185	0.06	6,600




CITY OF
 HERMISTON, OREGON
 UMATILLA RIVER BRIDGE
 PRELIMINARY ENGINEERING REPORT
 ELM AVENUE OPTION RIGHT-OF-WAY
 ACQUISITION COST

**FIGURE
 4-3**

Tax Lot Map #	Account #	Property			Real Market Value ⁴	Tax Lot Size ⁵		Real Market Value per SF ⁶	Estimated Cost ⁷
		Frontage Length (ft) ¹	Property Width Required (ft) ²	Area Required (SF) ³		(Acres)	(SF)		
4N28B00002902	149975	25	25	625	14,210	2.82	122,839	0.12	200
4N2804D001802	154630	560	12	6,720	173,750	12.40	540,144	0.32	3,300
4N2803C000802	156146	704	12	8,448	2,735,620	30.50	1,328,580	2.06	26,100
4N2804D001601	156899	645	12	7,740	153,800	9.35	407,286	0.38	4,400
4N2803D002502	157407	188	12	2,256	753,640	0.42	18,294	41.20	139,500
4N2803C000806	157476	202	12	2,424	6,588,490	1.39	60,548	108.81	395,700
4N2803C000807	157477	195	12	2,340	313,840	1.33	57,935	5.42	19,100
4N2803C000810	159016	156	12	1,872	906,760	0.59	25,594	35.43	99,500
4N2804D002001	161108	222	12	2,664	257,980	0.85	37,026	6.97	27,900
4N2804D002002	161109	185	12	2,220	226,580	0.71	30,928	7.33	24,400
4N2804D001602	162114	295	12	3,540	2,099,090	1.95	84,917	24.72	131,300
4N2804D001603	162115	175	12	2,100	889,980	1.18	51,518	17.28	54,500
4N2804D001802	166033	281	12	3,372	173,750	12.40	540,144	0.32	1,700
4N2810AB00205	167471	25	12	300	113,070	1.20	52,272	2.16	1,000
Total Estimated Cost								\$ 2,271,000	

¹ Property frontage length is based on tax maps when information is available and estimated when distances are not provided.
² Property width required is based on the current right-of-way width (ROW), location of property lines on tax maps, and the width of the proposed ROW.
³ Area required is the result of multiplying the property frontage length and the property width required.
⁴ The real market value of the tax lot is the real market value available from the Umatilla County Assessment and Taxation Web Query in January 2022.
⁵ The tax lot size is the tax lot size available from the Umatilla County Assessment and Taxation Web Query in January 2022.
⁶ The real market value per square foot is the result of dividing the real market value by the tax lot size in square feet.
⁷ The estimated cost is an approximate estimate of the cost of purchasing any required property. The estimated cost is the result of multiplying the real market value per square foot, the area required, and a 1.5 multiplier to account for legal, administrative, contingencies, and any other fees. Values have been rounded to the nearest 100.
⁸ Information for this tax lot is considered confidential and is unavailable. The real market value per square foot was established based on the neighboring property, Account #117280.

ft = feet
SF = square feet

	<p>CITY OF HERMISTON, OREGON UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT ELM AVENUE OPTION RIGHT-OF-WAY ACQUISITION COST</p>	<p>FIGURE 4-3 CONT'D.</p>
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**CITY OF HERMISTON, OREGON
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PUNKIN CENTER ROAD OPTION RIGHT-OF-WAY ACQUISITION COST**

Tax Lot Map #	Account #	Property		Area Required (SF) ³	Real Market Value ⁴	Tax Lot Size ⁵		Real Market Value per SF ⁶	Estimated Cost ⁷
		Frontage Length (ft) ¹	Property Width Required (ft) ²			(Acres)	(SF)		
4N28B00002100	117266	3,450	25	86,250	\$ 918,780	131.24	5,716,814	\$ 0.16	\$ 20,800
4N28B00002200	117268	1,020	25	25,500	432,010	38.59	1,680,980	0.26	9,900
4N28B00002302	117272	341	25	8,525	582,300	5.00	217,800	2.67	34,200
4N28B00002303	117273	330	25	8,250	20,890	4.85	211,266	0.10	1,300
4N28B00002304	117275	330	25	8,250	595,630	4.85	211,266	2.82	34,900
4N28B00002305	117277	650	25	16,250	149,090	4.37	190,357	0.78	19,100
4N2803AA00200	119107	546	12	6,552	2,727,010	30.39	1,323,788	2.06	20,300
4N2803AB00500	119120	467	12	5,604	157,350	5.00	217,800	0.72	6,100
4N2803B000100	119155	410	12	4,920	931,670	20.45	890,802	1.05	7,800
5N28330000400	124650	1,130	25	28,250	518,860	80.75	3,517,470	0.15	6,300
5N28330001500	124651	1,000	25	25,000	410,930	30.25	1,317,690	0.31	11,700
5N28330001700	124655	198	25	4,950	312,510	2.04	88,862	3.52	26,200
5N28C00006300	124656	1,960	25	49,000	246,460	60.00	2,613,600	0.09	7,000
5N28C00006400	124657	950	25	23,750	189,440	22.52	980,971	0.19	6,900
5N2833D000300	124707	200	25	5,000	599,260	7.75	337,590	1.78	13,400
5N2833D000800	124716	500	45	22,500	455,880	3.75	163,350	2.79	94,200
5N2833DC00900	124726	819	45	36,855	413,580	2.78	121,282	3.41	188,600
5N2834C001200	124902	50	12	600	3,190	1.18	51,401	0.06	100
5N2834C001300	124912	273	12	3,276	440,930	2.02	87,991	5.01	24,700
5N2834C001400	124915	341	12	4,092	411,360	2.02	87,991	4.68	28,700
5N2834C001900	124926	470	12	5,640	429,260	16.65	725,274	0.59	5,100
5N2834C001901	124927	204	12	2,448	460,880	2.01	87,556	5.26	19,400
5N2834D001502	124975	305	12	3,660	125,630	2.00	87,120	1.44	8,000
5N2834D001503	124976	305	12	3,660	62,490	2.00	87,120	0.72	4,000
5N2834D001700	124980	540	12	6,480	7,165,840	4.20	182,952	39.17	380,800
4N2804A000300	135297	520	45	23,400	45,161,200	23.34	1,016,690	44.42	1,559,200
4N2804A000400	135298	350	45	15,750	89,730	4.00	174,240	0.51	12,200
4N2803B000200	135672	1,000	45	45,000	1,695,990	38.40	1,672,704	1.01	68,500
5N28330000100	135746	315	65	20,475	131,500	65.75	2,864,070	0.05	1,500
5N2834D001708	135773	200	12	2,400	924,730	1.69	73,616	12.56	45,300
4N2804A000100	142124	511	45	22,995	347,090	2.00	87,120	3.98	137,500
4N28B00003703	142968	25	25	625	1,100	0.55	23,958	0.05	100
4N28B00002308	143080	25	25	625	520	0.26	11,326	0.05	100
5N2834D001507	143787	30	12	360	134,780	2.08	90,605	1.49	900
5N2834C001904	146370	208	12	2,496	151,560	1.97	85,813	1.77	6,700
5N2833D000602	148638	205	45	9,243	329,390	10.66	464,350	0.71	9,900
4N2803B000109	148726	509	12	6,108	146,070	2.00	87,120	1.68	15,400
5N2833D000603	150118	592	45	26,640	193,720	2.87	125,017	1.55	62,000
4N2803B000111	150343	225	12	2,700	555,180	2.07	90,169	6.16	25,000
5N2834C001905	150385	204	12	2,448	231,120	2.13	92,783	2.49	9,200
5N2834C001109	152706	281	12	3,372	629,010	1.72	74,923	8.40	42,500
5N2834C001110	152707	291	12	3,492	610,960	1.72	74,923	8.15	42,800
5N2834C001906	158336	208	12	2,496	400,390	1.99	86,684	4.62	17,300
5N28C00006001	158439	650	25	16,250	645,450	20.00	871,200	0.74	18,100
4N2803AB04300	160024	72	12	864	335,770	0.21	9,148	36.71	47,600
4N2803AB07300	160086	118	12	1,416	327,190	0.25	10,890	30.04	63,900
4N2803B000112	161466	100	12	1,200	114,560	1.26	54,886	2.09	3,800
4N2803B000113	161467	175	12	2,100	187,810	2.98	129,809	1.45	4,600
4N2803AA01700	163665	10	12	120	275,620	0.20	8,528	32.32	5,900



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**FIGURE
4-4**

Tax Lot Map #	Tax Lot	Property			Tax Lot Size ₅		Real Market Value per SF ⁶	Estimated Cost ⁷	
		Frontage Length (ft) ¹	Property Width Required (ft) ²	Area Required (SF) ³	Real Market Value ⁴	(Acres)			(SF)
4N2803AA01700	163665	10	12	120	275,620	0.20	8,528	32.32	5,900
4N2803AA01800	163666	133	12	1,596	283,330	0.21	9,215	30.75	73,700
4N2803AA01900	163667	112	12	1,344	255,820	0.21	9,064	28.22	56,900
4N2803AB10400	167036	142	12	1,704	336,130	0.24	10,398	32.33	82,700
4N2803AB10500	167037	98	12	1,176	336,870	0.20	8,590	39.22	69,200
4N2803AB11700	167050	52	12	624	388,410	0.22	9,530	40.76	38,200
4N2803AB11800	167051	135	12	1,620	386,080	0.21	9,347	41.31	100,400
4N2803AB11900	167052	80	12	960	392,060	0.27	11,656	33.64	48,500
Total Estimated Cost								\$	3,650,000

¹ Property frontage length is based on tax maps when information is available and estimated when distances are not provided.

² Property width required is based on the current right-of-way (ROW) width, location of property lines on tax maps, and the width of the proposed ROW.

³ Area required is the result of multiplying the property frontage length and the property width required.

⁴ The real market value of the tax lot is the real market value available from the Umatilla County Assessment and Taxation Web Query in January 2022.

⁵ The tax lot size is the tax lot size available from the Umatilla County Assessment and Taxation Web Query in January 2022.

⁶ The real market value per square foot is the result of dividing the real market value by the tax lot size in square feet.

⁷ The estimated cost is an approximate estimate of the cost of purchasing any required property. The estimated cost is the result of multiplying the real market value per square foot, the area required, and a 1.5 multiplier to account for legal, administrative, contingencies, and any other fees. Values have been rounded to the nearest 100.

ft = feet

SF = square feet



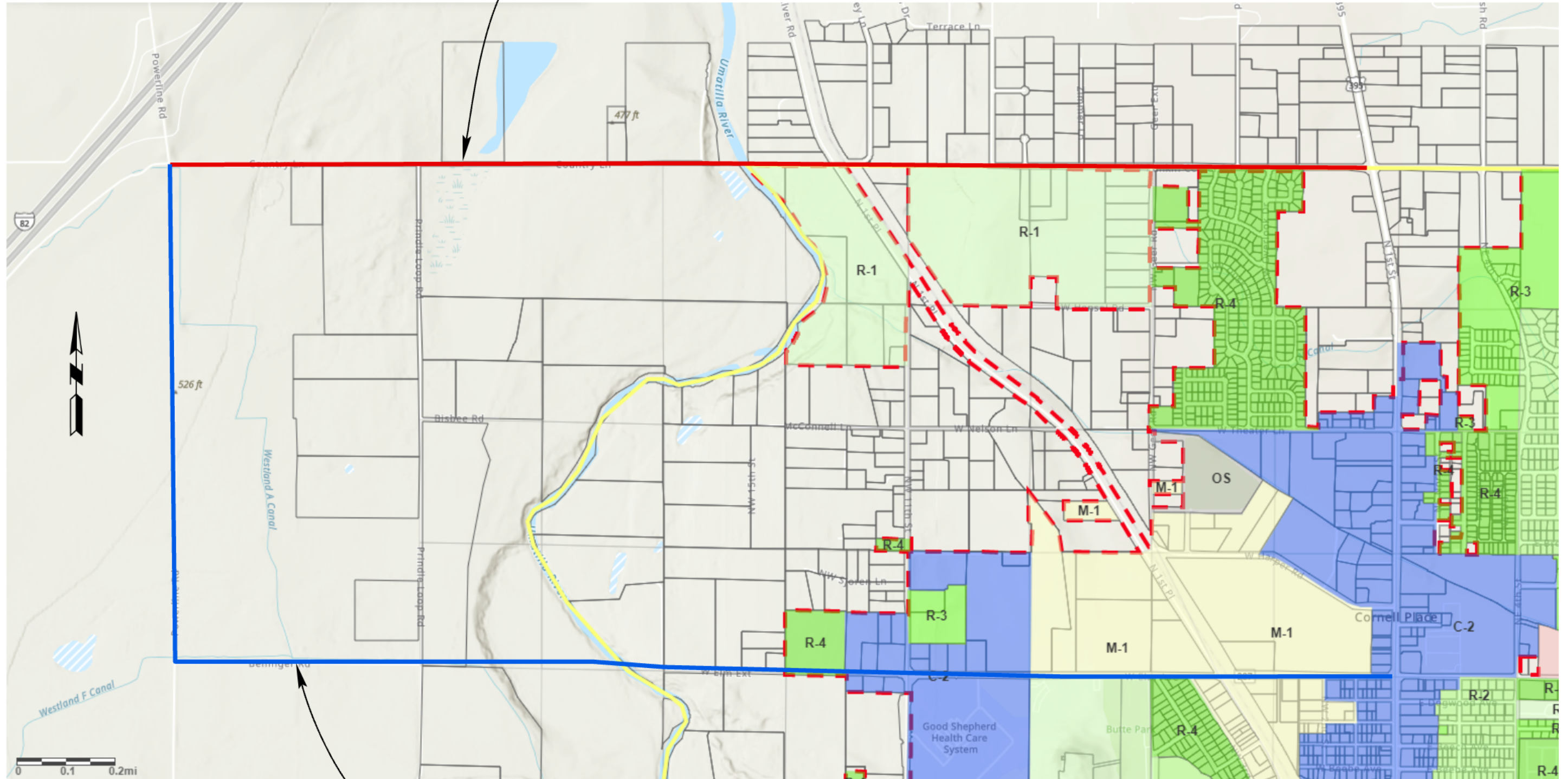
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PUNKIN CENTER ROAD OPTION
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FIGURE

4-4

CONT'D.

**PROJECT LOCATION
PUNKIN CENTER
ROAD OPTION**



LEGEND

- R-1 = LOW DENSITY RESIDENTIAL
- R-2 = MEDIUM DENSITY RESIDENTIAL
- R-3 = MEDIUM-HIGH DENSITY RESIDENTIAL
- R-4 = MULTI-STRUCTURE RESIDENTIAL
- C-2 = OUTLYING COMMERCIAL
- M-1 = LIGHT INDUSTRIAL
- OS = OPEN SPACE

**PROJECT LOCATION
ELM AVENUE OPTION**



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CITY OF HERMISTON ZONING

**FIGURE
4-5A**

Chapter 5 - Permitting, Environmental, and Cultural Resources

A. Overview

The following environmental review is an evaluation of the natural and cultural resources within and near the proposed project corridors. This review is cursory in nature and identifies elements to consider when planning for each of the proposed project options. Potential impacts to each resource are described along with potential mitigation measures and potentially required permits. All analyses were conducted via a desktop review of resources; a site visit was not completed for this work.

B. Elm Avenue Option

Goal 5 Resource Mapping

Oregon's Statewide Planning Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces requires review and consideration of important local resources to protect natural resources and conserve scenic and historic areas and open spaces. The Oregon Statewide Planning Goal 5 resources are addressed below.

- Riparian corridors, including water and riparian areas and fish habitat: The Elm Avenue option crosses the Umatilla River and its riparian corridor. According to a preliminary assessment by project engineers, the project would likely not require work below the ordinary high water elevation (OHWE) of the Umatilla River.
- Wetlands: Several wetlands occur near the Elm Avenue option, as discussed in the Wetlands and Waterways section below.
- Wildlife habitat: According to the City of Hermiston Comprehensive Plan, the Oregon Department of Fish and Wildlife (ODFW) has identified two critical habitats: the eastern bank of the Umatilla River and a three-acre pond in northeast Hermiston. These two areas and the Oregon State University (OSU) agricultural research station have been designated as Open Space, which protects them from incompatible development. The SageCon Landscape Planning Tool shows that there is no sage grouse habitat in Umatilla County (Oregon Explorer, 2021).
- Federal wild and scenic rivers: The National Wild and Scenic Rivers (NWSR) System map indicates that no designated Wild and Scenic Rivers are located within the Elm Avenue option (NWSR, 2016).
- State scenic waterways: The Oregon's Scenic Waterways list indicates that no designated State Scenic Waterways are located within the Elm Avenue option (Oregon Parks and Recreation Department [OPRD], 2021).
- Groundwater resources: According to the Oregon Water Resources Department (OWRD), the Elm Avenue option is located within the Stage Gulch, Butter Creek, and Ordinance Gravel critical groundwater areas (OWRD, 2016). Because the nature of the proposed work

does not include discharges to groundwater, the project is not anticipated to affect the Stage Gulch, Butter Creek, or Ordinance Gravel critical groundwater areas (see Figure 5-1, Critical Groundwater Areas).

- Approved Oregon recreation trails: According to Oregon State Parks, no designated scenic or regional trails are located near the Elm Avenue option (Oregon State Parks, 2021).
- Natural areas: The Cold Springs National Wildlife Refuge and the Umatilla National Wildlife Refuge are located near the City of Hermiston; however, neither occurs near the Elm Avenue option.
- Wilderness areas: The nearest wilderness area is the North Fork Umatilla Wilderness located approximately 50 miles east of the Elm Avenue option (Wilderness Connect, 2021).
- Mineral and aggregate resources: According to the City of Hermiston Comprehensive Plan, there are only two economically viable sand and gravel pits within the Hermiston urban growth boundary (UGB). Neither is located near the Elm Avenue option.
- Energy sources: According to the City of Hermiston Comprehensive Plan, the City is located near two major energy generators: the McNary Dam and the Portland General Electric (PGE) coal-fired electrical generating plant. Neither is located near the Elm Avenue option.
- Cultural Areas: Cultural resources and historic properties that occur within 1 mile of the project corridor are discussed in the Cultural Resources and Historic Properties section below.

Due to the nature of the proposed project, the Elm Avenue option could result in impacts to riparian corridors, wetlands, wildlife habitat, and cultural areas. Due to the distance of Goal 5 Resources, the Elm Avenue option is not anticipated to impact federal Wild and Scenic Rivers, State Scenic Waterways, groundwater resources, approved Oregon recreation trails, natural areas, wilderness areas, mineral and aggregate resources, and energy sources.

Wetlands and Waterways

According to the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Mapper, there are several wetlands near the Elm Avenue option, consisting of freshwater emergent wetlands and freshwater forested/shrub wetlands (USFWS, 2021a) (see Figure 5-2, Wetlands and Waterways). A pending Local Wetlands Inventory exists for the area, but it has not been reflected on the Statewide Wetlands Inventory, as it has not been approved.

The Umatilla River, Westland F Canal, Westland A Canal, three unnamed ditches, and one freshwater pond are located within and adjacent to the Elm Avenue option (see Figure 5-2, Wetlands and Waterways).

A site visit will be necessary to verify the presence of wetlands and waterways. If jurisdictional wetlands or waterbodies will be impacted by the proposed project, they will be subject to the permit requirements of the state and federal Removal-Fill Law and may require wetland/water delineation and permitting from the Oregon Department of State Lands (DSL) and the U.S. Army Corps of Engineers (USACE).

Floodplains

According to the Federal Emergency Management Agency (FEMA) Map Service Center, FEMA Flood Insurance Rate Map (FIRM) Panel No. 41059C0577G, the Elm Avenue option is located within the 500- and 100-year floodplains and within the floodway (FEMA, 2021) (see Figure 3-1, River Crossing Plan and Profile Elm Avenue Option). Therefore, FEMA development standards may apply, and a Floodplain Development Permit may be required. Since structural elements of the bridge will likely be located within the floodway, it is unlikely that a no-rise condition can be demonstrated. Because bridge construction will likely preclude demonstration of a 0.00 foot change in the effective 100-year flood water surface elevation, the project will require a Conditional Letter of Map Revision (CLOMR) and, following construction of the bridge, a Letter of Map Revision (LOMR); see Chapter 3 for costs and a detailed discussion of these elements.

Soils and Farmland

The six soils mapped within the Elm Avenue option are shown on Table 5-1 along with the hydric status, drainage class, and farmland classification (Natural Resources Conservation Service [NRCS], 2021) (see Figure 5-3, Soils Map).

**TABLE 5-1
 SOILS FOUND WITHIN THE ELM AVENUE OPTION**

Map Unit	Soil Name	Hydric Status	Drainage Class	Farmland Classification
14B	Burbank loamy fine sand, 0 to 5 percent slopes	No	Excessively drained	Not prime farmland
119A	Wanser loamy fine sand, 0 to 3 percent slopes	Yes	Poorly drained	Farmland of statewide importance
2B	Adkins fine sandy loam, gravelly substratum, 0 to 5 percent slopes	No	Well drained	Prime farmland if irrigated
122B	Winchester sand, 0 to 5 percent slopes	No	Excessively drained	Not prime farmland
124B	Winchester-Urban land complex, 0 to 5 percent slopes	No	Excessively drained	Not prime farmland
126A	Xerofluvents, 0 to 3 percent slopes	No	Somewhat poorly drained	Not prime farmland

The project will occur on previously disturbed farmland and on gravel and paved roads. If a federal nexus is identified (federal land, federal funding, federal permit, etc.), conversion of farmland to a non-farm use must comply with the guidelines of the Farmland Protection Policy Act, and farmland conversion impact consultation with the NRCS will be required. If improvements occur on Conservation Reserve Program (CRP) land, a waiver may be required.

Hydric soils have the potential to contain wetlands. A site visit will be necessary to verify the presence or absence of wetlands.

Protected Species

Listed species within the project corridor were obtained from the USFWS and National Marine Fisheries Service (NMFS) databases. The USFWS Information for Planning and Consultation (IPaC) list indicates that one threatened species (bull trout, *Salvelinus confluentus*) and bull trout critical habitat occur in the Umatilla River within the Elm Avenue option (USFWS, 2021b). The NMFS Protected Resources app indicates that one threatened species (Middle Columbia River [MCR] steelhead, *Oncorhynchus mykiss*) and steelhead critical habitat occur in the Umatilla River within the Elm Avenue option (NMFS, 2021a). The Umatilla River near the Elm Avenue option is also considered essential fish habitat (EFH) and is designated essential salmonid habitat (ESH) (NMFS, 2021b; DSL, 2021) (see Figure 5-4, Protected Species).

A search of the Oregon Biodiversity Information Center (ORBIC) database found 15 element occurrence records of rare, threatened, or endangered species within a 2-mile radius of the proposed project corridor, including federally listed steelhead and bull trout and state-listed Washington ground squirrel (*Urocitellus washingtoni*) (ORBIC, 2021). Depending on project funding or other considerations, a Washington ground squirrel survey may be required.

If no in-water work occurs, consultation under Section 7 of the Endangered Species Act (ESA) with the USFWS and NMFS would still be required if a federal nexus is identified for the project. To meet this requirement, a no effect memo may be required to document the lack of impacts to listed species. If in-water work is not required, the project will not be subject to an in-water work window.

If in-water work (or nearshore pile driving) occurs, formal consultation under Section 7 of the ESA with the USFWS and NMFS would be required. A USACE 404 Permit, DSL Removal-Fill Permit, and Oregon Department of Environmental Quality (DEQ) 401 Water Quality Certification Permit may be required. If the project requires in-water work, the project will be subject to the in-water work window for the Umatilla River of July 15 through September 30. If work occurs below the wetted edge of the Umatilla River, work area isolation, fish salvage, and ODFW fish passage approval may be required. The project is not anticipated to require in-water work. Construction of piers and abutments is anticipated to occur outside the OHWE. If work does occur within the OHWE, pile driving is anticipated to be required for the construction of piers and abutments. Due to the complexity of the project, it is unlikely that it would fit under the Standard Local Operating Procedures for Endangered Species (SLOPES) programmatic, and a Biological Assessment is anticipated to be required.

Migratory Birds

The USFWS IPaC list indicates bald eagle (*Haliaeetus leucocephalus*), Clark's grebe (*Aechmophorus clarkii*), Franklin's gull (*Leucophaeus pipixcan*), and rufous hummingbird (*Selasphorus rufus*) as birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in the project location. These species are highly mobile, and it is likely that they will simply leave the area during construction (USFWS, 2021b).

If tree removal occurs, trees should be surveyed for raptor nests prior to removal. Trees should be removed prior to the nesting season of March through August to ensure that no nesting raptors will

be affected by the proposed project. Construction should be completed outside the raptor nesting season, if possible, if any nesting raptors are observed near the project corridor.

Land Use/Zoning

The City of Hermiston Planning Department and the Umatilla County Planning Department should be consulted once the project design is complete to ensure all City and County permitting requirements are met.

If any work is located in an Exclusive Farm Use (EFU) area, a Conditional Land Use Permit and Goal 3 exception would be required along with strict County zoning requirements associated with the project. Goal 3 requires counties to identify farmland, designate it as such, and zone it EFU. An EFU zone places restrictions on developments that are unrelated to agriculture to minimize conflicts with farming.

If improvements occur on CRP land, a waiver may be required. Additionally, if a federal nexus is identified, conversion of farmland must comply with the guidelines of the Farmland Protection Policy Act. See Chapter 4 for additional land use and zoning discussion and costs.

Stormwater Discharge

Any expansion of impervious surfaces may require a DEQ Post-Construction Stormwater Management Plan. A National Pollutant Discharge Elimination System (NPDES) 1200-C Construction Stormwater Permit would be required if construction disturbs more than 1 acre of land and has the potential to discharge to the Umatilla River or other surface waters.

Parks, Green Spaces, and Natural Areas

Two parks, Butte Park and the disc golf course, are located adjacent to the Elm Avenue option (see Figure 5-5, Existing Park System).

Butte Park was funded by the Land and Water Conservation Fund (LWCF) in 1991 (LWCF, 2021). Section 6(f) of the Land and Water Conservation Fund Act (LWCFA) prohibits the conversion of property acquired or developed with LWCFA grants to uses other than public outdoor recreation. If work occurs on 6(f) land, consultation with the OPRD may be required.

Noise and Air Quality

The project may have the potential for noise impacts, and a noise analysis and mitigation plan may be required for construction noise, pile driving, and future traffic conditions.

According to the DEQ, the City of Hermiston is not in an air quality non-attainment or maintenance area (DEQ, 2021a). The proposed project is not anticipated to require an Air Quality Permit from the DEQ.

Hazardous Materials

Sixty-eight DEQ permitted sites occur within 0.5 mile of the Elm Avenue option; however, only hazardous materials adjacent to the project corridor will be discussed. Ten underground storage tanks (USTs), one hazardous waste generator, and four regulated leaking underground storage tanks (LUSTs) (cleanup completed) occur adjacent to the Elm Avenue option and are described below (DEQ, 2021b) (see Figure 5-6, DEQ Permitted Sites).

Underground Storage Tanks

- Western Express Mart; Facility ID 37420, UST Facility ID 12064 (1295 N.W. 11th Street). This site consists of three active USTs containing 30,000 gallons of gasoline and 20,000 gallons of diesel.
- Wondrack Distributing; Facility ID 17541, UST Facility ID 9477 (55 W. Elm Avenue). This site consists of four active USTs containing 12,000 gallons of gasoline and 12,000 gallons of diesel.
- Umatilla Electric Cooperative; Facility ID 879, UST ID 6477 (750 W. Elm Avenue). This site consists of three active USTs containing 20,000 gallons of gasoline and 40,000 gallons of diesel.

Leaking Underground Storage Tanks

- Umatilla Electric Cooperative; Facility ID 879, LUST ID 6477 (750 W. Elm Avenue). This site consists of two regulated LUSTs (cleanup completed). At the first tank, an unknown contaminant leaked, affecting soil and groundwater. The release was stopped on February 13, 1990, and cleanup was completed on September 21, 1990. At the second tank, an overfill caused diesel to release into soil. The release was stopped on January 23, 2002, and cleanup was completed on October 7, 2002. This site is located approximately 214 feet north of the Elm Avenue option. Due to the successful site cleanup, the project corridor is not anticipated to have been impacted by this release.
- McGregor Co. (Growers Fertilizer, Inc.); Facility ID 5559, LUST ID 10164 (445 W. Elm Avenue). This site consists of one regulated LUST (cleanup completed). An overfill caused unleaded gasoline/diesel to release into soil. The release was stopped on December 20, 1989, and cleanup was completed on August 13, 1999. This site is located approximately 115 feet north of the Elm Avenue option. Due to the successful site cleanup, the project corridor is not anticipated to have been impacted by this release.
- Netarts Bay, Inc.; Facility ID 22089, LUST ID 6132 (1235 N. 1st Street). This site consists of one regulated LUST (cleanup completed). An overfill caused unleaded gasoline to release into soil. The release was stopped on February 27, 1990, and cleanup was completed on November 1, 2005. This site is located approximately 131 feet south of the Elm Avenue option. Due to the successful site cleanup, the project corridor is not anticipated to have been impacted by this release.

Hazardous Waste Generators

- Umatilla Electric Cooperative; Conditionally Exempt Generator as of December 31, 2006; Facility ID 879, Site ID 1108 (750 W. Elm Avenue).

Because cleanup has been completed at all the LUSTs near the Elm Avenue option, the project is not anticipated to be impacted by these sites. A Phase 1 Environmental Site Assessment may be required for this project if property acquisition occurs. A Level 1 Hazardous Materials Corridor Study (HMCS) (and potentially a Level 2 Preliminary Site Investigation) may be required if Oregon Department of Transportation (ODOT) funding is utilized. If petroleum products are encountered during site excavation, work would be required to stop and the DEQ would be required to be contacted.

Cultural Resources and Historic Properties

The Oregon Archaeological Records Remote Access (OARRA) database was consulted for existing archaeological resources within 1 mile of the project corridor. While two previous surveys overlap the project corridor, no previously recorded archaeological sites or isolates were located within the proposed project corridor.

Eight cultural resources are mapped within 1 mile of the project corridor: site 35UM439 and seven isolates located on or near the Hermiston Butte. Site 35UM439 consists of two precontact burials that were 0.75 mile away from the proposed project and more than 1 mile away from the proposed bridge crossing. The graves were discovered on private land during construction of a road. After archaeological investigations were conducted by the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), the individuals were reburied in their original grave site (Dickson, 2008). The seven isolates located on or near the Hermiston Butte consist of precontact flakes, cobbles, shards, and a projectile point fragment as well as one historical bullet, the historical City reservoir, and the historical Butte Irrigation Canal. Most isolates are clustered 350 yards away from the project corridor on the butte itself, while one isolate is located approximately 100 yards from the project corridor (Oman, 1998; Miller, 2003). Site 35UM439, the Butte Irrigation Canal, and the City reservoir are unevaluated while all other cultural resources have been found ineligible for inclusion to the National Register of Historic Places (NRHP).

Cultural resource surveys within 1 mile of the proposed project have been conducted for land consolidation, water system improvements (pumps, storage, piping, irrigation canal improvements), road improvements (widening, grading, drainage improvements, repaving, sign installation), trail improvements, community pool construction, communications tower installations, and transmission line installation. One survey overlapped the project corridor for 1 mile of the eastern extent of W. Elm Avenue, from N. 1st Street to N.W. 11th Street. This survey observed no cultural material in the project corridor (Baxter, 2005). Six surveys occurred on or near the Hermiston Butte and observed the seven isolates. All other surveys observed no cultural materials in the vicinity of the project corridor. It should be noted that early surveys within the search radius (conducted in the 1970s through 1990s) did not employ the use of shovel test probes (STPs) to identify potential subsurface cultural resources, whereas the use of STPs is standard practice in current cultural resource surveys when a project will include ground disturbance. Potential impacts to archaeological

resources as a result of construction include excavation, sediment disturbance, sediment compactions, and other ground-disturbing construction activities.

Construction of a new road and bridge have the potential to impact viewsheds in the surrounding area. It is anticipated that a historic property inventory may be required, in addition to a cultural resource inventory, depending on funding requirements.

Funding Requirements

The funding agency will determine which environmental permits and consultation will be required for the proposed project. If federal funding is utilized, an Environmental Assessment will be required.

Advantages

The Elm Avenue option is not anticipated to impact the following Goal 5 resources: federal Wild and Scenic Rivers, State Scenic Waterways, groundwater resources, approved Oregon recreation trails, natural areas, wilderness areas, mineral and aggregate resources, and energy sources.

Disadvantages

The Elm Avenue option could result in impacts to the following Goal 5 resources: riparian corridors, wetlands, wildlife habitat, and cultural areas. The Elm Avenue option is anticipated to have greater wetland and waterway impacts than the Punkin Center Road option. A portion of the project corridor will be located within the floodway, 100-year floodplain, and 500-year floodplain; this is anticipated to require detailed hydraulic modeling and a no-rise certificate. The project will require permanent conversion of farmland. A portion of the project corridor is zoned EFU, so it may be challenging to gain land use approval from the County for development. ESA-listed species occur within the project corridor. More vegetation removal would be required. Upon project completion, the Elm Avenue option would result in a greater amount of impervious surface than the Punkin Center Road option. Two parks, Butte Park (LWCF funded) and the disc golf course, are located adjacent to the Elm Avenue option. A greater number of DEQ-permitted sites are located adjacent to the project corridor, resulting in a greater chance of encountering contaminated soils than the Punkin Center Road option. The Elm Avenue option is located farther upstream on the Umatilla River than the Punkin Center Road option and, therefore, would result in a longer stretch of river that could potentially be impacted by project development.

Permits

Table 5-2 lists potential permits and environmental clearances that could be required for the Elm Avenue option.

**TABLE 5-2
 ELM AVENUE OPTION ENVIRONMENTAL PERMITS**

Permit	Approving Agency
County/City Permits/Other	
Conditional Use Permit	Umatilla County and the City of Hermiston
Goal 3 Exception Process	Umatilla County
Floodplain Development Permit and No-Rise Certificate	Umatilla County and the City of Hermiston
State Permits/Consultation	
DSL Removal-Fill Permit	DSL
Wetland Delineation Concurrence	DSL
Post-Construction Stormwater Management Plan	DEQ
1200-C Construction Stormwater General Permit	DEQ
401 Water Quality Certification	DEQ
ODFW Fish Passage Approval	ODFW
ODFW Consultation (Ground Squirrel Survey)	ODFW
Beneficial Use Determination	ODOT
Noise Analysis	ODOT
LWCF 6(f) Land Consultation	OPRD
Federal Permits/Consultation	
404 Removal-Fill Permit	USACE
Section 7 ESA Consultation	USACE, USFWS, and NMFS
Section 106 Consultation	Oregon State Historic Preservation Office (SHPO)/Tribes as approved by the Legislative Commission on Indian Services
Environmental Assessment	Federal Funding Agency
CLOMR	FEMA
Farmland Conversion Impact Consultation	NRCS

Cost

Table 5-3 lists the estimated costs for potential permits and environmental clearances that could be required for the Elm Avenue option (2022 dollars).

**TABLE 5-3
 ELM AVENUE OPTION ENVIRONMENTAL COSTS**

Task Description	Estimated Cost
County/City Permits/Other	
Floodplain Development Permit Application and No-Rise Certificate (assumes hydraulic modeling completed)	\$5,000
Conditional Use Permit Application (Goal 3 Exception)	\$30,000
State Permits/Consultation	
Wetland Delineation	\$10,000
Wetland/Waterway Mitigation Plan	\$20,000
Stream Functional Assessment Method	\$6,000
Oregon Rapid Wetland Assessment Protocol	\$4,000
Ground Squirrel Survey	\$5,000
Fish Salvage	\$10,000
ODFW Fish Passage Approval	\$10,000

Post-Construction Stormwater Management Plan	\$10,000
1200-C Construction Stormwater General Permit	\$8,000
ODOT Noise Analysis	\$30,000
Phase 1 Environmental Site Assessment/ODOT Level 1 HMCS	\$10,000
ODOT Level 2 Preliminary Site Investigation	Depends on Level 1 Results
Federal Permits/Consultation	
CLOMR/LOMR	See Chapter 3
Joint Permit Application	\$16,000
Biological Assessment	\$20,000
Environmental Assessment	\$25,000
Historic Property Inventory	\$30,000
Cultural Resource Phase I (STP and Pedestrian)	\$75,000
Cultural Resource Phase II (Ten Sites)	\$150,000
Cultural Resource Phase III	Depends on Phase II
Cultural Resource Monitoring (Assumes 100 Construction Days)	\$100,000
Total	\$574,000

C. Punkin Center Road Option

Goal 5 Resource Mapping

Oregon’s Statewide Planning Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces requires review and consideration of important local resources to protect natural resources and conserve scenic and historic areas and open spaces. The Oregon Statewide Planning Goal 5 resources are addressed below.

- Riparian corridors, including water and riparian areas and fish habitat: The Punkin Center Road option crosses the Umatilla River and its riparian corridor. Based on a preliminary analysis by design engineers, the project is not anticipated to require work below the OHWE of the Umatilla River.
- Wetlands: Several wetlands occur near the Punkin Center Road option, as discussed in the Wetlands and Waterways section below.
- Wildlife habitat: According to the City of Hermiston Comprehensive Plan, ODFW has identified two critical habitats: the eastern bank of the Umatilla River and a 3-acre pond in northeast Hermiston. These two areas and the OSU agricultural research station have been designated as Open Space, which protects them from incompatible development. The SageCon Landscape Planning Tool shows that there is no sage grouse habitat in Umatilla County (Oregon Explorer, 2021).
- Federal Wild and Scenic Rivers: The NWSR System map indicates that no designated Wild and Scenic Rivers are located within the Punkin Center Road option (NWSR, 2016).
- State Scenic Waterways: The Oregon’s Scenic Waterways list indicates that no designated State Scenic Waterways are located within the Punkin Center Road option (Oregon Parks and Recreation Department, 2021).
- Groundwater resources: According to the OWRD, the Punkin Center Road option is located within the Butter Creek critical groundwater area (OWRD, 2016). Because the nature of the

- proposed work does not include discharges to groundwater, the project is not anticipated to affect the Butter Creek critical groundwater area (see Figure 5-1, Critical Groundwater Areas).
- Approved Oregon recreation trails: According to Oregon State Parks, no designated scenic or regional trails are located near the Punkin Center Road option (Oregon State Parks, 2021).
 - Natural areas: The Cold Springs National Wildlife Refuge and the Umatilla National Wildlife Refuge are located near the City of Hermiston; however, neither occurs near the project corridor.
 - Wilderness areas: The nearest wilderness area is the North Fork Umatilla Wilderness located approximately 50 miles east of the project corridor (Wilderness Connect, 2021).
 - Mineral and aggregate resources: According to the City of Hermiston Comprehensive Plan, only two economically viable sand and gravel pits are located within the Hermiston UGB. Neither is located near the Punkin Center Road option.
 - Energy sources: According to the City of Hermiston Comprehensive Plan, the City is located near two major energy generators, the McNary Dam and the PGE coal-fired electrical generating plant. Neither is located near the Punkin Center Road option.
 - Cultural Areas: Cultural resources and historic properties that occur within 1 mile of the project corridor are discussed in the Cultural Resources and Historic Properties section below.

Due to the nature of the proposed project, the Punkin Center Road option could result in impacts to riparian corridors, wetlands, wildlife habitat, and cultural areas. Due to the distance of Goal 5 Resources, the Punkin Center Road option is not anticipated to impact federal Wild and Scenic Rivers, State Scenic Waterways, groundwater resources, approved Oregon recreation trails, natural areas, wilderness areas, mineral and aggregate resources, and energy sources.

Wetlands and Waterways

According to the USFWS NWI Mapper, several wetlands are located near the Punkin Center Road option, consisting of freshwater emergent wetlands and freshwater forested/shrub wetlands (USFWS, 2021a) (see Figure 5-2, Wetlands and Waterways). A pending Local Wetlands Inventory exists for the area, but it has not been reflected on the Statewide Wetlands Inventory, as it has not been approved.

The Umatilla River, Westland A Canal, two unnamed ditches, and several freshwater ponds are located within and adjacent to the Punkin Center Road option (see Figure 5-2, Wetlands and Waterways).

A site visit will be necessary to verify the presence of wetlands and waterways. If wetlands and waterbodies will be impacted by the proposed project, the wetlands may be subject to the permit requirements of the state and federal Removal-Fill Law and may require wetland/waters delineation requirements and permitting from the DSL and the USACE.

Floodplains

According to the FEMA Map Service Center, FEMA FIRM Panel No. 41059C0577G, the Punkin Center Road option is located within the 500- and 100-year floodplains and within the floodway (FEMA, 2021) (see Figure 3-2, River Crossing Plan and Profile Punkin Center Road Option). Therefore, FEMA development standards may apply, and a Floodplain Development Permit would be required. Since the bridge infrastructure will be located within the floodway, it is unlikely that a no-rise condition can be demonstrated. Because bridge construction will preclude demonstration of a 0.00 foot change in the effective 100-year flood water surface elevation, the project will require a CLOMR and, following construction of the bridge, a LOMR; see Chapter 3 for costs and a detailed discussion of these elements.

Soils and Farmland

The six soils mapped within the Punkin Center Road option are shown on Table 5-4 along with the hydric status, drainage class, and farmland classification (NRCS, 2021) (see Figure 5-3, Soils Map).

**TABLE 5-4
 SOILS FOUND WITHIN THE PUNKIN CENTER ROAD OPTION**

Map Unit	Soil Name	Hydric Status	Drainage Class	Farmland Classification
14B	Burbank loamy fine sand, 0 to 5 percent slopes	No	Excessively drained	Not prime farmland
119A	Wanser loamy fine sand, 0 to 3 percent slopes	Yes	Poorly drained	Farmland of statewide importance
122B	Winchester sand, 0 to 5 percent slopes	No	Excessively drained	Not prime farmland
76B	Quincy loamy fine sand, gravelly substratum, 0 to 5 percent slopes	No	Excessively drained	Not prime farmland
75E	Quincy loamy fine sand, 5 to 25 percent slopes	No	Excessively drained	Not prime farmland
126A	Xerofluvents, 0 to 3 percent slopes	No	Somewhat poorly drained	Not prime farmland

The project will occur on previously disturbed farmland and gravel roads. If a federal nexus is identified, conversion of farmland must comply with the guidelines of the Farmland Protection Policy Act, and farmland conversion impact consultation with the NRCS will be required. If improvements occur on CRP land, a waiver may be required.

Hydric soils have the potential to contain wetlands. A site visit will be necessary to verify the presence or absence of wetlands.

Protected Species

Listed species within the project corridor were obtained from the USFWS and NMFS databases. The USFWS IPaC list indicates that one threatened species (bull trout, *Salvelinus confluentus*) and bull trout critical habitat occur in the Umatilla River within the Punkin Center Road option (USFWS, 2021b). The NMFS Protected Resources app indicates that one threatened species (MCR steelhead,

Oncorhynchus mykiss) and steelhead critical habitat occur in the Umatilla River within the Punkin Center Road option (NMFS, 2021a). The Umatilla River near the Punkin Center Road option is also considered EFH and is designated ESH (NMFS, 2021b; DSL, 2021) (see Figure 5-4, Protected Species).

A search of the ORBIC database found 15 element occurrence records of rare, threatened, or endangered species within a 2-mile radius of the proposed project corridor, including federally listed steelhead and bull trout and state-listed Washington ground squirrel (*Urocitellus washingtoni*) (ORBIC, 2021). Depending on project funding or other considerations, a Washington ground squirrel survey may be required.

If no in-water work occurs, consultation under Section 7 of the ESA with the USFWS and NMFS would still be required if a federal nexus is identified. To meet this requirement, a no effect memo may be required to document the lack of impacts to listed species. If in-water work is not required, the project will not be subject to an in-water work window.

If in-water work (or nearshore pile driving) occurs, formal consultation under Section 7 of the ESA with the USFWS and NMFS would be required. A USACE 404 Permit, DSL Removal-Fill Permit, and DEQ 401 Water Quality Certification Permit may be required. If the project requires in-water work, the project will be subject to the in-water work window for the Umatilla River of July 15 through September 30. If work occurs below the wetted edge of the Umatilla River, work area isolation, fish salvage, and ODFW fish passage approval may be required. The project is not anticipated to require in-water work. The construction of piers and abutments is anticipated to occur outside the OHWE. If work does occur within the OHWE, pile driving is anticipated to be required for the construction of piers and abutments. Due to the complexity of the project, it is unlikely that it would fit under the SLOPES programmatic, and a Biological Assessment is anticipated to be required.

Migratory Birds

The USFWS IPaC list indicates bald eagle (*Haliaeetus leucocephalus*), Clark's grebe (*Aechmophorus clarkii*), Franklin's gull (*Leucophaeus pipixcan*), and rufous hummingbird (*Selasphorus rufus*) as birds of particular concern either because they occur on the USFWS BCC list or warrant special attention in the project corridor. These species are highly mobile, and it is likely that they will simply leave the area during construction (USFWS, 2021b).

If tree removal occurs, trees should be surveyed for raptor nests prior to removal. Trees should be removed prior to the nesting season of March through August to ensure that no nesting raptors will be affected by the proposed project. Construction should be completed outside the raptor nesting season, if possible, if any nesting raptors are observed near the project corridor.

Land Use/Zoning

The City of Hermiston Planning Department and the Umatilla County Planning Department should be consulted once the project design is complete to ensure that all City and County permitting requirements are met.

If any work is located in an EFU area, a Conditional Land Use Permit and Goal 3 exception would be required along with strict County zoning requirements associated with the project. Goal 3 requires

counties to identify farmland, designate it as such, and zone it EFU. An EFU zone places restrictions on developments that are unrelated to agriculture to minimize conflicts with farming.

If improvements occur on CRP land, a waiver may be required. Additionally, if a federal nexus is identified, conversion of farmland must comply with the guidelines of the Farmland Protection Policy Act.

Based on preliminary mapping, it appears a portion of the project may occur on Bureau of Land Management (BLM)-owned land. If the project occurs on BLM-owned land, the project may be subject to BLM National Environmental Policy Act (NEPA) requirements and an extensive environmental review process. The BLM should be consulted to ensure that all BLM permitting requirements are met. See Chapter 4 for additional land use and zoning discussion and cost.

Stormwater Discharge

Any expansion of impervious surfaces would require a DEQ Post-Construction Stormwater Management Plan. An NPDES 1200-C Construction Stormwater Permit would be required if construction disturbs more than 1 acre of land and has the potential to discharge to the Umatilla River or other surface waters.

Parks, Green Spaces, and Natural Areas

One natural area, owned by the BLM, is located adjacent to the Punkin Center Road option (see Figure 5-5, Existing Park System).

If the project occurs on BLM-owned land, the project may be subject to BLM NEPA requirements and an extensive environmental review process.

Noise and Air Quality

The project may have the potential for noise impacts, and a noise analysis and mitigation plan may be required for construction noise, pile driving, and future traffic conditions.

According to the DEQ, the City of Hermiston is not in an air quality non-attainment or maintenance area (DEQ, 2021a). The proposed project is not anticipated to require an Air Quality Permit from the DEQ.

Hazardous Materials

Six hazardous material sites occur within 0.5 mile of the project corridor; however, only hazardous materials adjacent to the project corridor will be discussed. One suspected contaminated site requiring further investigation and four USTs occur adjacent to the Punkin Center Road option and are described below (DEQ, 2021b) (see Figure 5-6, DEQ Permitted Sites).

Suspected Contaminated Site

- Swain Motors; Facility ID 141365, Site ID 6127 (80406 Highway 395). A floor drain located in the vehicle service area discharged to a former septic drainfield. The floor drain was closed in June 2016. The site has potential soil and groundwater contamination; soil and/or groundwater sampling is necessary to evaluate environmental impacts from the floor drain. This site is located approximately 615 feet north of the Punkin Center Road option. Due to the distance from the project corridor, the project is not anticipated to be impacted by this release.

Underground Storage Tank

- Rocket Mart; Facility ID 88807, UST Facility ID 2215 (2398 N. 1st Street). This site consists of four active USTs containing 50,000 gallons of gasoline and 15,000 gallons of diesel.

Based on the location of the permitted sites in relation to the project corridor, the project is not anticipated to be impacted by these sites. A Phase 1 Environmental Site Assessment may be required for this project if property acquisition occurs. A Level 1 HMCS (and potentially a Level 2 Preliminary Site Investigation) may be required if ODOT funding is utilized. If petroleum products are encountered during site excavation, work would be required to stop and the DEQ would be required to be contacted.

Cultural Resources and Historic Properties

The OARRA database was consulted for existing archaeological resources within 1 mile of the project corridor. While four previous surveys overlap the project corridor, no previously recorded archaeological sites or isolates were located within the proposed project corridor.

One cultural resource is mapped within 1 mile of the project corridor. Site 35UM439 consists of two precontact burials that were 0.25 mile away from the proposed project and more than 0.5 mile from the proposed bridge crossing. The graves were discovered on private land during the construction of a road. After archaeological investigations were conducted by the CTUIR, the two individuals were reburied in their original grave site (Dickson, 2008). Site 35UM439 is unevaluated for inclusion to the NRHP.

Cultural resource surveys within 1 mile of the proposed project have been conducted for wastewater treatment systems (construction of a plant, installation of piping and tanks), road improvements (widening, grading, drainage improvements, repaving, sign installation), land consolidation, and transmission line installation. None of these surveys observed cultural materials in the general vicinity of the proposed project. However, it should be noted that early surveys within the search radius (conducted in the 1970s through 1990s) did not employ the use of STPs to identify potential subsurface cultural resources, whereas the use of STPs is standard practice in current cultural resource surveys when a project will include ground disturbance. Potential impacts to archaeological resources as a result of construction include excavation, sediment disturbance, sediment compaction, and other ground-disturbing construction activities.

Construction of a new road and bridge have the potential to impact viewsheds in the surrounding area. It is anticipated that a historic property inventory may be required in addition to a cultural resource inventory, depending on funding requirements.

Funding Requirements

The funding agency will determine which environmental permits and consultation will be required for the proposed project. If federal funding is utilized, an Environmental Assessment will be required. Since a portion of the Punkin Center Road option corridor occurs on BLM-owned land, the project may be subject to BLM NEPA requirements and an extensive environmental review process.

Advantages

The Punkin Center Road option is not anticipated to impact the following Goal 5 resources: federal Wild and Scenic Rivers, State Scenic Waterways, groundwater resources, approved Oregon recreation trails, natural areas, wilderness areas, mineral and aggregate resources, and energy sources. The Punkin Center Road option is anticipated to have fewer wetland and waterway impacts than the Elm Avenue option. Less vegetation removal will be required than the Elm Avenue option. Upon project completion, the Punkin Center Road option would result in a smaller amount of impervious surface than the Elm Avenue option. Fewer DEQ-permitted sites are located adjacent to the project corridor than the Elm Avenue option, resulting in less chance of encountering contaminated soils. The Punkin Center Road option is located farther downstream on the Umatilla River and, therefore, would result in fewer downstream impacts than the Elm Avenue option.

Disadvantages

The Punkin Center Road option could result in impacts to the following Goal 5 resources: riparian corridors, wetlands, wildlife habitat, and cultural areas. A portion of the project corridor would be located within the floodway, 100-year floodplain, and 500-year floodplain; this is anticipated to require detailed hydraulic modeling and a no-rise certificate. The project would require permanent conversion of farmland. A portion of the project corridor is zoned EFU, so it may be challenging to gain land use approval from the County for development. ESA-listed species occur within the project corridor. A BLM-owned natural area is located adjacent to the Punkin Center Road option. A major disadvantage to the Punkin Center Road option is that a portion of the project corridor may occur on BLM-owned land and, therefore, may be subject to BLM NEPA requirements and an extensive environmental review process.

Permits

Table 5-5 lists potential permits and environmental clearances that could be required for the Punkin Center Road option.

**TABLE 5-5
 PUNKIN CENTER ROAD OPTION ENVIRONMENTAL PERMITS**

Permit	Approving Agency
County/City Permits/Other	
Conditional Use Permit	Umatilla County and the City of Hermiston
Goal 3 Exception Process	Umatilla County
Floodplain Development Permit and No-Rise Certificate	Umatilla County and the City of Hermiston
State Permits/Consultation	
DSL Removal-Fill Permit	DSL
Wetland Delineation Concurrence	DSL
Post-Construction Stormwater Management Plan	DEQ
1200-C Construction Stormwater General Permit	DEQ
401 Water Quality Certification	DEQ
ODFW Fish Passage Approval	ODFW
ODFW Consultation (Ground Squirrel Survey)	ODFW
Beneficial Use Determination	ODOT
Noise Analysis	ODOT
6(f) Land Consultation	OPRD
Federal Permits/Consultation	
404 Removal-Fill Permit	USACE
Section 7 ESA Consultation	USACE, USFWS, and NMFS
BLM NEPA Process (Environmental Assessment)	BLM
Section 106 Consultation	SHPO/Tribes as approved by the Legislative Commission on Indian Services
CLOMR	FEMA
Farmland Conversion Impact Consultation	NRCS

Cost

Table 5-6 lists the estimated costs for potential permits and environmental clearances that could be required for the Punkin Center Road option (2022 dollars).

**TABLE 5-6
 PUNKIN CENTER ROAD OPTION ENVIRONMENTAL COSTS**

Task Description	Estimated Cost
County/City Permits/Other	
Floodplain Development Permit and No-Rise Certificate (assumes hydraulic modeling completed)	\$5,000
Conditional Use Permit Application (Goal 3 Exception)	\$30,000
State Permits/Consultation	
Wetland Delineation	\$10,000
Wetland/Waterway Mitigation Plan	\$20,000
Stream Functional Assessment Method	\$6,000
Oregon Rapid Wetland Assessment Protocol	\$4,000
Ground Squirrel Survey	\$5,000
Fish Salvage	\$10,000
ODFW Fish Passage Approval	\$10,000
Post-Construction Stormwater Management Plan	\$10,000

1200-C Construction Stormwater General Permit	\$8,000
ODOT Noise Analysis	\$30,000
Phase 1 Environmental Site Assessment/ODOT Level 1 HMCS	\$10,000
ODOT Level 2 Preliminary Site Investigation	Depends on Level 1 Results
Federal Permits/Consultation	
CLOMR/LOMR	See Chapter 3
Joint Permit Application	\$16,000
Biological Assessment	\$20,000
BLM NEPA Process (Environmental Assessment)	\$75,000
Historic Property Inventory	\$30,000
Cultural Resource Phase I (STP and Pedestrian)	\$75,000
Cultural Resource Phase II (Ten Sites)	\$150,000
Cultural Resource Phase III	Depends on Phase II
Cultural Resource Monitoring (Assumes 100 Construction Days)	\$100,000
Total	\$624,000

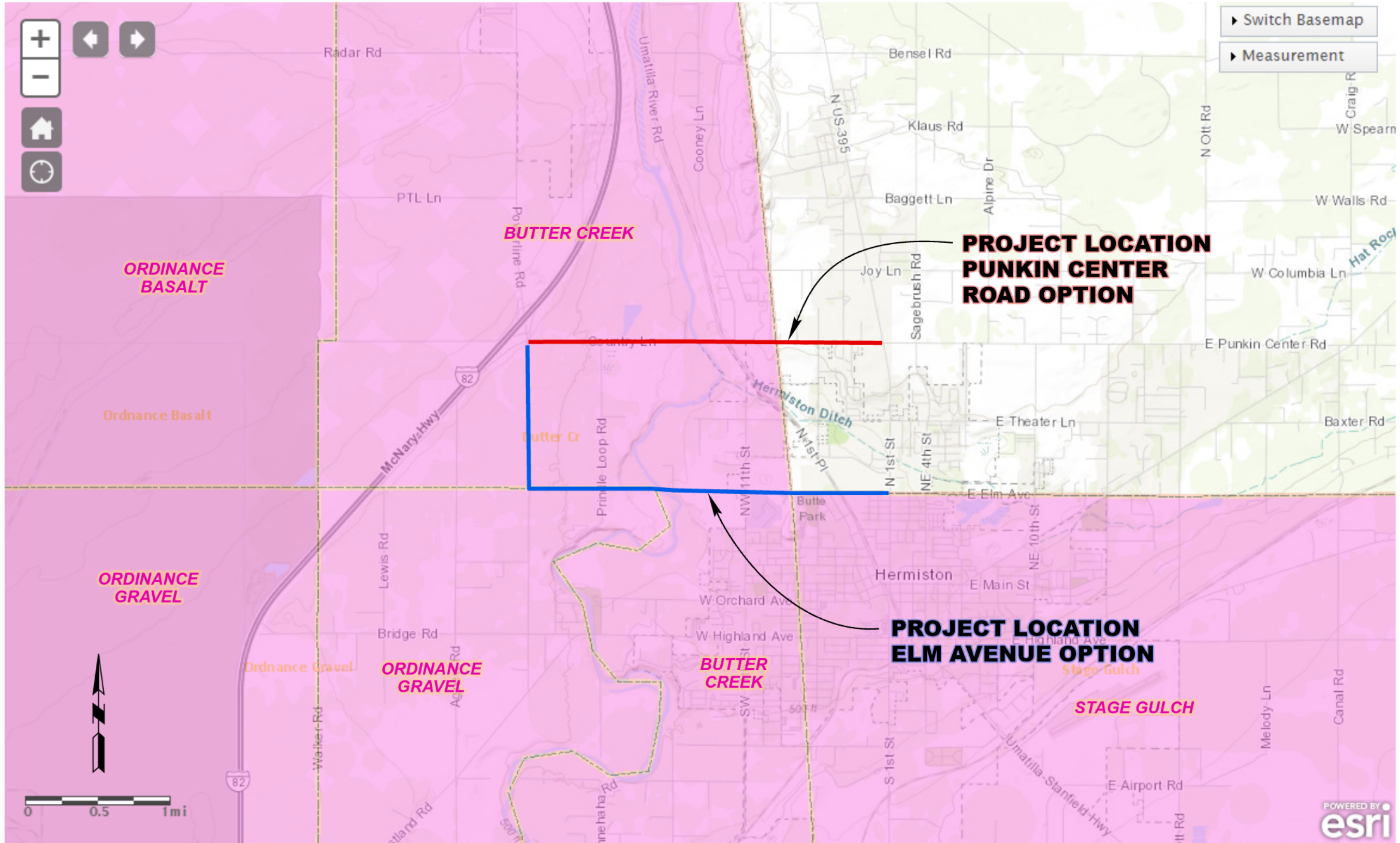
Table 5-7 lists the advantages and disadvantages of the Elm Avenue option and the Punkin Center Road option.

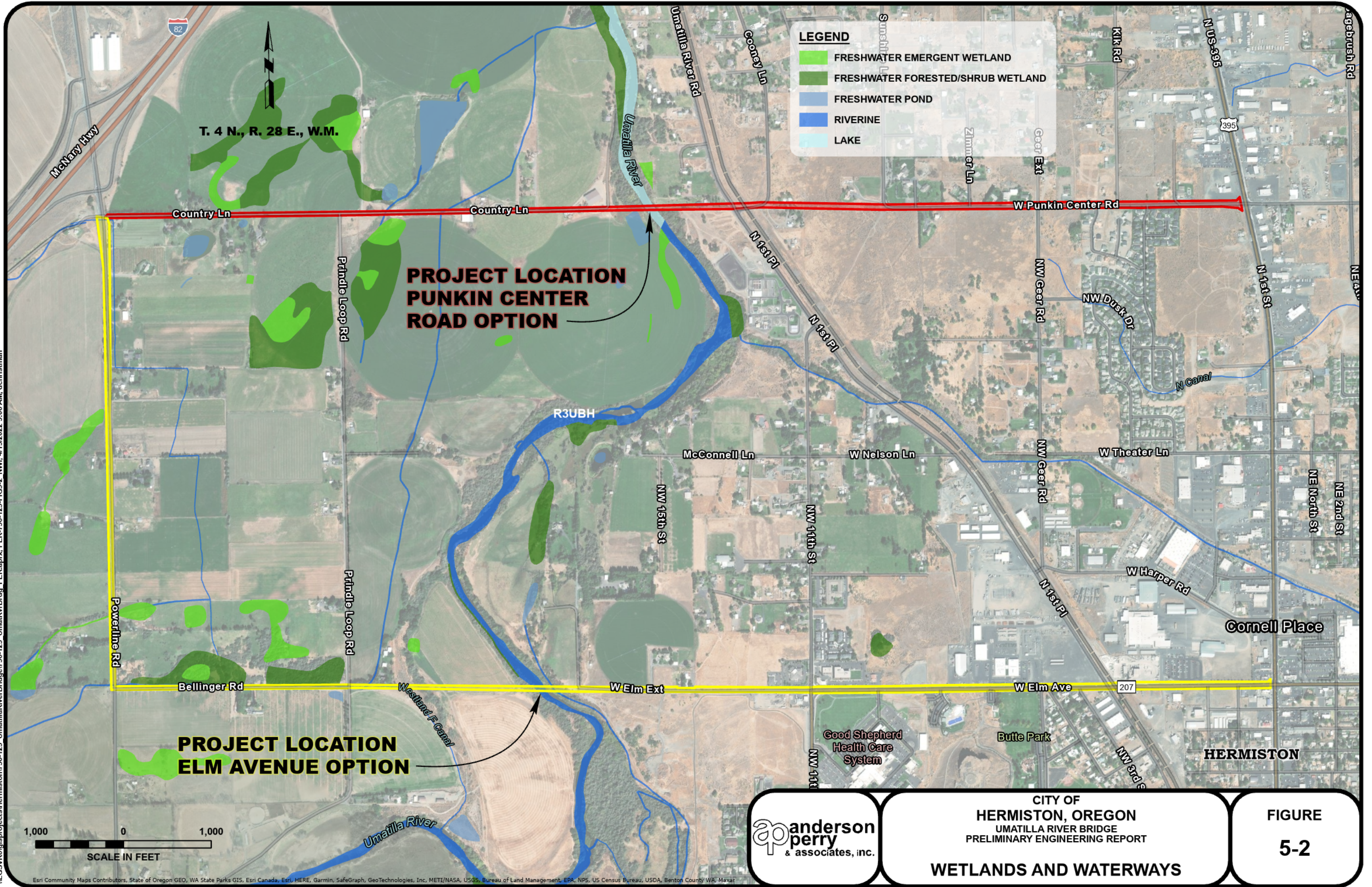
**TABLE 5-7
 ADVANTAGES AND DISADVANTAGES**

Elm Avenue Option		Punkin Center Road Option	
Advantages	Disadvantages	Advantages	Disadvantages
<ul style="list-style-type: none"> Likely will not affect the following Goal 5 resources: federal Wild and Scenic Rivers, State Scenic Waterways, groundwater resources, approved Oregon recreation trails, natural areas, wilderness areas, mineral and aggregate resources, and energy sources Does not occur on federally owned land 	<ul style="list-style-type: none"> May affect the following Goal 5 resources: riparian corridors, wetlands, wildlife habitat, and cultural areas May require demolition of houses or structures More potential wetland and waterway impacts Potential federally listed species impacts Larger project corridor, more disturbance Would require permanent conversion of farmland within EFU zoning designation Would occur within the floodway, 100-year floodplain, and 500-year floodplain Located farther upstream, resulting in more downstream impacts 	<ul style="list-style-type: none"> Likely will not affect the following Goal 5 resources: federal Wild and Scenic Rivers, State Scenic Waterways, groundwater resources, approved Oregon recreation trails, natural areas, wilderness areas, mineral and aggregate resources, and energy sources Fewer potential wetland and waterway impacts Less vegetation removal would be required Smaller project corridor, reduced disturbance Smaller amount of impervious surface created 	<ul style="list-style-type: none"> May affect the following Goal 5 resources: riparian corridors, wetlands, wildlife habitat, and cultural areas May occur on BLM-owned land May require demolition of houses or structures Potential wetland and waterway impacts Potential federally listed species impacts Would require permanent conversion of farmland within EFU zoning designation Would occur within the floodway, 100-year floodplain, and 500-year floodplain

	<ul style="list-style-type: none">• More vegetation removal would be required• Greater amount of impervious surface created• May impact Butte Park (LWCF funded)• Greater chance of encountering contaminated soils	<ul style="list-style-type: none">• Less chance of encountering contaminated soils• Located farther downstream, resulting in fewer downstream impacts	
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LEGEND

- FRESHWATER EMERGENT WETLAND
- FRESHWATER FORESTED/SHRUB WETLAND
- FRESHWATER POND
- RIVERINE
- LAKE

**PROJECT LOCATION
PUNKIN CENTER
ROAD OPTION**

**PROJECT LOCATION
ELM AVENUE OPTION**

1,000 0 1,000
SCALE IN FEET



**anderson
perry**
& associates, inc.

CITY OF
HERMISTON, OREGON
UMATILLA RIVER BRIDGE
PRELIMINARY ENGINEERING REPORT

FIGURE
5-2

WETLANDS AND WATERWAYS

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Esri Community Maps Contributors, State of Oregon GEO, WA State Parks GIS, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc. METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, Benton County WA, Maxar

SOILS LEGEND

- 2B ADKINS FINE SANDY LOAM, GRAVELLY SUBSTRATUM, 0 TO 5 PERCENT SLOPES
- 14B BURBANK LOAMY FINE SAND, 0 TO 5 PERCENT SLOPES
- 75E QUINCY LOAMY FINE SAND, 5 TO 25 PERCENT SLOPES
- 76B QUINCY LOAMY FINE SAND, GRAVELLY SUBSTRATUM, 0 TO 5 PERCENT SLOPES
- 78B QUINCY-ROCK OUTCROP COMPLEX, 1 TO 20 PERCENT SLOPES
- 119A WANSER LOAMY FINE SAND, 0 TO 3 PERCENT SLOPES
- 122B WINCHESTER SAND, 0 TO 5 PERCENT SLOPES
- 124B WINCHESTER-URBAN LAND COMPLEX, 0 TO 5 PERCENT SLOPES
- 126A XEROFLUVENTS, 0 TO 3 PERCENT SLOPES

**PROJECT LOCATION
PUNKIN CENTER
ROAD OPTION**

**PROJECT LOCATION
ELM AVENUE OPTION**

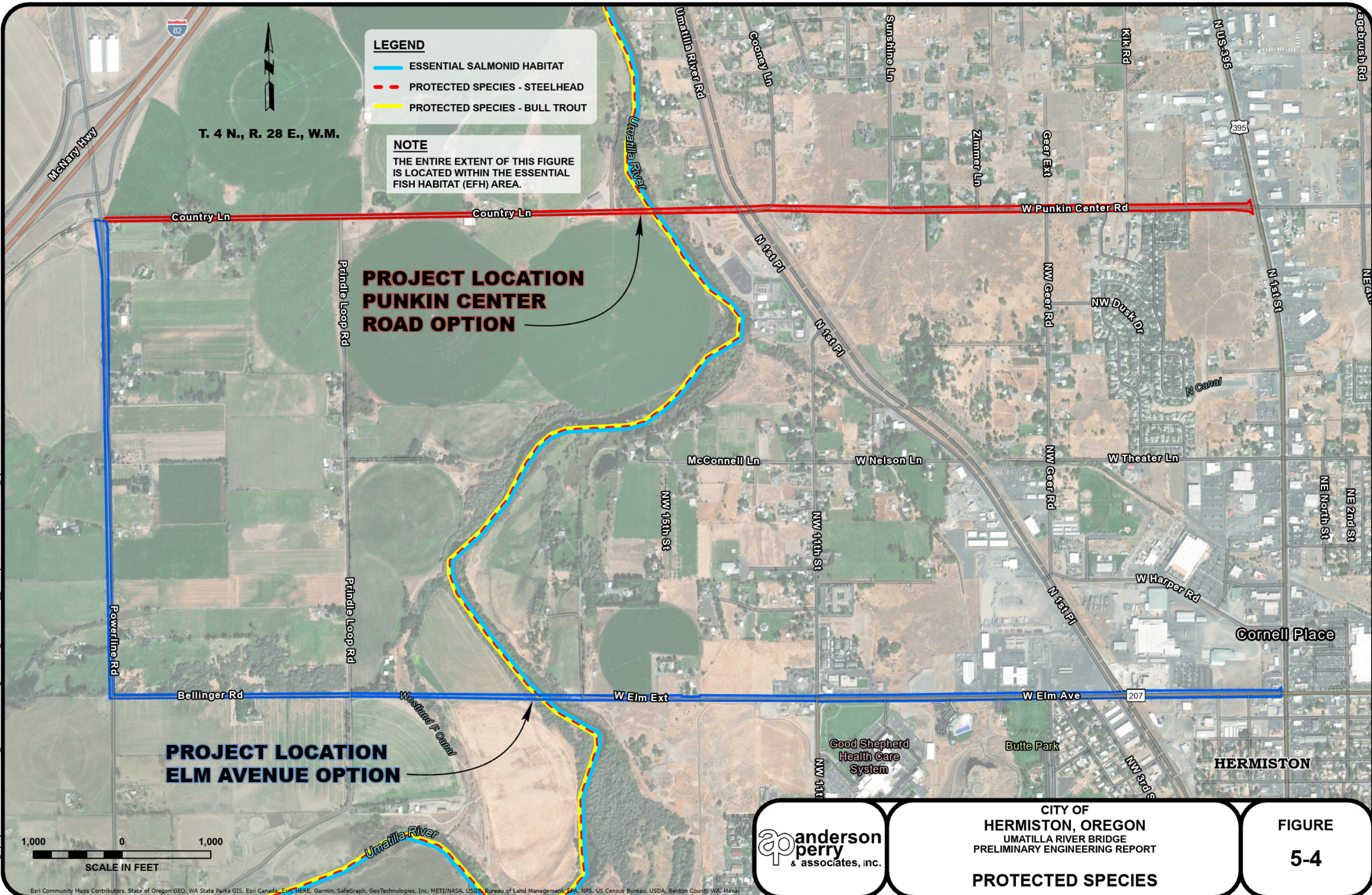
T. 4 N., R. 28 E., W.M.



I:\GIS\Projects\Hermiston\736-123_UmatillaRiverBridge\736-123_UmatillaRiverBridge\PER.aprx, PER:736-123-FIG5-3_Soils, 4/15/2022 9:07 AM, dchristman

<p>anderson perry & associates, inc.</p>	<p>CITY OF HERMISTON, OREGON UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT</p>	<p>FIGURE 5-3</p>
<p>SOILS MAP</p>		

\\GIS\Projects\Hermiston\736-123_UmatillaRiverBridge\736-123_UmatillaRvBrdg_PER.aprx, PER 736-123-FIG5-4_Species_4/15/2022 9:09 AM, dchristman



LEGEND

- ESSENTIAL SALMONID HABITAT
- PROTECTED SPECIES - STEELHEAD
- PROTECTED SPECIES - BULL TROUT

NOTE
THE ENTIRE EXTENT OF THIS FIGURE IS LOCATED WITHIN THE ESSENTIAL FISH HABITAT (EFH) AREA.

T. 4 N., R. 28 E., W.M.

**PROJECT LOCATION
PUNKIN CENTER
ROAD OPTION**






**PROJECT LOCATION
ELM AVENUE OPTION**

 <p>anderson perry & associates, inc.</p>	<p>CITY OF HERMISTON, OREGON UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT</p>	<p>FIGURE 5-4</p>
	<p>PROTECTED SPECIES</p>	

Existing Park System

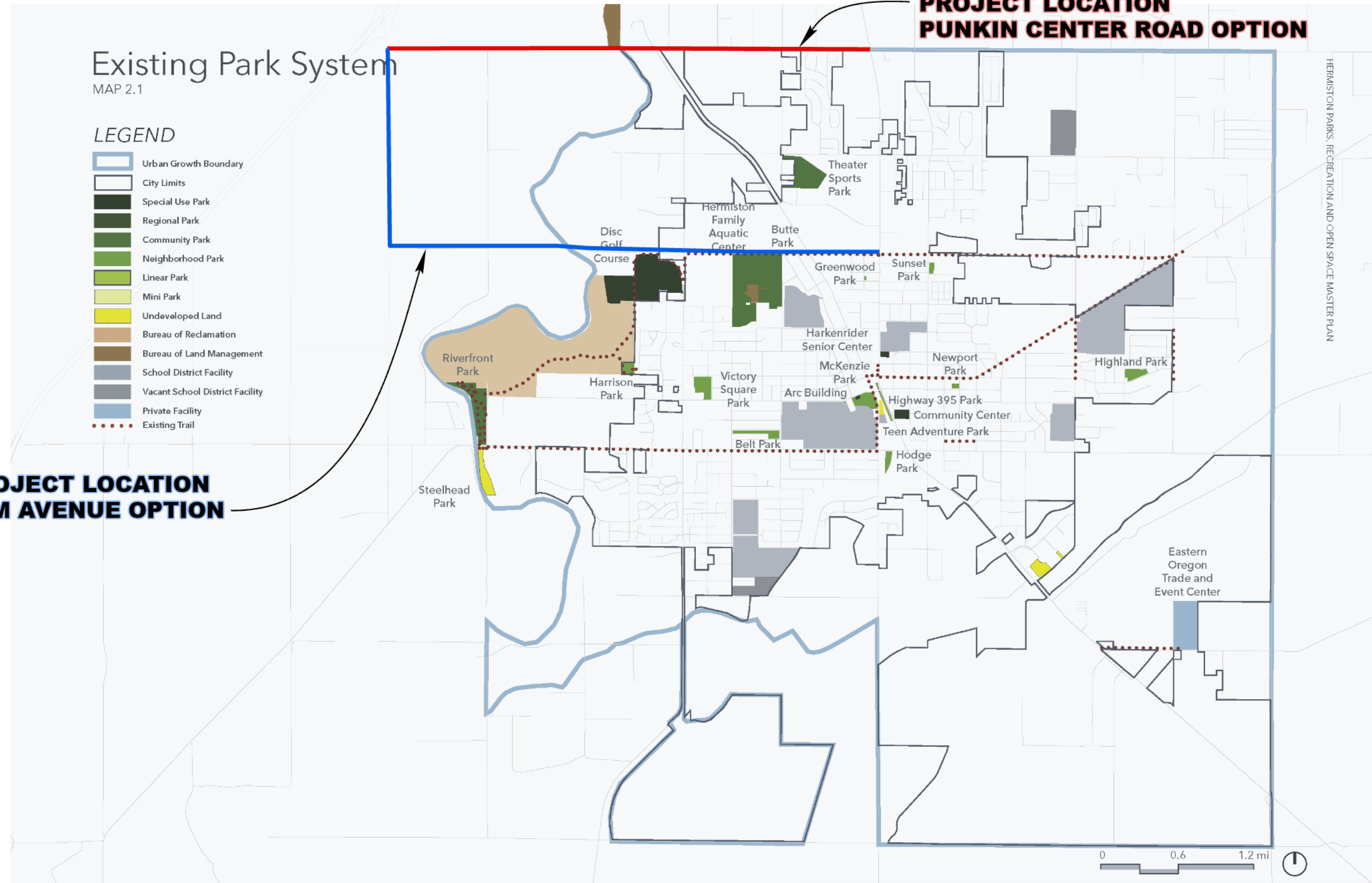
MAP 2.1

LEGEND

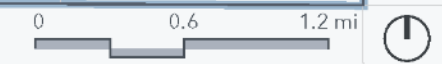
-  Urban Growth Boundary
-  City Limits
-  Special Use Park
-  Regional Park
-  Community Park
-  Neighborhood Park
-  Linear Park
-  Mini Park
-  Undeveloped Land
-  Bureau of Reclamation
-  Bureau of Land Management
-  School District Facility
-  Vacant School District Facility
-  Private Facility
-  Existing Trail

**PROJECT LOCATION
PUNKIN CENTER ROAD OPTION**

**PROJECT LOCATION
ELM AVENUE OPTION**



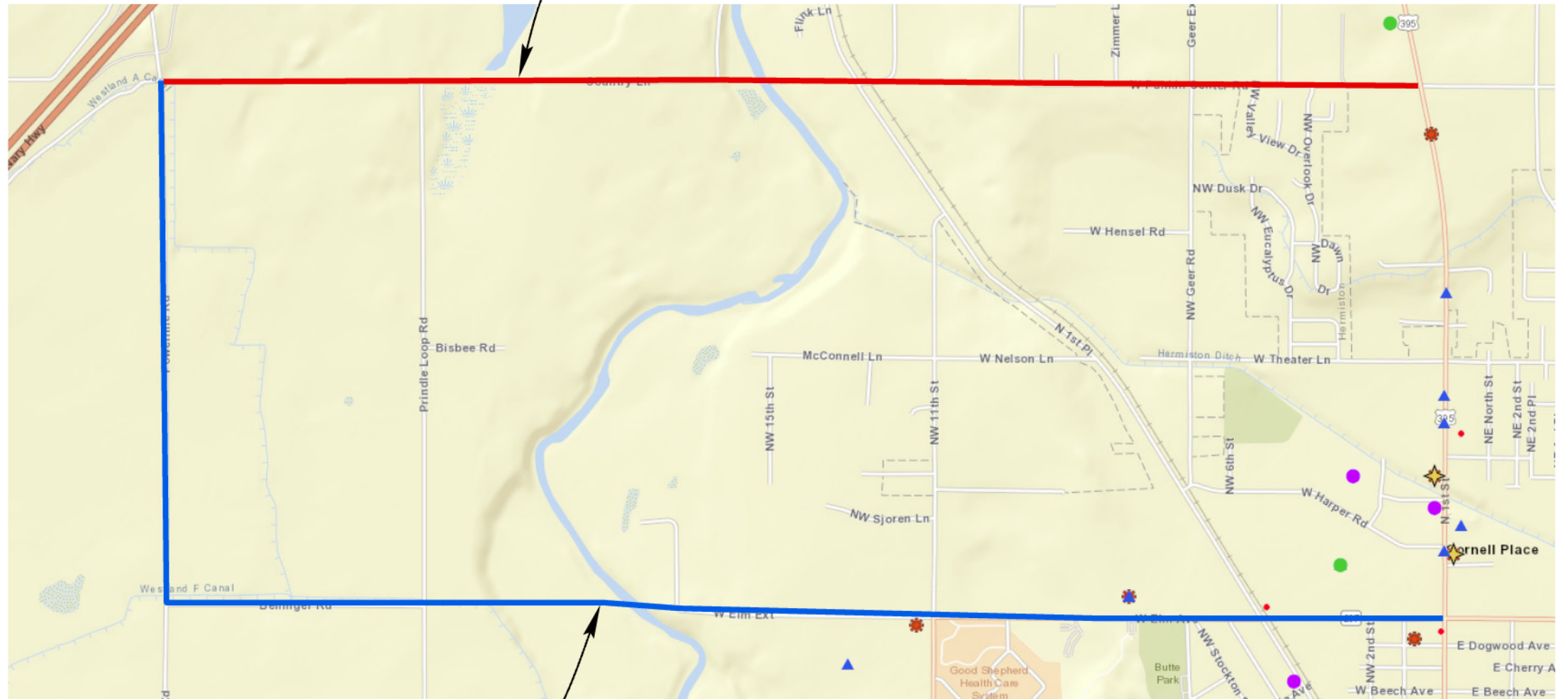
HERMISTON PARKS: RECREATION AND OPEN SPACE MASTER PLAN



	<p>CITY OF HERMISTON, OREGON UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT</p> <p>EXISTING PARK SYSTEM</p>	<p>FIGURE 5-5</p>
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I:\GSVR\GIS\projects\Hermiston\736-123 UmatillaRiverBridge\736-123 UmatillaRiverBrdg PER.aprx, PER 736-123.FIGS-5 Parks, 4/15/2022 9:10 AM, dchristman

**PROJECT LOCATION
PUNKIN CENTER ROAD OPTION**



- Environmental Cleanup Site Information (ECSI)
 - Contaminated Site, Listed on CRL or Inventory
 - Contaminated Site, No further action required
 - Contaminated Site, Suspect site requiring further investigation
 - Study Area, Listed on CRL or Inventory
 - Study Area, Suspect site requiring further investigation
- Hazardous Waste (HAZWASTE)
 - ▲ Generator
 - ▲ TSD
- Leaking Underground Storage Tanks (LUST)
 - ★ Regulated LUST - Cleanup started
 - ★ Regulated LUST - Reported
 - Regulated LUST - Cleanup completed
 - ★ Non-regulated LUST - Cleanup started
 - ★ Non-regulated LUST - Reported
 - Non-regulated LUST - Cleanup completed
 - ★ Underground Storage Tanks (UST)

**PROJECT LOCATION
ELM AVENUE OPTION**

Chapter 6 - Selected Improvements and Project Implementation

A. Selected Option

B. Project Implementation

Potential Funding Sources

Action Items

Chapter 7 - References

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Appendices Table of Contents

Appendix A - New East-West Roadway Circulation Analysis Technical Memo

Appendix B - Cost Estimates for Infrastructure Improvements and Land Acquisition

Appendix C - City of Hermiston, Oregon, Major Arterial Standard Drawing

APPENDIX A
New East-West Roadway Circulation Analysis
Technical Memo by Kittelson & Associates, Inc.

Technical Memorandum

March 4, 2022

Project# 26970

To: Joshua Lott, PE; Chas Hutchins; PE
Anderson Perry & Associates, Inc.
243 E Main St, Suite C
Hermiston, OR 97838

From: Matt Hughart, AICP; Amy Griffiths, EIT; Chris Brehmer, P.E.
Kittelison & Associates, Inc.

RE: New East-West Roadway Circulation Analysis

EXECUTIVE SUMMARY

The City of Hermiston is exploring the possibility of a future travel corridor that would span the Umatilla River and provide an additional east-west connection to Powerline Road. The following two corridor options are being considered:

- A westerly extension of the W Punkin Center Road corridor
- A westerly extension of the W Elm Avenue corridor

This report documents the motorized circulation and operational impacts associated with these two corridor options for inclusion in the Umatilla River Bridge Preliminary Engineering Report (PER).

The following transportation conditions were analyzed for the study intersections shown in Figure 1:

- Existing Traffic Conditions
- 2032 No-Build Traffic Conditions (without either of the two corridor options but still considering local and regional transportation growth on the existing infrastructure network)
- 2032 Build Conditions with a W Punkin Center Road Extension
- 2032 Build Conditions with a W Elm Avenue Extension

As documented in greater detail herein, this analysis has generated the following findings and recommendations.

Findings

EXISTING TRAFFIC CONDITIONS

- All of the study intersections meet the applicable ODOT mobility targets and City of Hermiston operating standards during the AM and PM study hours.

2032 NO-BUILD CONDITIONS

- Annual traffic growth rates between 1.5% and 3.0% were conservatively applied to the study corridors and intersections to account for anticipated local and regional growth.

- Under 2032 No-Build conditions, all of the study intersections are forecast to meet the applicable ODOT mobility targets and City of Hermiston operating standards during the AM and PM study hours with the exception of US 395/W Elm Avenue (OR 207) intersection. During the weekday PM peak hour, this intersection is forecast to operate at a volume-to-capacity ratio (V/C) of 0.93 which exceeds ODOT's 0.90 mobility target.

2032 W PUNKIN CENTER ROAD EXTENSION

An extension of W Punkin Center Road is anticipated to result in operational impacts at the following intersections/study corridors:

- US 395/W Punkin Center Road - While projected to continue meeting the operational mobility target, the intersection is forecast to serve a significantly greater level of turning movement demand under the W Punkin Center Road extension option.
 - To better serve this projected demand and manage expected long-term vehicle queues, the intersection would benefit from the construction of a separate eastbound right-turn lane.
- US 395/W Elm Avenue (OR 207) - As with the 2032 No-Build conditions, the intersection is forecast to continue to exceed the 0.90 ODOT mobility target. During the weekday PM peak hour, the intersection is forecast to operate at a V/C of 0.96 which represents a slight degradation in operations compared to 2032 No-Build conditions.
 - To better serve the projected demand, the construction of a northbound right-turn lane, a southbound right-turn lane, and a westbound right-turn lane would improve operations of the intersection and result in an acceptable V/C of 0.76. While these improvements would benefit the long-term operations of the intersection, their accommodation would be difficult and costly considering the lack of public right-of-way and impacts to existing businesses.
- River Road/W Punkin Center Road - A westerly extension of W Punkin Center Road is assumed to form a new intersection with River Road in the approximate location of the existing River Road/Cooney Lane intersection. The following improvement would be needed to accommodate the long-term turning movement demands at this intersection:
 - Construction of separate left-turn and shared through/right-turn lanes on all four intersection approaches.
 - When warranted, construction of a traffic signal.
 - Upgrade and modernization of the adjacent Union Pacific Railroad crossing.
 - Realignment of Cooney Lane to intersect the westerly extension of W Punkin Center Road instead of directly connecting to River Road.
- Country Lane Corridor –
 - Realign Country Lane and form a new intersection with Powerline Road to increase spacing from the I-82 interchange. The alignment and spacing should be determined through a separate multi-agency Interchange Area Management Plan (IAMP).
 - Upgrade the Country Lane corridor to two paved twelve-foot travel lanes (widened to include left- or right-turn lanes at major crossroads), five-foot shoulders/bike lanes, curb and gutter, and five-foot sidewalks.
 - Upgrade the right-of-way width to 90 feet to allow for a future upgrade to an Urban Major Arterial per City of Hermiston Standard Drawing ST07.
- Powerline Road/Country Lane Intersection - With a Punkin Center Road extension to Country Lane, there will be an increase in travel demand at the Powerline Road/Country Lane intersection. This increase will necessitate the following improvements which are recommended to be more fully explored as part of a separate IAMP with ODOT and Umatilla County:
 - Construction of a southbound left-turn lane on Powerline Road.

- Construction of westbound right-turn and left-turn lanes on Country Lane.
- I-82 SB Ramp Terminal/Powerline Road – A Punkin Center Road extension is anticipated to generate additional travel demand through the I-82/Powerline Road interchange. As a result, the SB ramp terminal approach is forecast to operate at a V/C of 0.95 which exceeds the 0.85 mobility target. This forecast operating condition and potential traffic control improvements should be addressed as part of a more comprehensive Interchange Area Management Plan.
- Powerline Road Corridor –
 - Upgrade the Powerline Road corridor from the I-82 interchange to the realigned Country Lane intersection to two paved twelve-foot travel lanes (widened to include a southbound left-turn lane at Country Lane), five-foot shoulders/bike lanes, curb and gutter, and five-foot sidewalks.
 - Upgrade the right-of-way width to 90 feet to allow for a future upgrade to an Urban Major Arterial per City of Hermiston Standard Drawing ST07.

2032 W ELM AVENUE EXTENSION

An extension of W Elm Avenue is anticipated to result in operational impacts at the following intersections/study corridors:

- US 395/W Elm Avenue (OR 207) – A W Elm Avenue extension is anticipated to significantly increase turning movement volumes at the US 395/W Elm Avenue intersection resulting in over capacity conditions during the weekday PM peak hour.
 - To better serve the projected demand, the construction of a northbound right-turn lane, a southbound right-turn lane, and a westbound right-turn lane would significantly improve operations of the intersection and result in an acceptable V/C of 0.90. While these improvements would benefit the long-term operations of the intersection, their accommodation would be difficult and costly considering the lack of public right-of-way and impacts to existing businesses.
- W Elm Avenue (OR 207)/1st Place – A W Elm Avenue extension would increase traffic demands on W Elm Avenue. While the intersection is forecast to continue to meet the mobility target, the intersection will not have much long-term flexibility to accommodate additional traffic growth. To increase the flexibility, the following improvements are recommended:
 - Construction of a southbound right-turn lane on 1st Place.
 - Construction of an eastbound right-turn lane on W Elm Avenue.
- W Elm Avenue (OR 207)/NW 11th Street – A W Elm Avenue extension would add a significant amount of travel demand to the underutilized west leg of the intersection. During the weekday PM peak hour, the intersection is forecast to operate at a V/C of 0.94 which exceeds the 0.90 mobility target.
 - To better serve the projected demand, the construction of an eastbound right-turn lane would improve intersection operations and result in an acceptable V/C of 0.89.
- Powerline Road / Bellinger Road - With a W Elm Avenue extension, there will be a significant increase in travel demand at the Powerline Road/Bellinger Road intersection. This increase will necessitate the need for the following improvements:
 - Construction of a southbound left-turn lane on Powerline Road.
 - Construction of westbound right-turn and left-turn lanes on Bellinger Road.
- Bellinger Road Corridor –
 - Upgrade the Bellinger Road corridor to two paved twelve-foot travel lanes (widened to include left- or right-turn lanes at major crossroads), five-foot shoulders/bike lanes, curb and gutter, and five-foot sidewalks.

- Upgrade the right-of-way width to 90 feet to allow for a future upgrade to an Urban Major Arterial per City of Hermiston Standard Drawing ST07.
- Powerline Road Corridor –
 - Upgrade the Powerline Road corridor from the I-82 interchange to Bellinger Road to two paved twelve-foot travel lanes (widened to include left- or right-turn lanes at major crossroads), five-foot shoulders/bike lanes, curb and gutter, and five-foot sidewalks.
- I-82 SB Ramp Terminal/Powerline Road – A W Elm Avenue extension is anticipated to generate additional travel demand through the I-82/Powerline Road interchange. As a result, the increase in travel demand will likely necessitate an upgrade and modernization of the interchange ramp terminals. The specific improvements should be addressed as part of a more comprehensive Interchange Area Management Plan.

Additional details of the methodology, findings, and recommendations are provided herein.

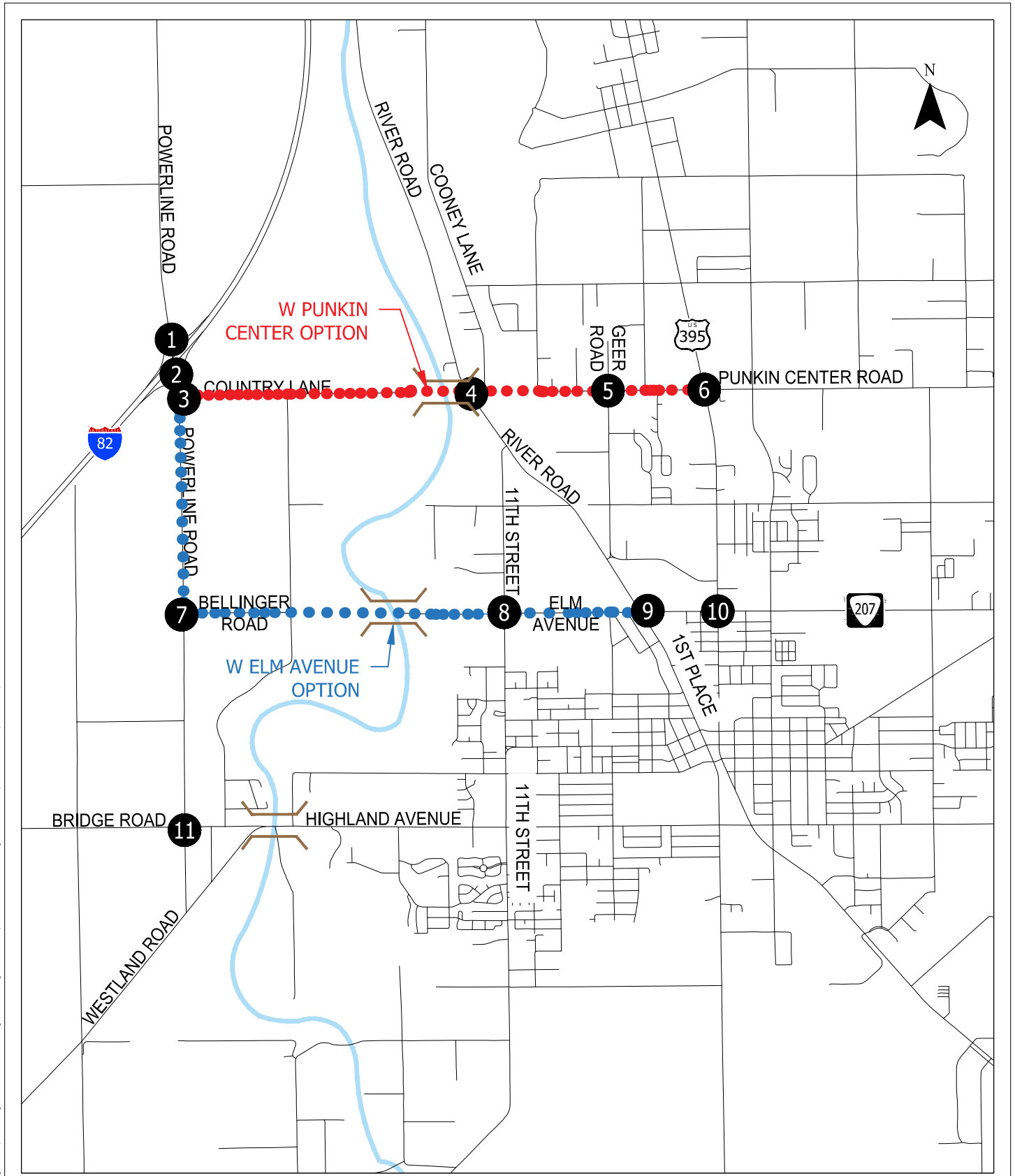
INTRODUCTION

The City of Hermiston is exploring the feasibility of extending one of two existing roadway corridors across the Umatilla River and connecting to the existing Powerline Road corridor to improve local and regional east-west travel connectivity.

W Punkin Center Option would involve the westerly extension of W Punkin Center Road from its current terminus at Sunshine Lane, forming a new intersection at River Road, spanning the Umatilla River on a new bridge, merging with the existing Country Lane corridor, and ultimately connecting to Powerline Road at an appropriate location south of the I-82/Powerline Road interchange.

W Elm Avenue Option would involve the westerly extension of W Elm Avenue from its current terminus west of the NW 11th Street intersection, spanning the Umatilla River on a new bridge, merging with the existing Bellinger Road corridor, and connecting with Powerline Road.

Figure 1 illustrates a study area map and conceptual alignments for the two study corridors. Additional details regarding these corridors are documented later in this technical memorandum.



LEGEND

- STUDY INTERSECTION

Study Area
Hermiston, Oregon

Figure
1

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SCOPE OF THE REPORT

This analysis determines the high-level transportation-related impacts associated with the two corridor extension options. The study intersections were selected to assess the anticipated local and regional transportation impacts associated with each option. They include:

- I-82 Northbound Ramp Terminal/Powerline Road
- I-82 Southbound Ramp Terminal/Powerline Road
- Powerline Road/Country Lane
- Umatilla River Road/Cooney Lane
- Punkin Center Road/Geer Road
- US 395/Punkin Center Road
- Powerline Road/Bellinger Road
- Elm Avenue (OR 207)/11th Street
- Elm Avenue (OR 207)/1st Place
- US 395/Elm Avenue (OR 207)
- Powerline Road/Bridge Road

This report evaluates the following transportation scenarios at each study intersection:

- 2021 Existing Traffic Conditions
- 2032 No-Build Traffic Conditions (without either of the two corridor options but still considering transportation growth on the existing infrastructure network)
- 2032 Build Conditions with a W Punkin Center Road Extension
- 2032 Build Conditions with a W Elm Avenue Extension

Analysis Methodology

The signalized and stop-controlled intersection operational analyses presented in this report were prepared following Highway Capacity Manual (HCM) 6th Edition analysis procedures using PTV Vistro 2022 software in accordance with the ODOT Analysis Procedures Manual (APM). The observed peak hour factor was used for the existing traffic analyses.

Applicable Performance Measures & Operating Standards/Targets

Intersection performance measures reported in this study include, but are not limited to, level of service (LOS), volume to capacity (V/C), and delay. Intersection operating targets adopted by the Oregon Department of Transportation (ODOT) and the City of Hermiston are summarized below.

ODOT MOBILITY TARGETS

ODOT uses V/C to assess intersection operations. Table 6 of the *Oregon Highway Plan* (OHP) provides maximum volume-to-capacity ratio targets for all signalized and unsignalized intersections located outside the Portland metropolitan area. Based on the OHP, Table 1 summarizes the mobility target (V/C) used to assess intersection operations at the ODOT owned/maintained study intersections.

Table 1: ODOT Mobility Targets

Intersection	OHP Mobility Target
I-82 Northbound Ramp Terminal/ Powerline Road	V/C: 0.85 Powerline Road Approach V/C: 0.85 Offramp Approach
I-82 Southbound Ramp Terminal/ Powerline Road	V/C: 0.85 Powerline Road Approach V/C: 0.85 Offramp Approach
US 396 / Punkin Center Road	V/C ≤ 0.80
US 395 / Elm Avenue (OR 207)	V/C ≤ 0.90
Elm Avenue (OR 207) / 11 th Street	V/C ≤ 0.90
Elm Avenue (OR 207) / 1 st Place	V/C ≤ 0.90

CITY OF HERMISTON OPERATING STANDARDS

Traffic operations at City intersections are described using a measure known as level of service (LOS). LOS represents ranges in the average amount of delay that motorists experience when passing through the intersection. The City of Hermiston has adopted LOS D or better for all signalized and unsignalized intersections.

EXISTING CONDITIONS ANALYSIS

This section summarizes the existing characteristics of the transportation system at key intersections that are most likely to be impacted by the two W Elm Avenue or W Punkin Center Road corridor options.

Transportation Facilities

Table 2 provides a summary of the transportation facilities in the site vicinity. Figure 2 illustrates the existing lane configurations and traffic control devices at the study intersections.

Table 2: Existing Transportation Facilities and Roadway Designations

Roadway	Classification (bold indicates jurisdictional ownership)	Cross Section	Posted Speed (mph)	Sidewalks Present	Bike Lanes Present?
I-82	Interstate Highway – ODOT	4 lanes	70	None	None
Powerline Road	Local Road – Umatilla County Rural Collector - Hermiston	2 lanes	40	None	None
Country Lane	Local Road – Umatilla County	2 lanes	Not Posted	None	None
Bellinger Road	Local Road – Umatilla County	2 lanes	Not Posted	None	None
Bridge Road	Local Road – Umatilla County Rural Collector Street - Hermiston	2 lanes	40	None	None
River Road	Major Collector – Umatilla County Urban Major Collector - Hermiston	2 lanes	45	None	None
W Punkin Center Road	Urban Major Collector - Hermiston	2 lanes	40	Partial	None
US 395	Statewide Highway – ODOT Urban Major Arterial - Hermiston	5 lanes	30-45	Yes	None
W Elm Avenue (OR207)	Regional Highway - ODOT	3 lanes	30	Partial	Partial
11 th Street (north of Elm)	Regional Highway - ODOT Urban Minor Arterial - Hermiston	2 lanes	35	Partial	Partial
1 st Place	Urban Major Collector - Hermiston	2 lanes	35	None	None

Traffic Volumes and Peak Hour Operations

Manual turning-movement counts were collected at the study intersections in October 2021. The traffic counts were conducted on a typical mid-week day (while local schools were in session) from 7:00 to 9:00 AM and 4:00 to 6:00 PM in order to capture the anticipated weekday AM and PM peak hour operation conditions. *Appendix A contains the traffic count worksheets used in this study.* The following sections summarize how the volumes were adjusted to account for seasonality.

SEASONAL ADJUSTMENTS

Per the ODOT *Analysis Procedures Manual (APM)* (Chapter 5.2), the existing traffic volumes at intersection movements on state facilities were seasonally adjusted to represent the 30th highest hour volumes. The On-site Automatic Traffic Recorder (ATR) method was used for two different ATR locations within the site vicinity and averaged to arrive at a seasonal adjustment factor of 1.09. *Appendix B includes the detailed methodology and calculations for the 30th highest hour adjustments.*

EXISTING INTERSECTION OPERATIONS

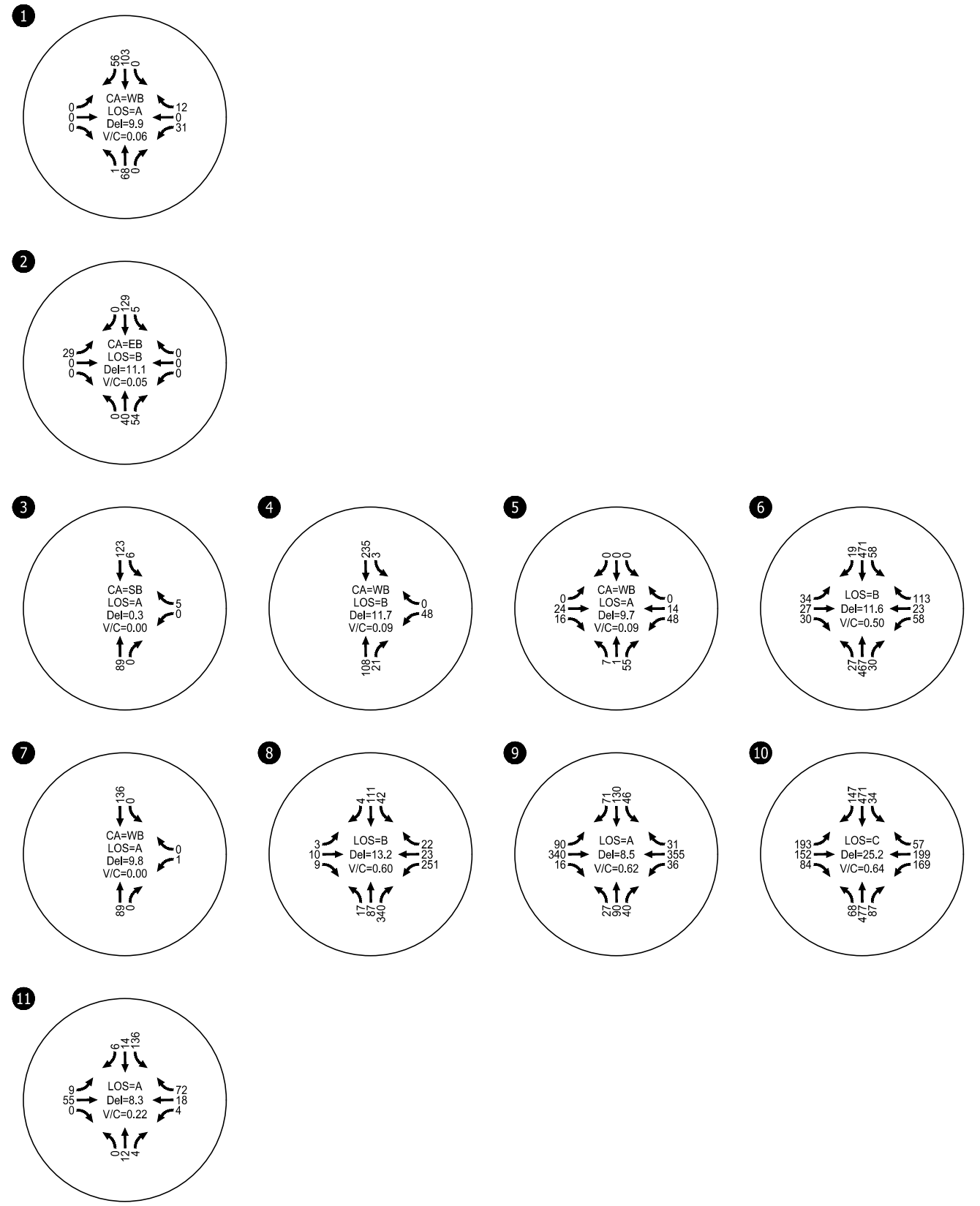
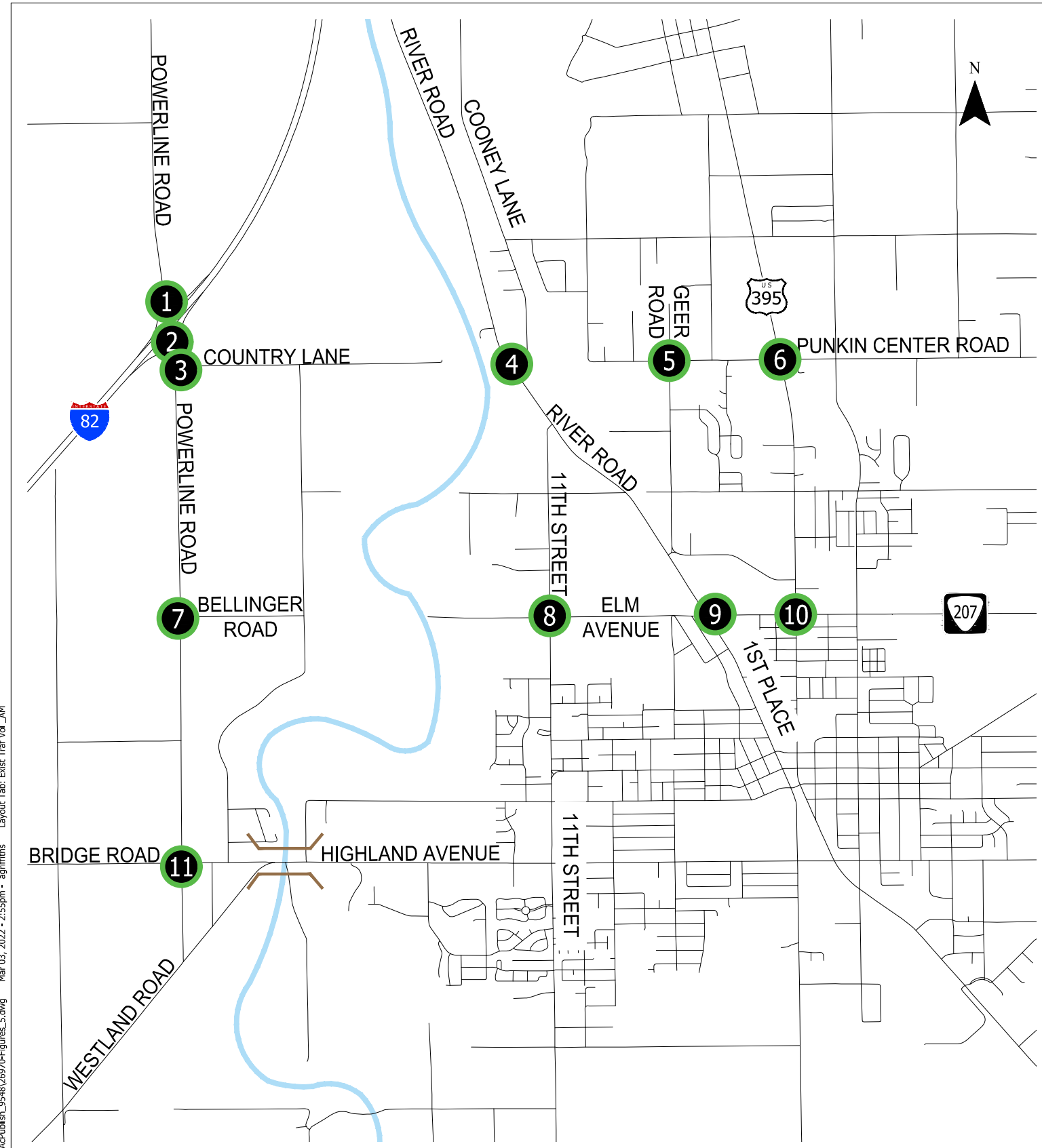
Figure 3 and Figure 4 illustrate the adjusted existing turning movement counts and operational conditions for the weekday AM and PM peak hours. *Appendix C contains the existing conditions operations analysis worksheets.* As shown, all of the study intersection operations meet the applicable ODOT mobility targets and City of Hermiston operating standards during the weekday AM and PM study hours.



Existing Lane Conditions
& Traffic Control Devices
Hermiston, OR

Figure
2

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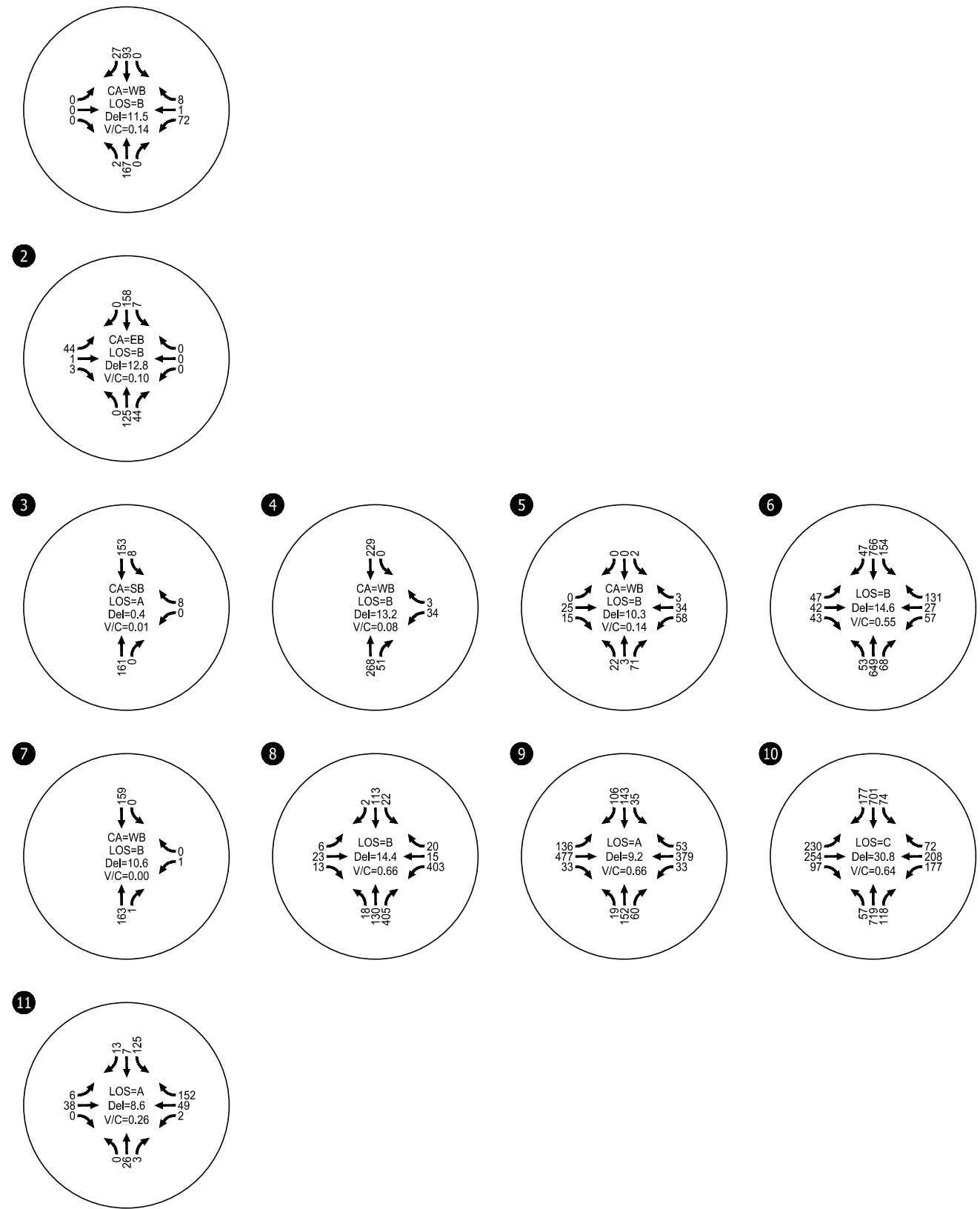
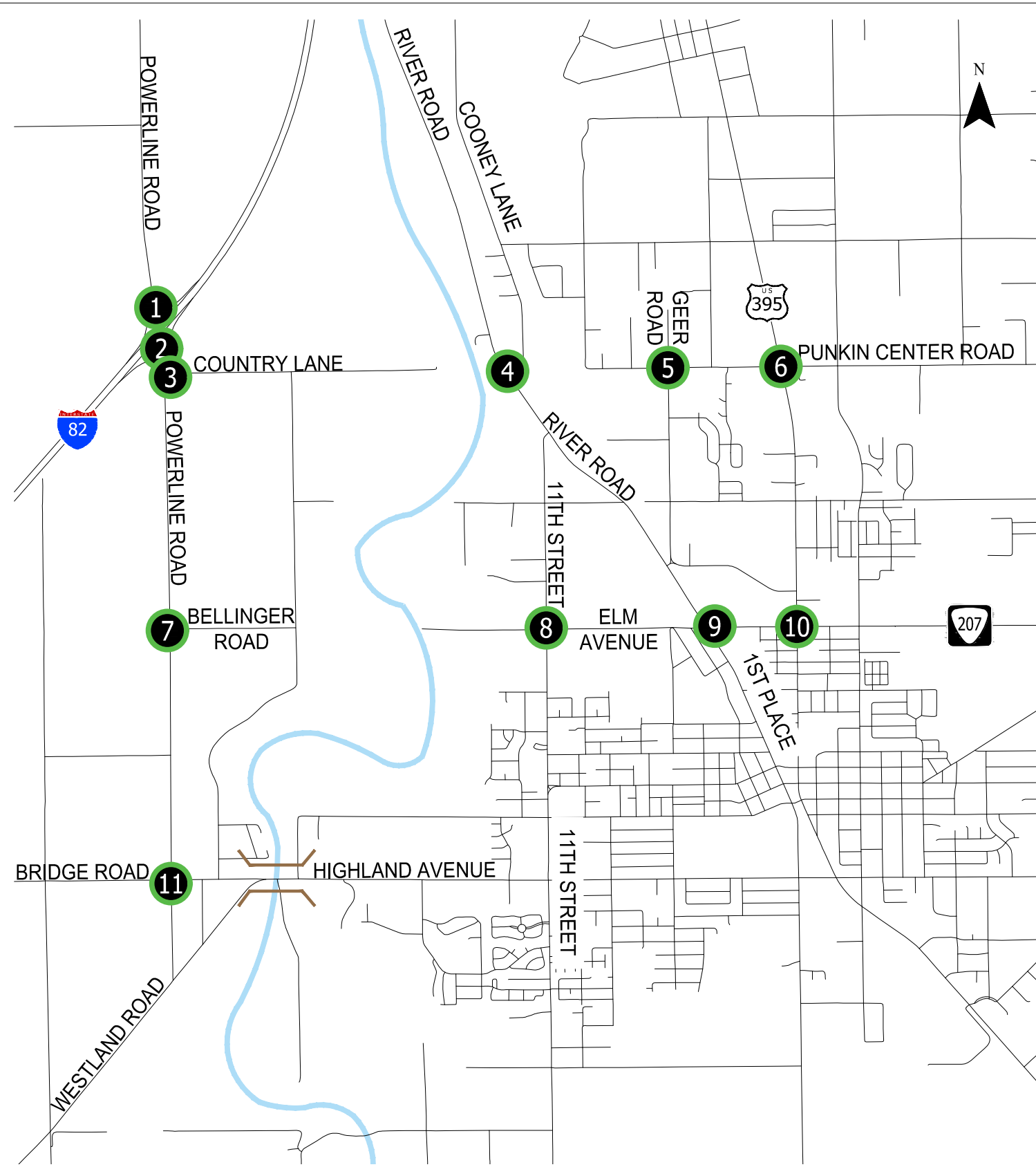


LEGEND
 CA = CONTROL APPROACH
 LOS = LEVEL OF SERVICE
 Del = DELAY
 V/C = VOLUME-TO-CAPACITY RATIO

- STUDY INTERSECTION HAS NO OPERATIONAL ISSUES OR CAPACITY CONSTRAINTS
- STUDY INTERSECTION HAS OPERATIONAL ISSUES THAT WILL REQUIRE CAPACITY OR GEOMETRIC IMPROVEMENTS

Existing Traffic Volumes (2021)
 Weekday AM Peak Hour
 Hermiston, OR

Figure 3



LEGEND

- CA = CONTROL APPROACH
- LOS = LEVEL OF SERVICE
- Del = DELAY
- V/C = VOLUME-TO-CAPACITY RATIO
- # - STUDY INTERSECTION HAS NO OPERATIONAL ISSUES OR CAPACITY CONSTRAINTS
- # - STUDY INTERSECTION HAS OPERATIONAL ISSUES THAT WILL REQUIRE CAPACITY OR GEOMETRIC IMPROVEMENTS

Existing Traffic Volumes (2021)
Weekday PM Peak Hour
Hermiston, OR

Figure
4

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FUTURE YEAR NO-BUILD ANALYSIS

This section of the report identifies how the study area's transportation system is forecast to operate in the future assuming continued local and regional traffic growth but without either of the two corridor extension options. Based on conversations with City of Hermiston staff, the year 2032 was chosen as the most reasonable near-term horizon year for this project.

2032 No-Build Traffic Volumes and Peak Hour Operations

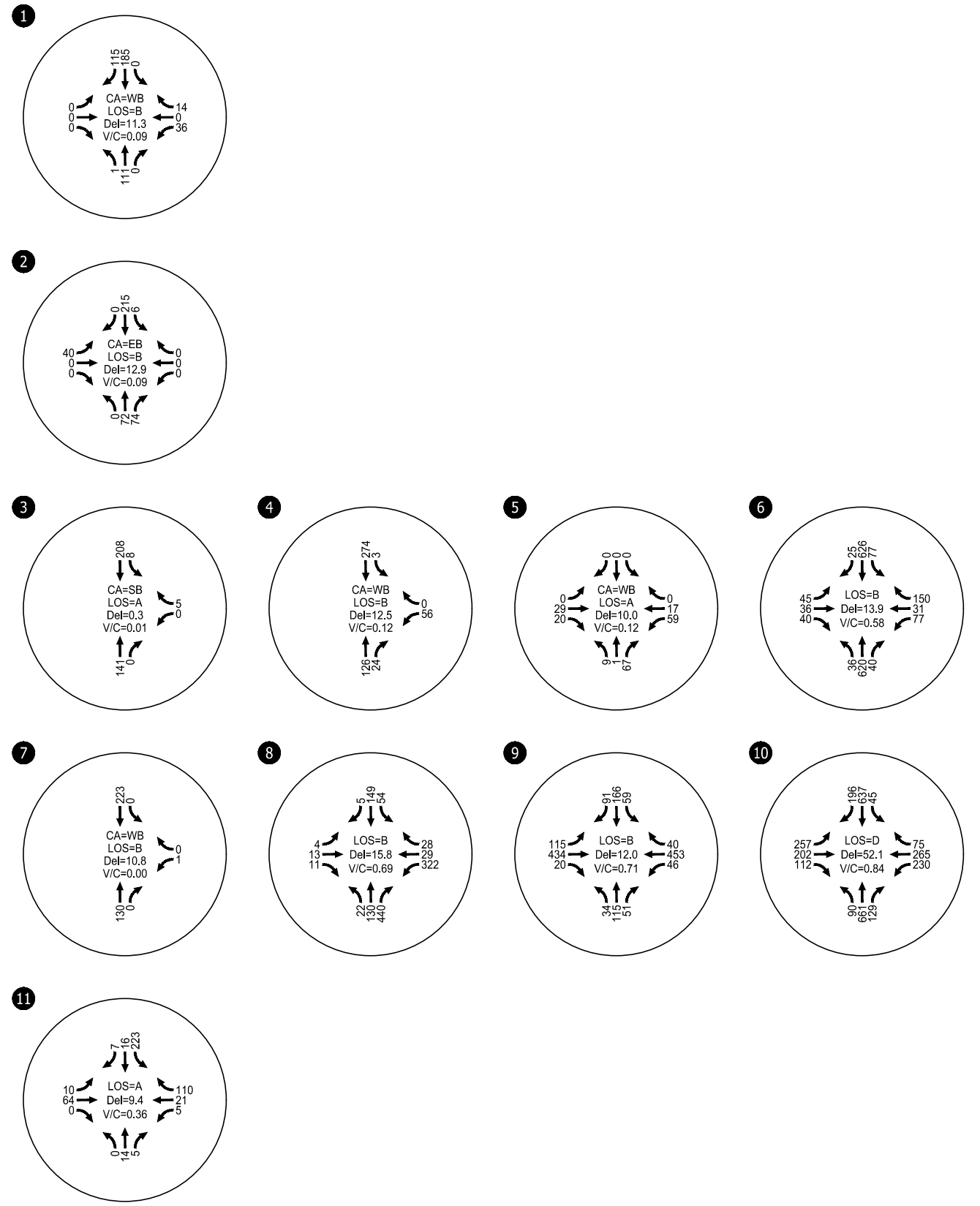
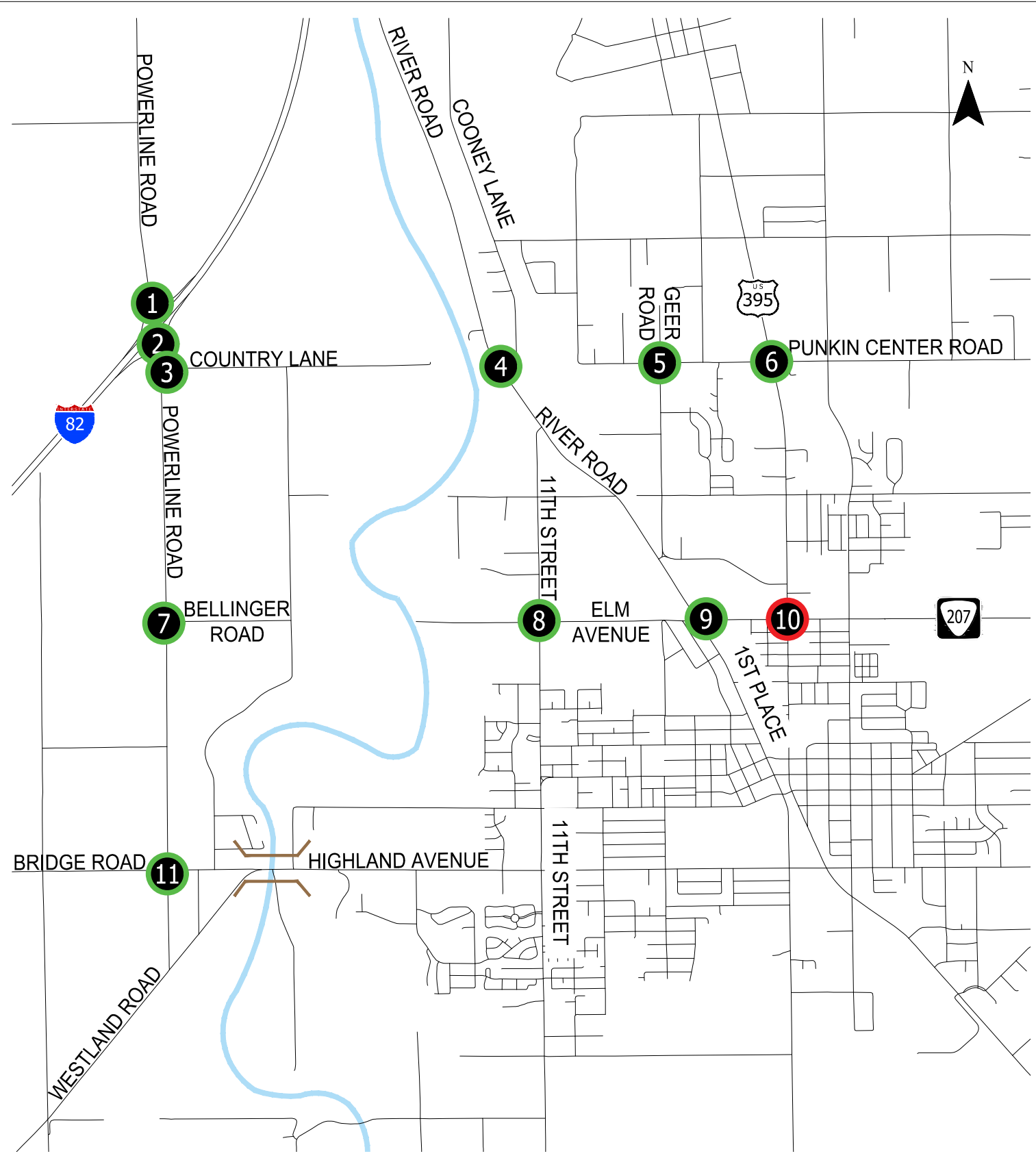
To estimate future year 2032 traffic conditions, a compound annual growth rate between 1.5% and 3% was applied to the seasonally adjusted 2021 traffic volumes in order to reflect anticipated local and regional growth. Specific growth rate applications include:

- Intersections along Powerline Road and Umatilla River Road were grown at a compound rate of 1.5% per year to be consistent with other recent traffic impact analyses performed in the study area.
- The intersections of 11th Street and 1st Place with Elm Avenue were grown at a compound rate of 2.5% per year to reflect a slightly higher projected growth within Hermiston and the significance of Elm Avenue as a major east-west travel corridor.
- The study intersections along US 395 were grown at a compound growth rate of 3% per year to account for greater projected growth in northeast Hermiston and the local and regional significance of the US 395 corridor.

In addition to these growth assumptions, the projected traffic demands associated with several approved development projects were incorporated at applicable study intersections. These include:

- Ambience Homes Traffic Impact Analysis in Umatilla. This project is anticipated to be completed by 2024, therefore the trips associated with this project were added to the 2032 background growth traffic volumes.
- Umatilla Residential Development Traffic Impact Analysis for the residential and commercial development of Vandelay Meadows, Cheryl's Place, and Ballard Property. This project is anticipated to be completed by 2030, therefore the trips associated with this project were added to the 2032 background growth traffic volumes.
- McClannahan Summit subdivision; this project has a planning horizon year of 2040. The phasing of the project is unclear in the study, therefore a proportional number of trips associated with this project between 2021 were added to the 2032 background growth traffic volumes.

Figure 5 and Figure 6 illustrate the resulting 2032 no-build traffic volumes and operational conditions for the weekday AM and PM peak hours. As shown, all of the study intersection operations are forecast to meet the applicable ODOT mobility targets and City of Hermiston operating standards during the AM and PM study hours with the exception of US 395/W Elm Avenue (OR 207). During the weekday PM peak hour, this intersection is forecast to operate at a V/C of 0.93 which exceeds the 0.90 mobility target. Additional discussion regarding future year operations of this intersection will be provided in following sections of this report. *Appendix D includes the 2032 no-build conditions operations analysis worksheets.*



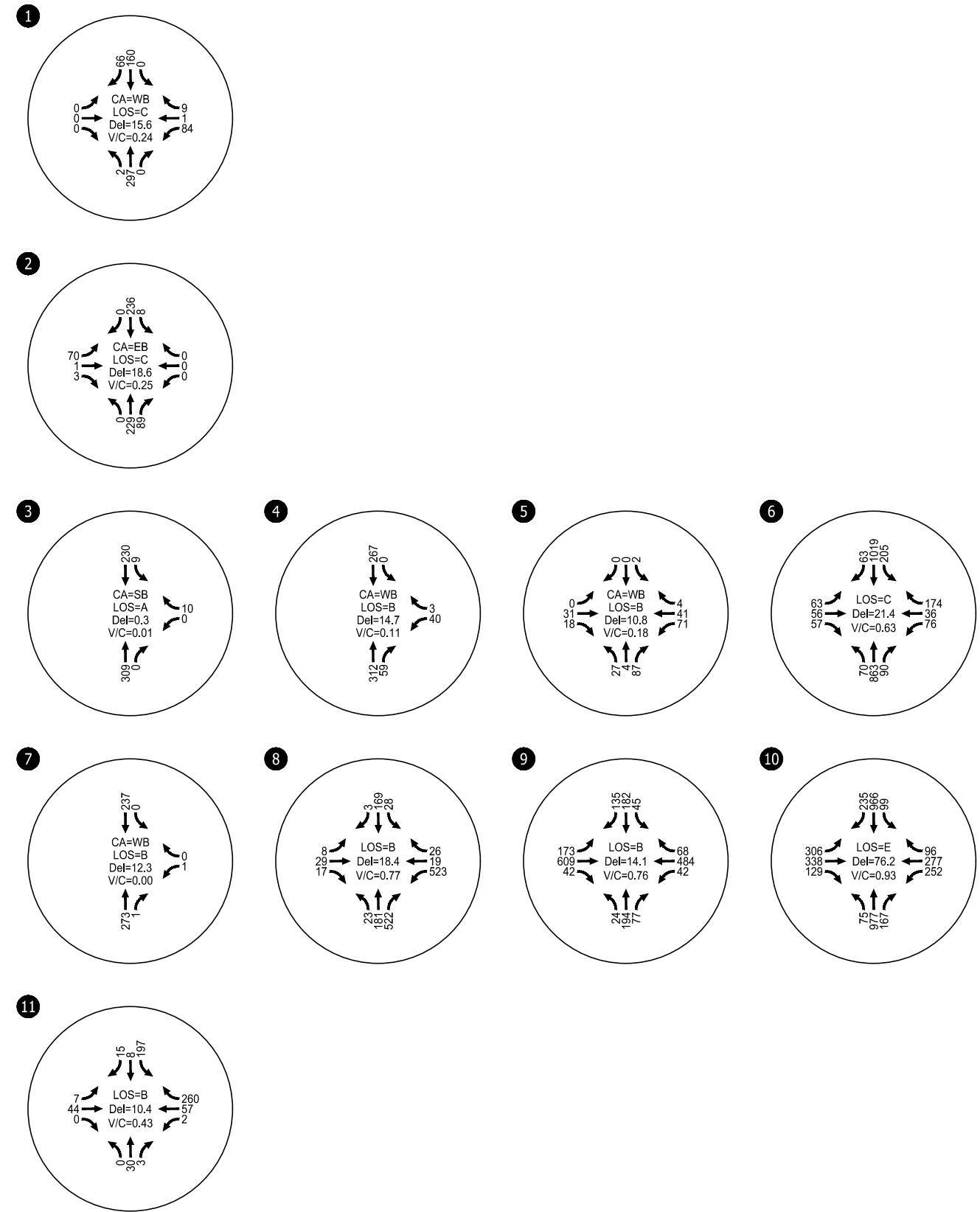
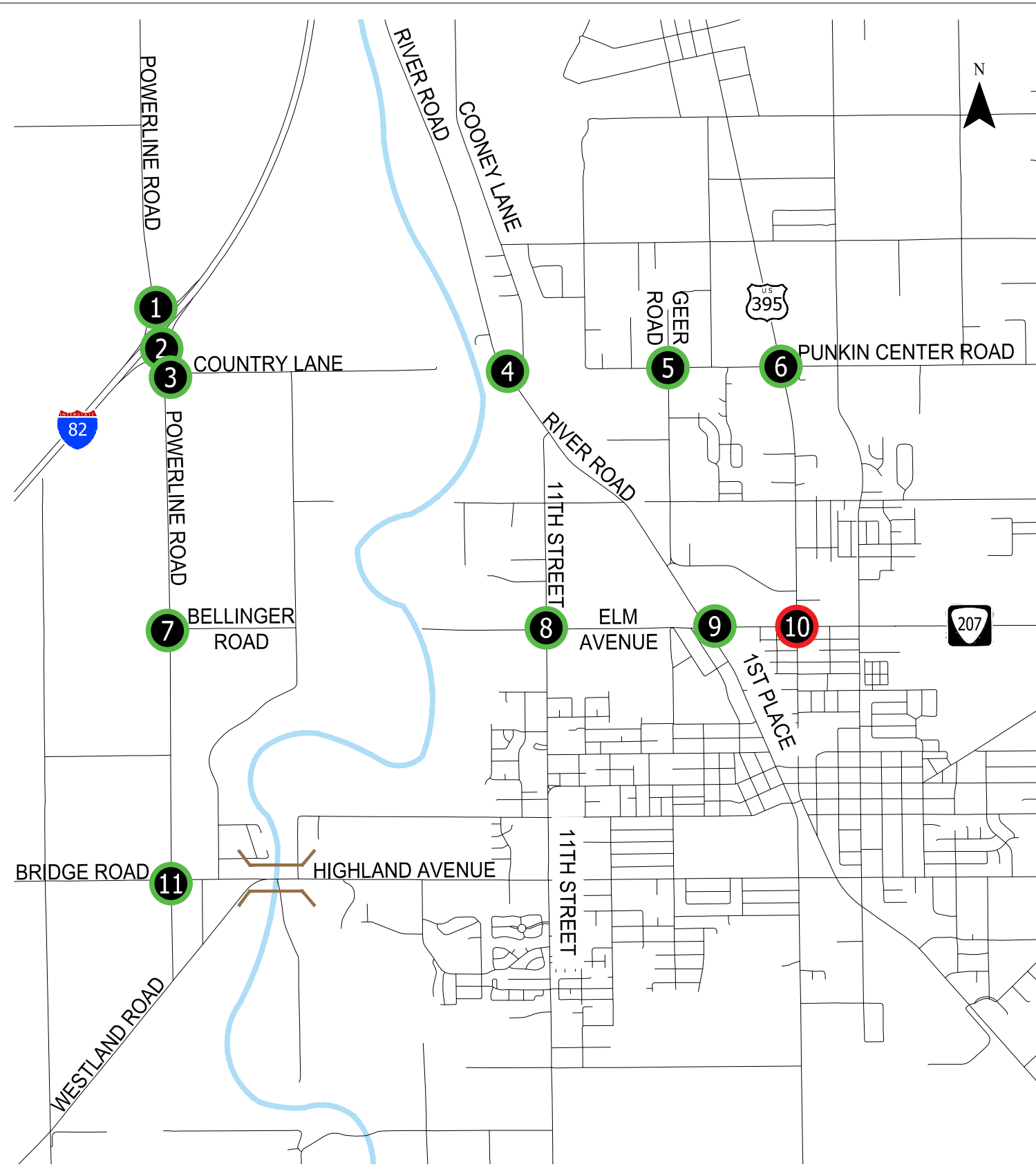
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- CA = CONTROL APPROACH
- LOS = LEVEL OF SERVICE
- Del = DELAY
- V/C = VOLUME-TO-CAPACITY RATIO
- # - STUDY INTERSECTION HAS NO OPERATIONAL ISSUES OR CAPACITY CONSTRAINTS
- # - STUDY INTERSECTION HAS OPERATIONAL ISSUES THAT WILL REQUIRE CAPACITY OR GEOMETRIC IMPROVEMENTS

2032 No-Build Background Traffic Volumes
Weekday AM Peak Hour
Hermiston, OR

Figure
5

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2032 No-Build Background Traffic Volumes
 Weekday PM Peak Hour
 Hermiston, OR

Figure
 6

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W PUNKIN CENTER ROAD EXTENSION

As conceptually visualized in Figure 1, the W Punkin Center Option would involve the following:

- A westerly extension of W Punkin Center Road from its current terminus at Sunshine Lane to River Road. While there are multiple alignment options for this extension, it is assumed that the extension would minimize impacts to existing properties and cross the Union Pacific rail line in the approximate location as the existing Cooney Lane crossing.
- A new four-legged intersection with River Road that replaces the existing River Road/Cooney Lane¹ intersection. Given the significance of this intersection and the traffic volumes that it would likely accommodate, it is preliminarily assumed that the intersection would need to be fully improved with left-turn and shared through/right-turn lanes on all four approaches. Potential traffic control improvements will be discussed in the following sections.
- A continued westerly extension from River Road that would span the Umatilla River on a new bridge and merge with the existing Country Lane corridor. It is preliminarily assumed that Country Lane would be upgraded to a fully improved Major Arterial cross section.
- A realignment of Country Lane at Powerline Road to improve spacing with the adjacent I-82/Powerline Road interchange. Potential alignment scenarios will be discussed in the following sections. Given the levels of new travel demand that it would accommodate, a new Powerline Road/Country Lane intersection was assumed that the intersection would be fully improved with left-turn and shared through/right-turn lanes on the southbound and westbound approaches.

Beyond these noted infrastructure changes, no other major regional or local infrastructure improvements were assumed to the study area roadways and intersections.

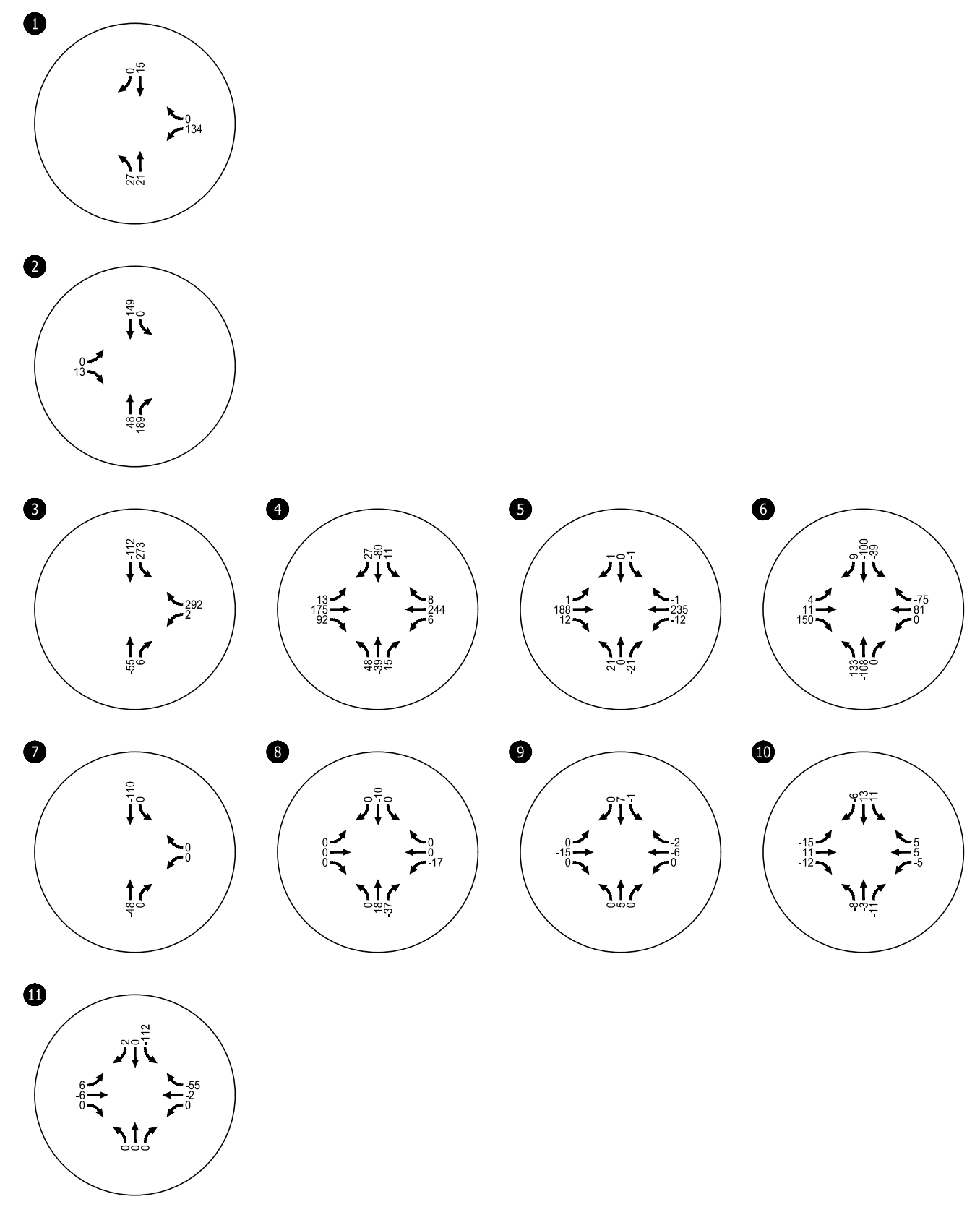
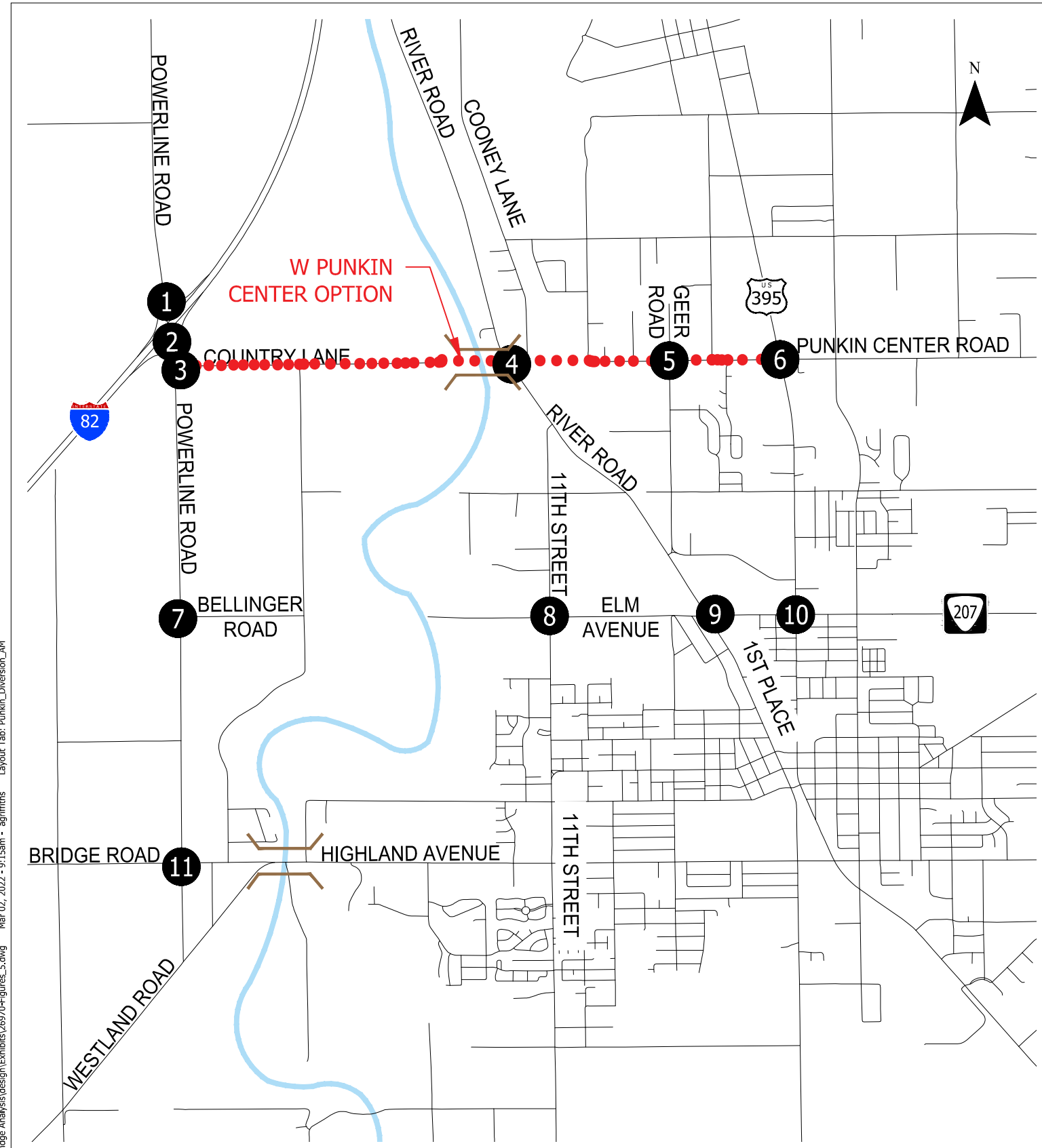
Assumed Redistribution of Trips

With the circulation components of the W Punkin Center Road extension described above, it is anticipated that there will be a natural redistribution of projected traffic volumes at the local and regional levels. Key elements of this assumed redistribution include:

- A rerouting of a portion of the travel demand along the Powerline Road/Bridge Road/Highland Avenue corridors to the new W Punkin Center Road corridor.
- A rerouting of a portion of the north-south US 395 travel demand onto the new W Punkin Center Road corridor in recognition that it would provide a more direct connection to the I-82 corridor.
- A rerouting of a portion of the north-south River Road travel demand onto the new W Punkin Center Road corridor in recognition that it would provide new connections to Powerline Road, I-82, and US 395.
- A rerouting of a small portion of Westland Road demand to the I-82/Powerline Road interchange and the new east-west W Punkin Center Road corridor.

Figure 7 and Figure 8 illustrate the assumed travel demand redistribution at the study intersections during the 2032 weekday AM and PM peak study hours.

¹ It is assumed that Cooney Lane would be realigned and would connect to the new W Punkin Center Road extension.

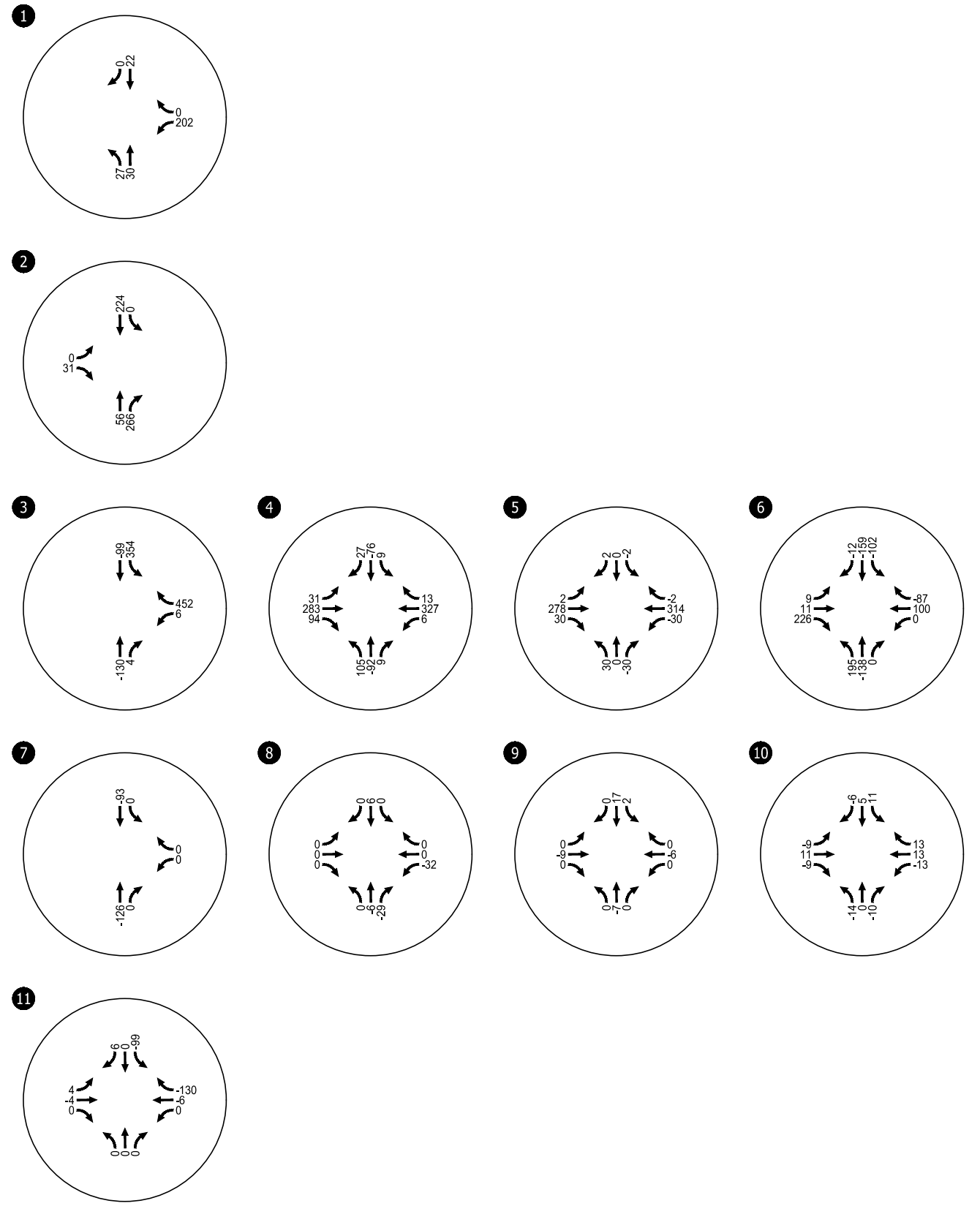
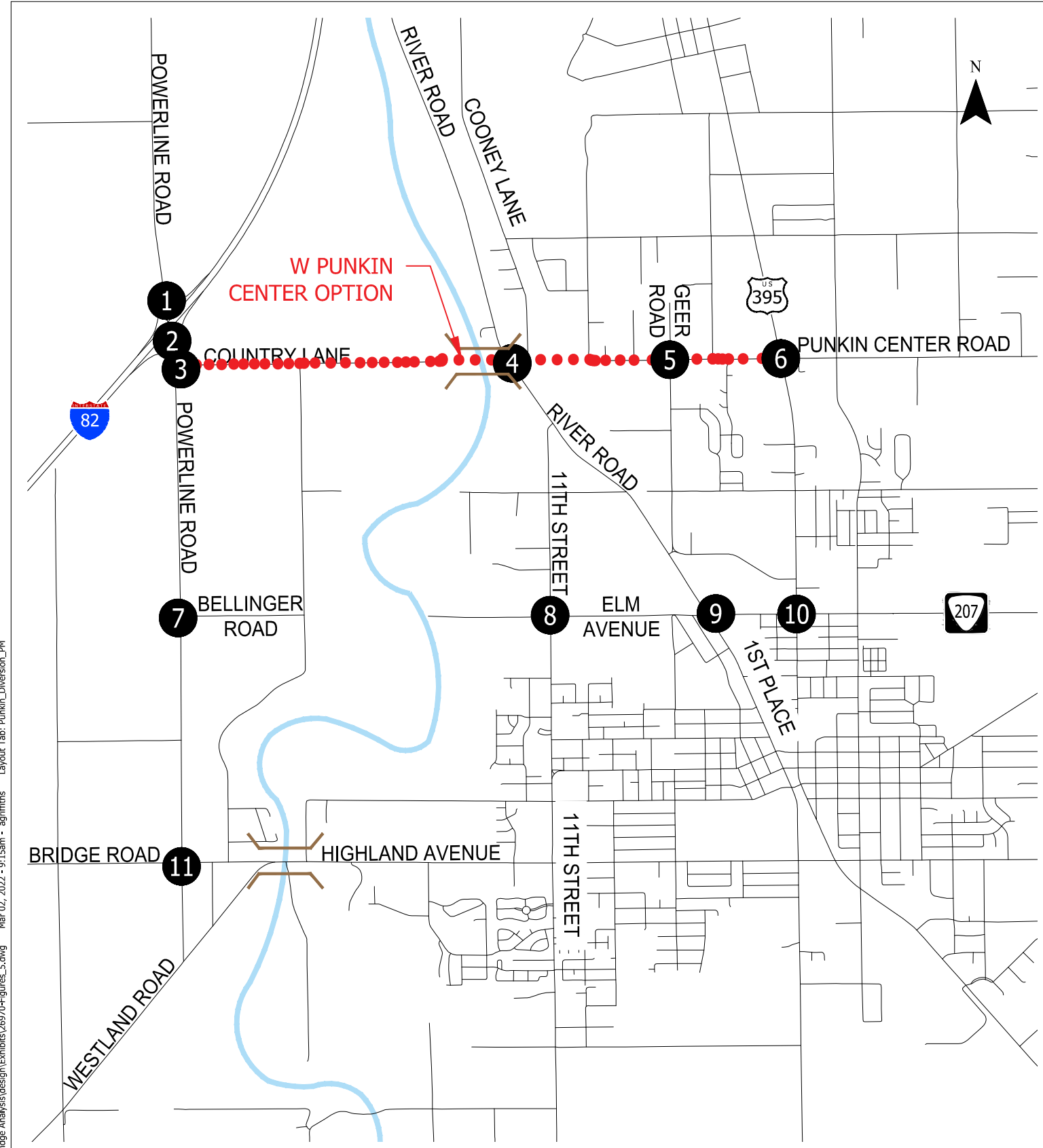


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Redistributed Trips Under W Punkin Center Option
 Weekday AM Peak Hour (2032)
 Hermiston, OR

Figure
 7

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Redistributed Trips Under W Punkin Center Option
 Weekday PM Peak Hour (2032)
 Hermiston, OR

Figure
 8

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2032 W Punkin Center Option Traffic Volumes and Peak Hour Operations

The 2032 traffic conditions with a W Punkin Center Road corridor were determined by applying the redistributed volumes shown in Figure 7 and Figure 8 to the 2032 No-Build volumes shown in Figure 5 and Figure 6. Figure 9 and Figure 10 illustrate the resulting and anticipated 2032 W Punkin Center Road corridor traffic volumes and peak hour operations. *Appendix E includes the 2032 total traffic volumes under Punkin Center Road extension operations analysis worksheets.*

As shown in these figures, the combination of local/regional traffic growth and the anticipated redistribution of area travel demand is projected to result in the following impacts:

US 395/W PUNKIN CENTER ROAD

While the US 395/Punkin Center Road intersection is forecast to continue to meet the ODOT mobility target during the weekday AM and PM peak hours, forecast traffic demand on the eastbound approach is projected to be high enough to require additional turn lane improvements. Specifically, the eastbound approach is projected to have a high right-turn demand during the peak study hours which would result in long vehicle queues in the existing shared through/right-turn lane.

In order to better manage this demand and address long vehicle queues, the following improvements are recommended at the US 395/W Punkin Center Road intersection:

- Construction of an eastbound right-turn lane with 200 feet of right-turn storage on the eastbound W Punkin Center Road approach.
- Relocation of the US 395/W Punkin Center Road signal controller infrastructure currently located in the southwest quadrant of the intersection in order to accommodate a new eastbound right-turn lane.

Given that the property in the southwest quadrant of the US 395/W Punkin Center Road intersection is currently undeveloped, the right-of-way for this improvement could be obtained with fewer private property impacts.

US 395/W ELM AVENUE (OR 207)

As with the 2032 No-Build conditions, the US 395/W Elm Avenue (OR 207) intersection is forecast to continue to exceed the 0.90 ODOT mobility target. Specifically, the intersection is forecast to operate near capacity at a V/C of 0.96 during the weekday PM peak hour. This represents a slight degradation in operations compared to the 2032 No-Build conditions (V/C 0.93). A review of forecast traffic demands (generated primarily as a result of local/regional growth) indicates that the intersection would benefit from a number of capacity enhancing improvements to the critical northbound, southbound and westbound approaches. Specifically, these include:

- Construction of a northbound right-turn lane, a southbound right-turn lane, and a westbound right-turn lane. These capacity enhancements would significantly improve operations of the intersection and result in an acceptable V/C of 0.76.
- Reconstruction of the US 395/W Elm Avenue traffic signal infrastructure.

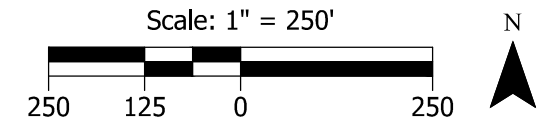
While these improvements would benefit the long-term operations of the intersection, their accommodation would be difficult and costly considering the lack of available public right-of-way and impacts to existing businesses.

RIVER ROAD/W PUNKIN CENTER ROAD

A westerly extension of W Punkin Center Road is assumed to form a new intersection with River Road in the approximate location of the existing River Road/Cooney Lane intersection. A conceptual illustration of this connection and the assumed intersection geometry (left-turn and shared through/right-turn lanes on all four approaches) is provided in Exhibit A. As shown in Figures 9 and 10, the projected future year traffic demands through this intersection will require the consideration of traffic control measures beyond two-way stop-control². A planning level signal warrant analysis indicates that the intersection would meet volume-based warrants for a traffic signal. With signalization and the conceptually illustrated geometric improvements, the intersection would operate at acceptable level of service D during both the weekday AM and PM peak hours. In addition to the geometric and long-term traffic control needs, a new River Road/W Punkin Center Road intersection would need to consider the following:

- An alignment between Sunshine Lane and River Road that minimizes impacts to existing land uses. The conceptual alignment shown in Exhibit A is one potential option.
- A realignment of Cooney Lane to intersect the W Punkin Center Road extension. The conceptual alignment shown in Exhibit A is one potential option.
- An upgrade and modernization of the adjacent Union Pacific Railroad crossing gates and signal infrastructure.

² The consideration of traffic control measures typically includes the consideration of a roundabout. However, a roundabout was not assessed at this location due to the typically large footprint of a roundabout, lack of existing right-of-way, and the intersection's close proximity to the adjacent Union Pacific rail line.



- ✕ - Road to be removed/relocated
- * Alignments and geometry shown are for visualization purposes only and should be considered conceptual.

Conceptual Alignment
Hermiston, OR

Exhibit
A

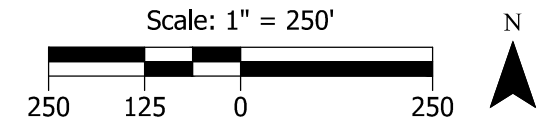
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POWERLINE ROAD/COUNTRY LANE

The existing Powerline Road/Country Lane intersection is located approximately 275 feet south of the I-82/Powerline Road interchange ramp terminal. This spacing does not meet ODOT's desired ¼-mile access spacing standard for public street intersections within the vicinity of freeway ramp terminals. While not meeting the spacing standard, existing traffic volumes on Country Lane are relatively minimal. However, with a Punkin Center Road extension to Country Lane, there will be a significant increase in travel demand necessitating a closer review of the intersection spacing issue, physical improvements such as intersection modernization, and travel lane improvements such as a southbound left-turn lane on Powerline Road and westbound right-turn and left-turn lanes on Country Lane.

Given the complexity and private property impacts associated with improving and relocating the Country Lane intersection with Powerline Road, a separate study effort called an Interchange Area Management Plan (IAMP) is typically recommended. An IAMP is a public planning effort that would involve ODOT, Umatilla County, City of Hermiston, nearby private property owners, and other interest groups. The IAMP would formally identify a preferred interchange improvement plan including the design, timing, and right of way needs for a relocated Country Lane intersection. While there are any number of potential Country Lane relocation scenarios that could be studied in an IAMP, one potential concept is illustrated in Exhibit B. This concept (included for illustrative purposes only but also inclusive of identified geometry and capacity needs) would:

- Close off the existing Country Lane connection to Powerline Road and develop a separate alignment that would intersection Powerline Road along property lines approximately 1,500 feet to the south. An IAMP would formally study alignments like this as well as others to find the least impactful and cost-effective solution.
- Widen Powerline Road to provide a southbound left-turn lane at the realigned Country Lane intersection.
- Upgrade the Country Lane corridor to two paved twelve-foot travel lanes (widened to include left- or right-turn lanes at major crossroads), five-foot shoulders/bike lanes, curb and gutter, and five-foot sidewalks.
- Upgrade the right-of-way width to 90 feet to allow for a future upgrade to an Urban Major Arterial per City of Hermiston Standard Drawing ST07.

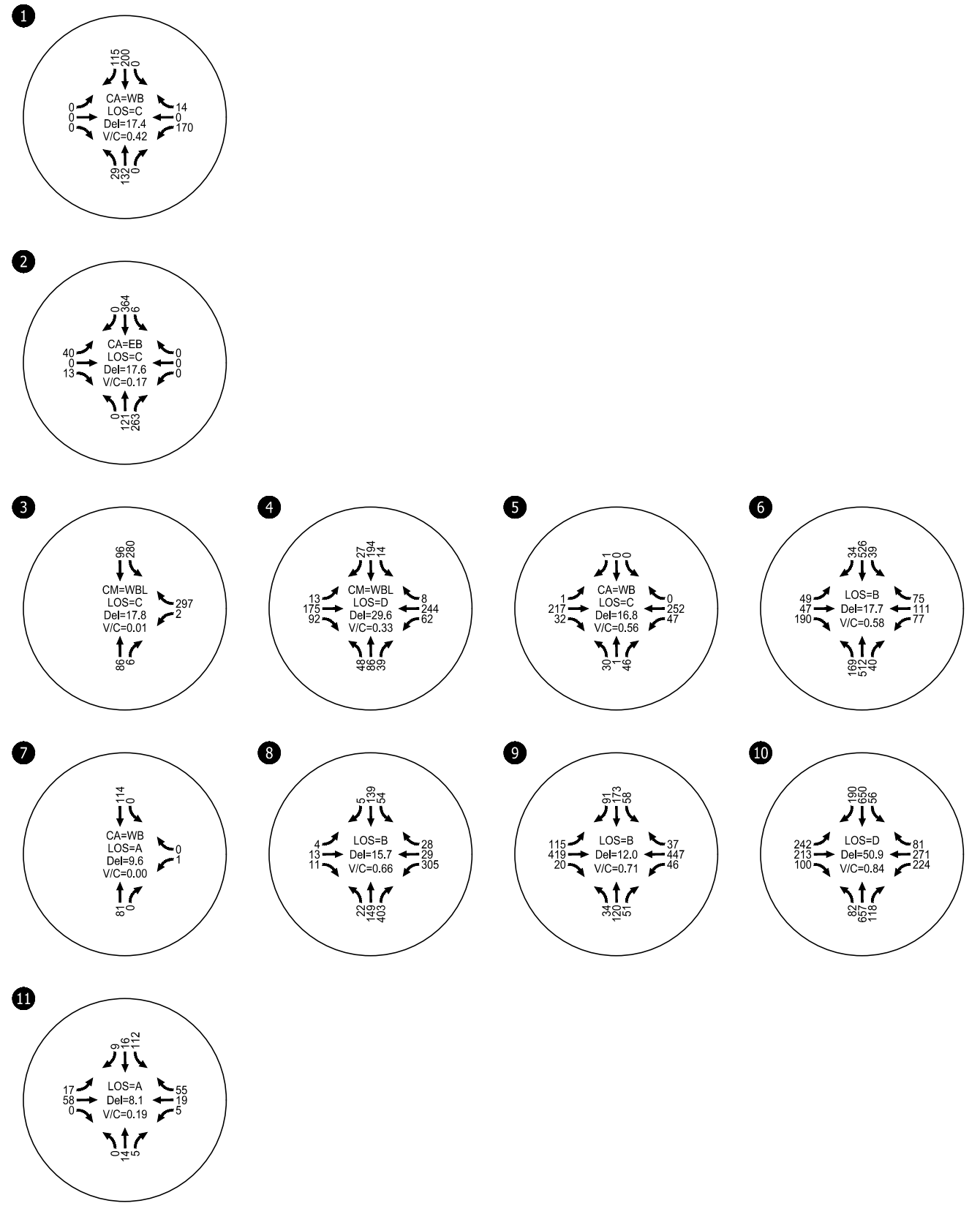
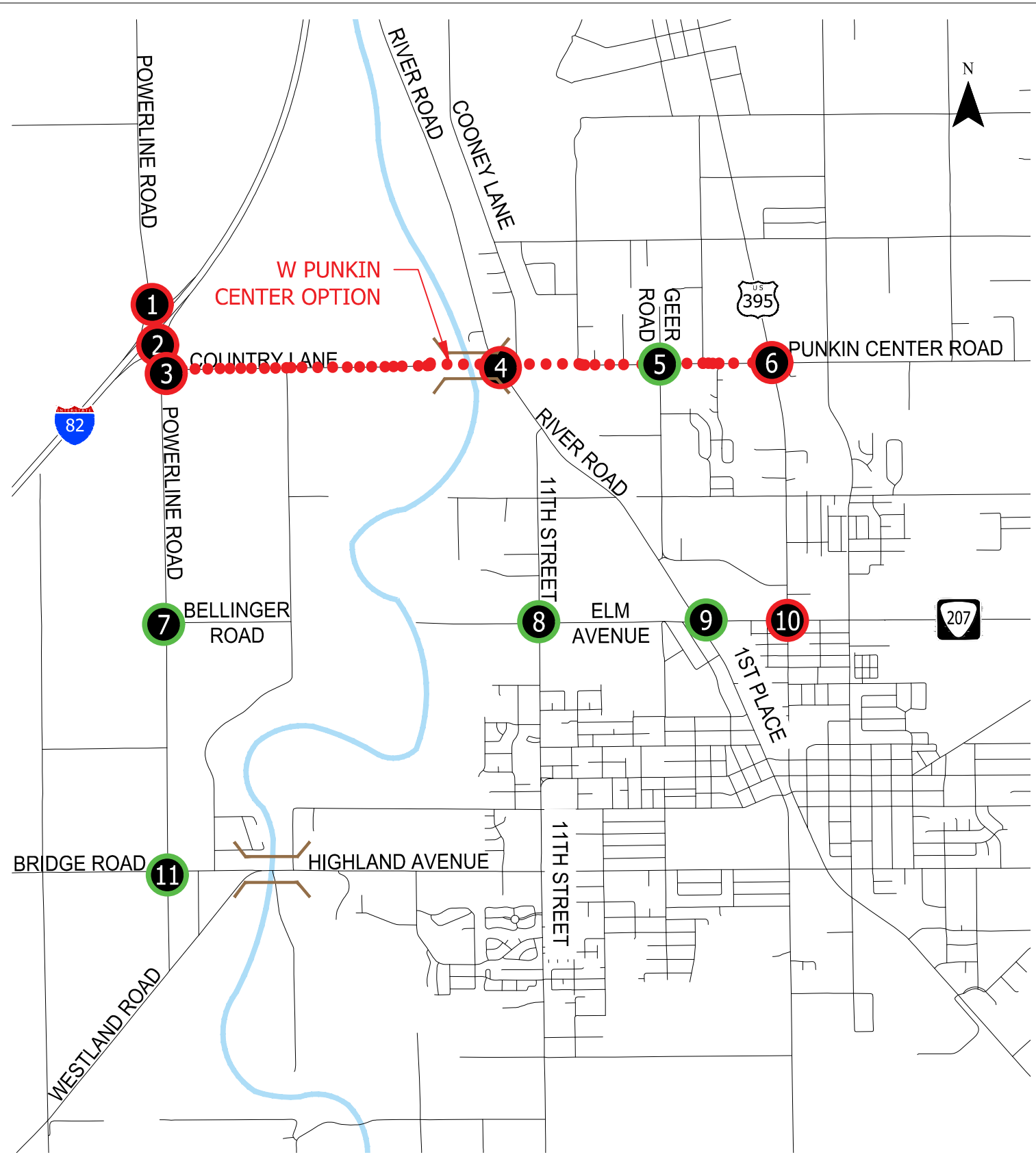


X - Road to be removed/relocated
 * Alignments and geometry shown are for visualization purposes only and should be considered conceptual.

Conceptual Alignment
 Hermiston, OR

Exhibit
 B

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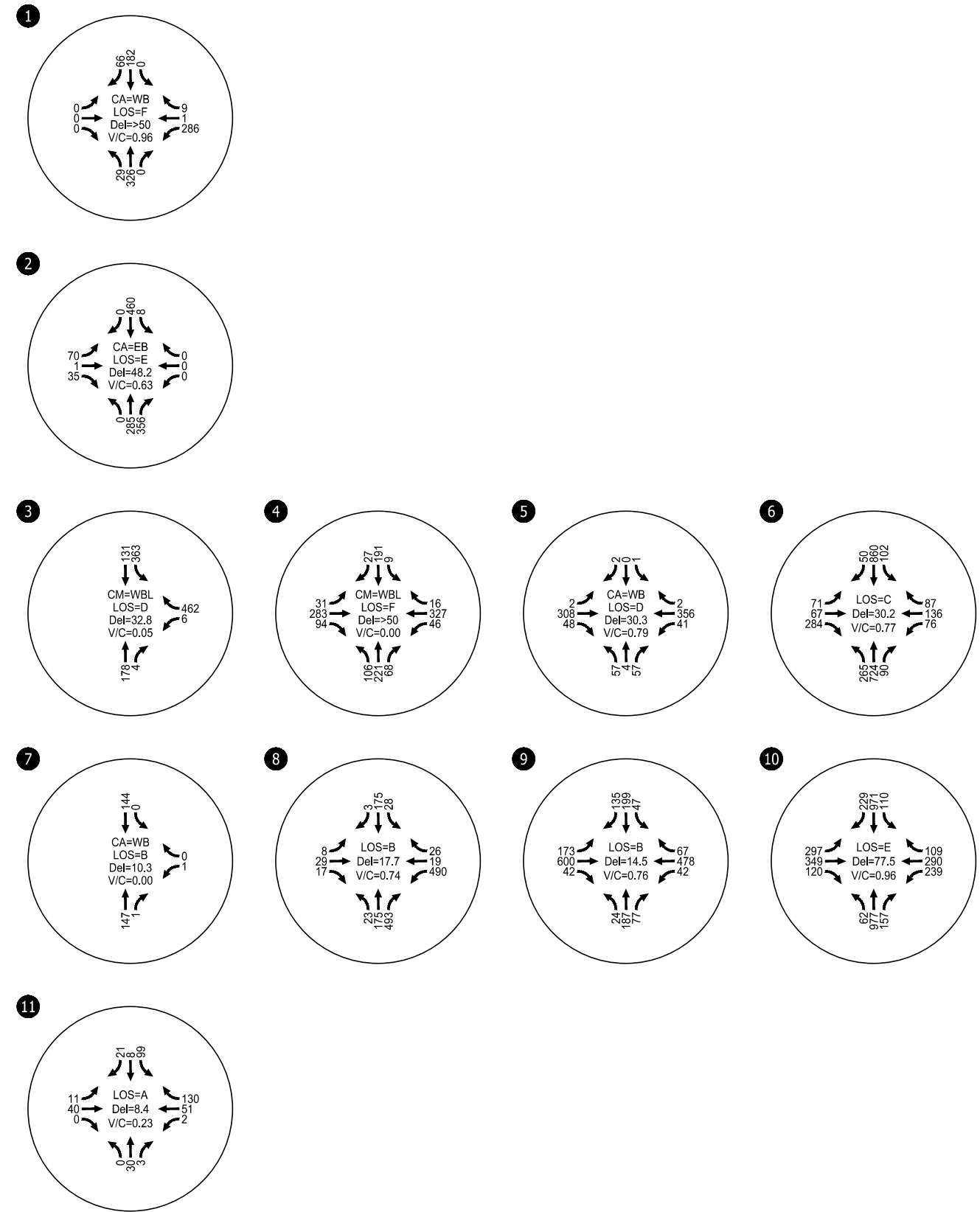
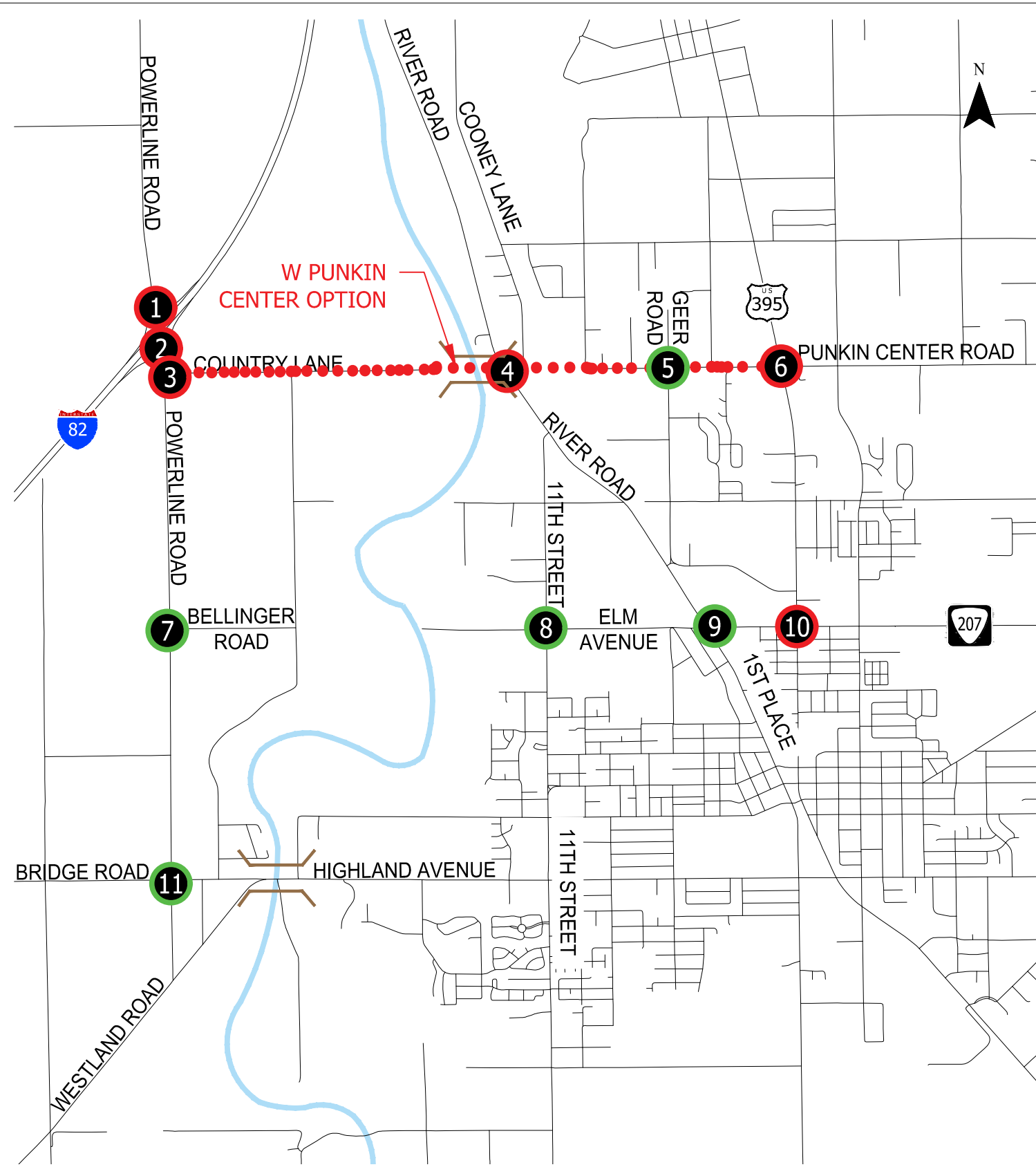
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Total Traffic Volumes Under W Punkin Center Option
 Weekday AM Peak Hour (2032)
 Hermiston, OR

Figure 9

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Total Traffic Volumes Under W Punkin Center Option
 Weekday PM Peak Hour (2032)
 Hermiston, OR

Figure
 10

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W ELM AVENUE EXTENSION

As conceptually visualized in Figure 1, the W Elm Avenue Option would involve the following:

- A westerly extension of W Elm Avenue from its current terminus at NW 11th Street that would span the Umatilla River on a new bridge and merge with the existing Bellinger Road corridor.
- An upgraded Bellinger Road (to Major Arterial level standards).
- An upgraded intersection of Bellinger Road at Powerline Road.

Beyond these noted infrastructure changes, no other major regional or local infrastructure improvements to the study area roadways and intersections were assumed.

Assumed Redistribution of Trips

With the circulation components of the W Elm Avenue extension described above, it is anticipated that there will be a natural redistribution of projected traffic volumes at the local and regional levels. Key elements of this assumed redistribution include:

- A rerouting of a portion of the travel demand along the Powerline Road/Bridge Road/Highland Avenue corridors to the new W Elm Avenue corridor.
- A rerouting of a portion of the north-south US 395 travel demand onto the new W Elm Avenue corridor in recognition that it would provide an alternative connection to the I-82 corridor.
- A rerouting of a portion of the north-south 11th Avenue travel demand onto the new W Elm Avenue corridor in recognition that it would provide new connections to Powerline Road and I-82.

Figure 11 and Figure 12 illustrate the assumed travel demand redistribution at the study intersections during the 2032 weekday AM and PM peak study hours.

2032 W Elm Avenue Option Traffic Volumes and Peak Hour Operations

The 2032 traffic conditions with a W Elm Avenue corridor were determined by applying the redistributed volumes shown in Figure 11 and Figure 12 to the 2032 No-Build volumes shown in Figure 5 and Figure 6. Figure 13 and Figure 14 illustrate the resulting and anticipated 2032 W Elm Avenue Option traffic volumes and peak hour operations. *Appendix F includes the 2032 total traffic volumes under Elm Avenue extension operations analysis worksheets.*

As shown in these figures, the combination of local/regional traffic growth and the anticipated redistribution of area travel demand is projected to result in the following impacts:

US 395/W ELM AVENUE (OR 207)

Under the W Elm Avenue Option, the US 395/W Elm Avenue (OR 207) intersection is forecast to operate either over the 0.90 mobility target or over capacity depending upon the study period. Specifically, the intersection is forecast to operate at a V/C of 0.92 during the weekday AM peak hour and over capacity with a V/C of 1.02 during the weekday PM peak hour. With an increase in turning movement demand generated by the W Elm Avenue Option, this represents a much more significant degradation in operations compared to the 2032 No-Build conditions (V/C 0.93). A review of forecast traffic demands indicates the

intersection would benefit from the same previously identified capacity enhancements to the critical northbound, southbound and westbound approaches. These include:

- Construction of a northbound right-turn lane, a southbound right-turn lane, and a westbound right-turn lane would significantly improve operations of the intersection and result in an acceptable V/C of 0.90.
- Reconstruction of the US 395/W Elm Avenue traffic signal infrastructure to accommodate the above noted turn lanes.

While these improvements would benefit the long-term operations of the intersection, their accommodation would be difficult and costly considering the lack of right-of-way and impacts to existing businesses. It should also be noted that while these improvements would restore capacity to the intersection, they would only restore enough capacity in order to meet the 0.90 mobility target.

W ELM AVENUE (OR 207)/1ST PLACE

Under the W Elm Avenue Option, the W Elm Avenue (OR 207)/1st Place intersection is forecast to operate at a V/C ratio of 0.89 during the weekday PM peak hour. While this forecast operation does not exceed the 0.90 mobility target, it does indicate the intersection has limited long-term operational flexibility to accommodate additional traffic growth. To help address this long-term limitation and accommodate increased traffic demand anticipated under the W Elm Avenue Option, the intersection would benefit from the following modernization and capacity enhancing improvements:

- Construction of a southbound left-turn lane on 1st Place
- Construction of an eastbound right-turn lane on W Elm Avenue

While not a function of the increased traffic generated by the W Elm Avenue Option, the north and south legs of 1st Place are unimproved and would benefit from an upgrade to a Major Collector per option 2 of the City of Hermiston Standard Drawing ST09.

W ELM AVENUE (OR 207)/NW 11TH STREET

Under the W Elm Avenue Option, new traffic demand on the underutilized west leg of the intersection will result in a degradation of capacity during the weekday PM peak hour. Specifically, the intersection is forecast to operate at a V/C of 0.94 which will exceed the 0.90 mobility target. A review of forecast traffic demands indicates the intersection would benefit from capacity enhancements to the critical eastbound approach. This includes:

- Construction of an eastbound right-turn lane which would improve operations of the intersection and result in an acceptable V/C of 0.89.

POWERLINE ROAD/BELLINGER ROAD

Under the W Elm Avenue Option, the Powerline Road/Bellinger Road intersection will need to be upgraded to urban travel standards in order to safely accommodate anticipated increases in travel demand. This includes

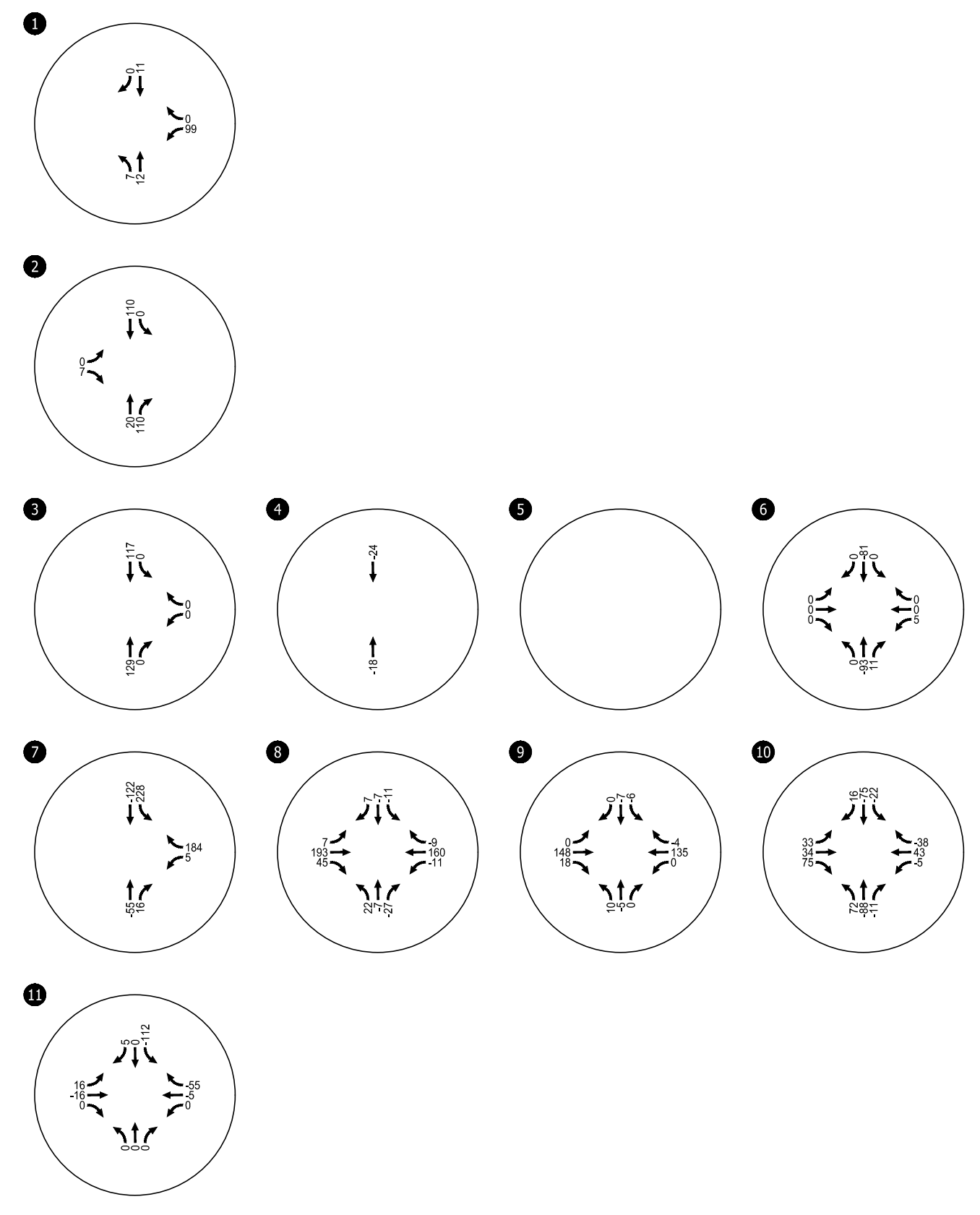
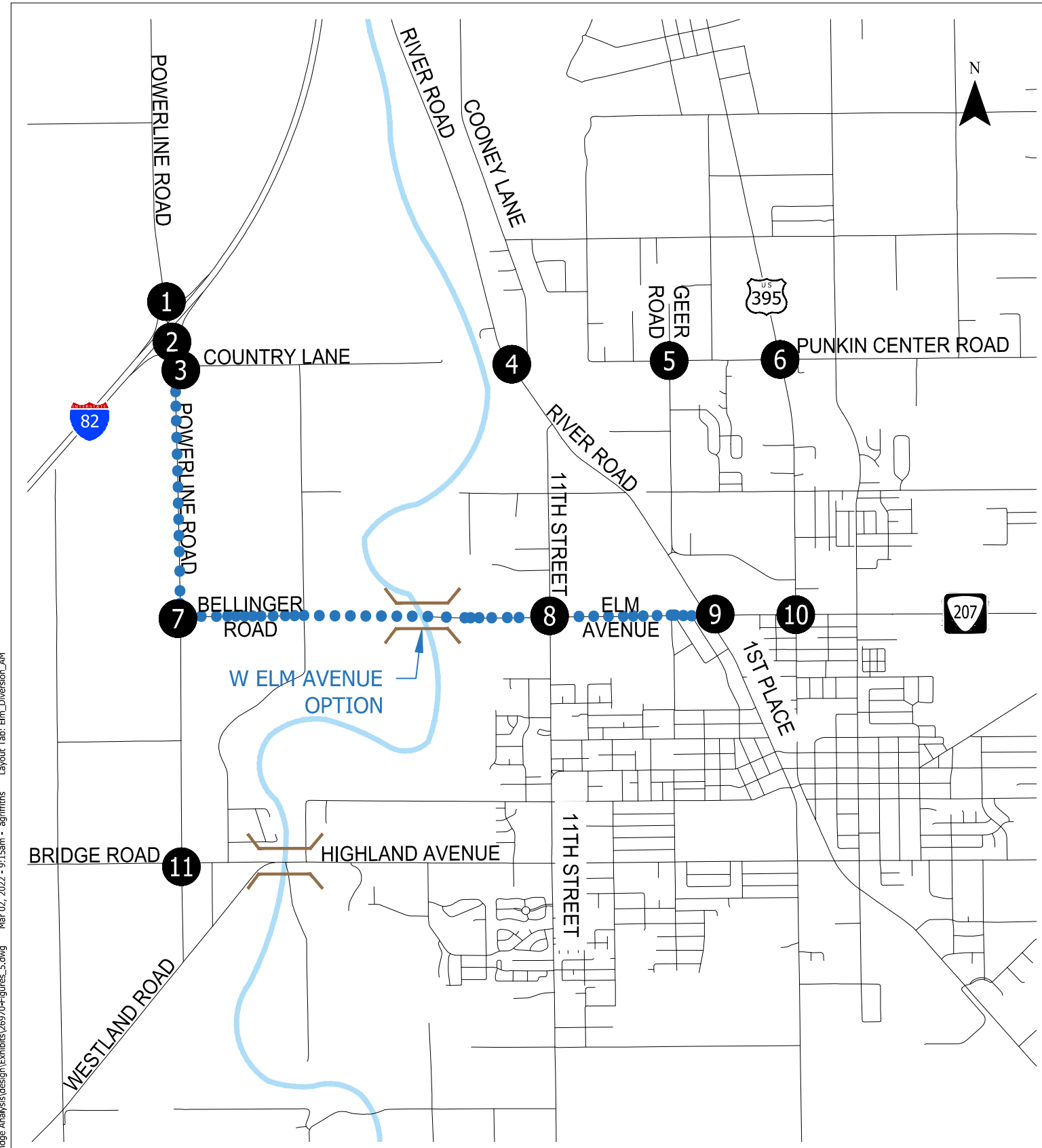
- Construction of a southbound left-turn lane on Powerline Road. The forecast left-turn demand will be high enough to warrant a separate turn lane allowing southbound through traffic to progress through the intersection unimpeded by the high left-turn demand.
- Construction of westbound right-turn and left-turn lanes on Bellinger Road.

POWERLINE ROAD AND BELLINGER ROAD CORRIDORS

Under the W Elm Avenue Option, Power Line Road (from the I-82 interchange to Bellinger Road) and Bellinger Road (from Powerline Road to the Umatilla River Bridge) would need to be upgraded to two paved twelve-foot travel lanes (widened to include left- or right-turn lanes at major crossroads), five-foot shoulders/bike lanes, curb and gutter, and five-foot sidewalks. In addition, upgrade the right-of-way width to 90 feet to allow for a future upgrade to an Urban Major Arterial per City of Hermiston Standard Drawing ST07.

I-82 SB RAMP TERMINAL/POWERLINE ROAD

A W Elm Avenue extension is anticipated to generate additional travel demand through the I-82/Powerline Road interchange. As a result, the increase in travel demand will likely necessitate an upgrade and modernization of the interchange ramp terminals. The specific improvements should be addressed as part of a more comprehensive Interchange Area Management Plan.

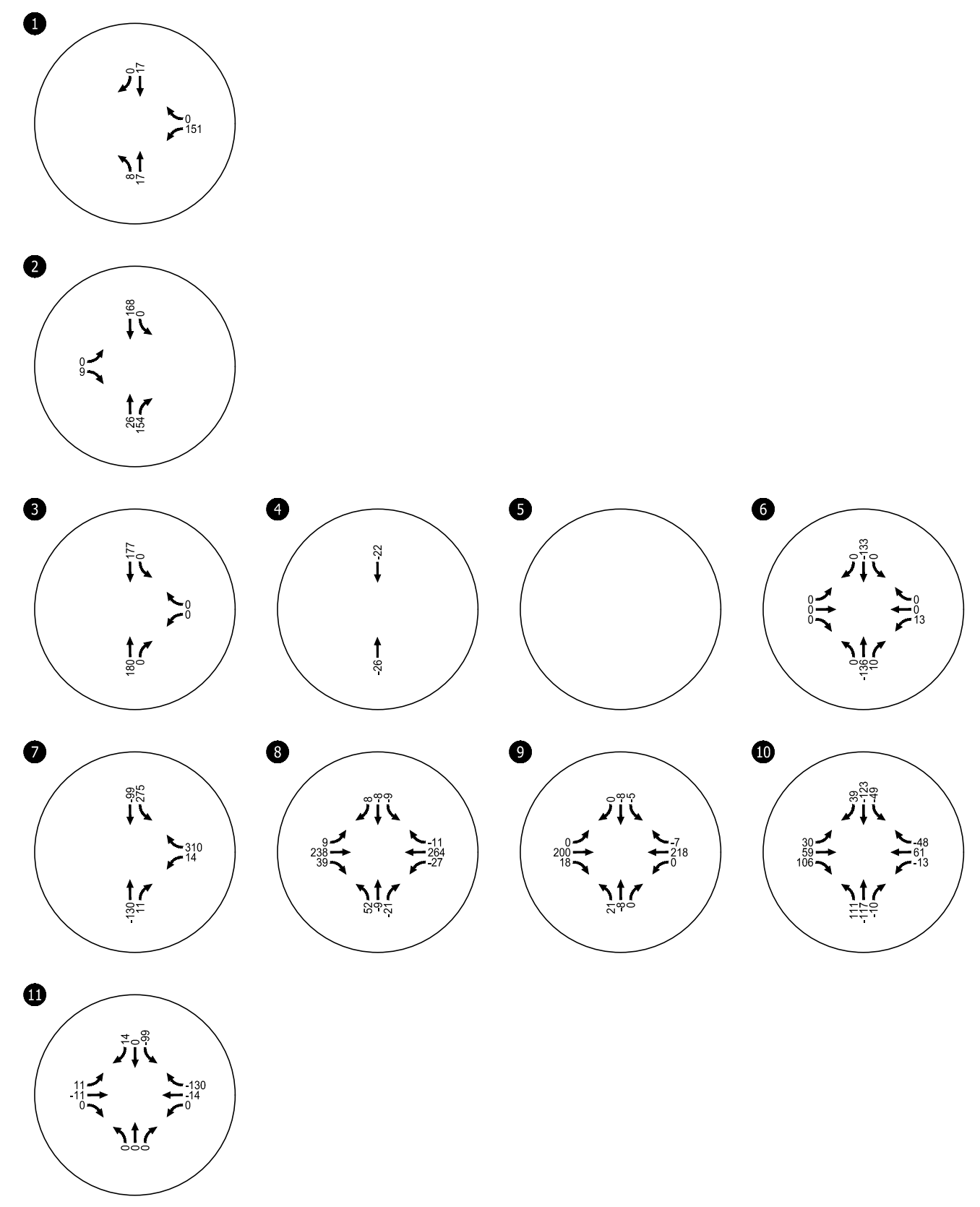
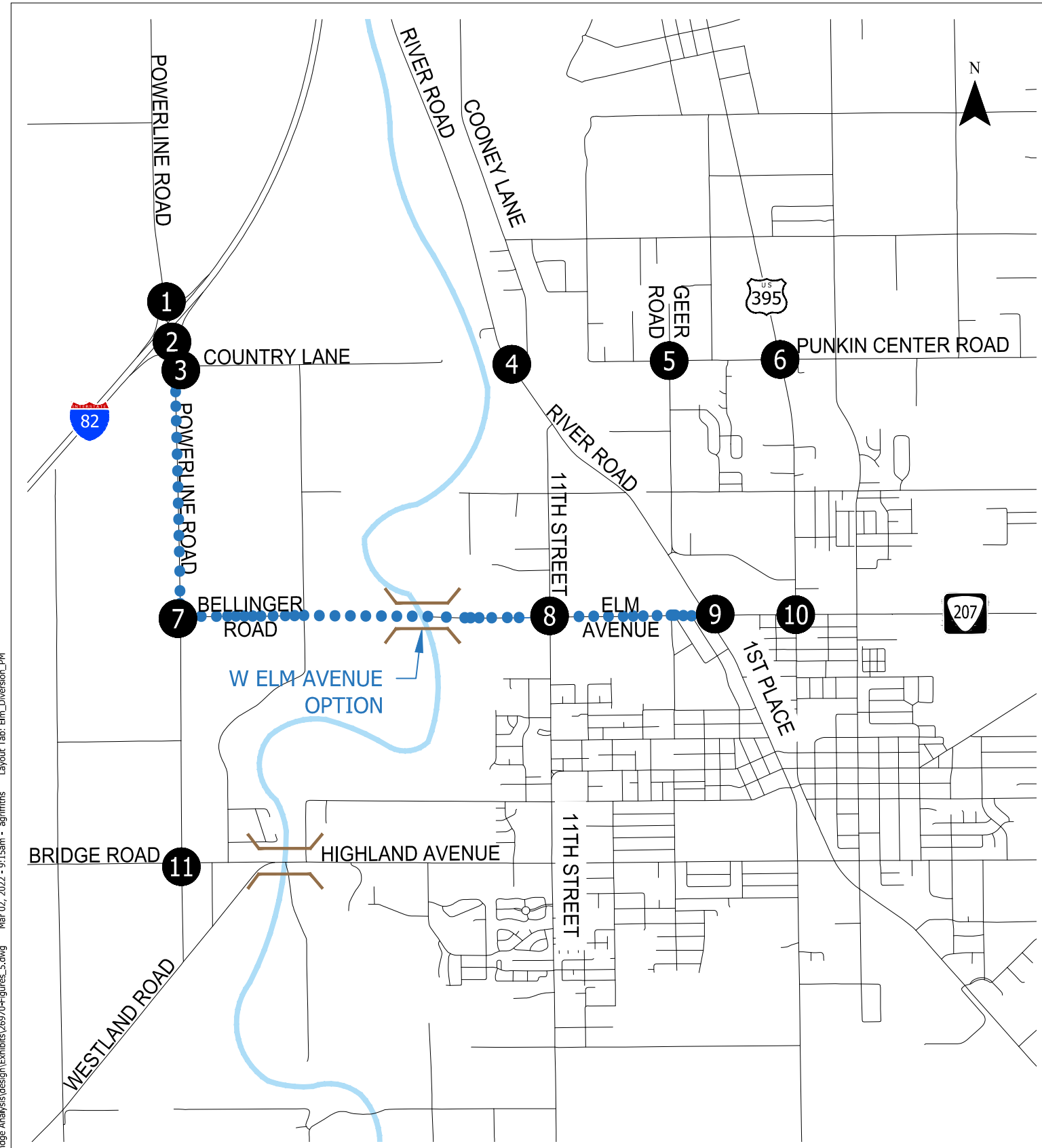


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Redistributed Trips Under W Elm Avenue Option
 Weekday AM Peak Hour (2032)
 Hermiston, OR

Figure
 11

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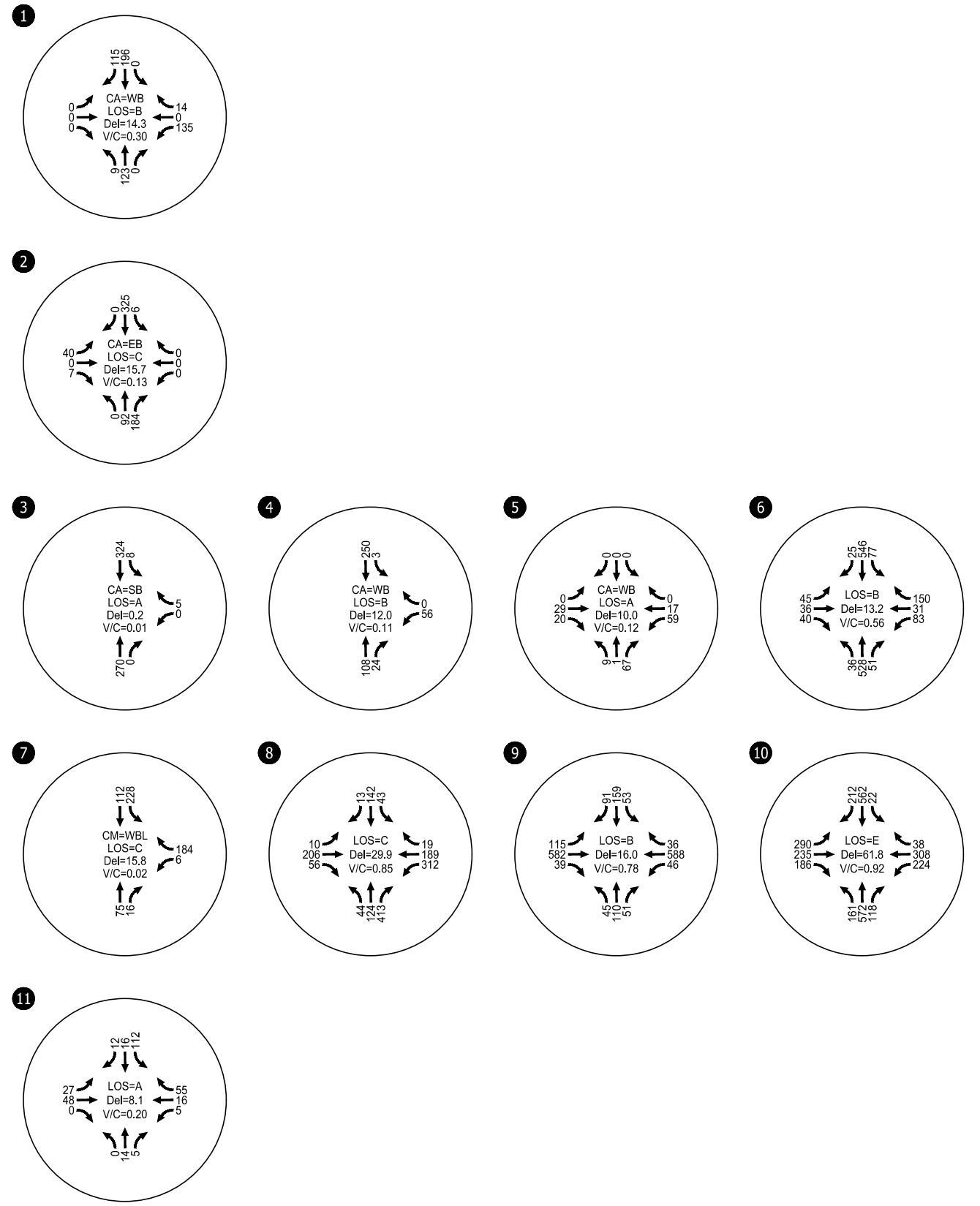
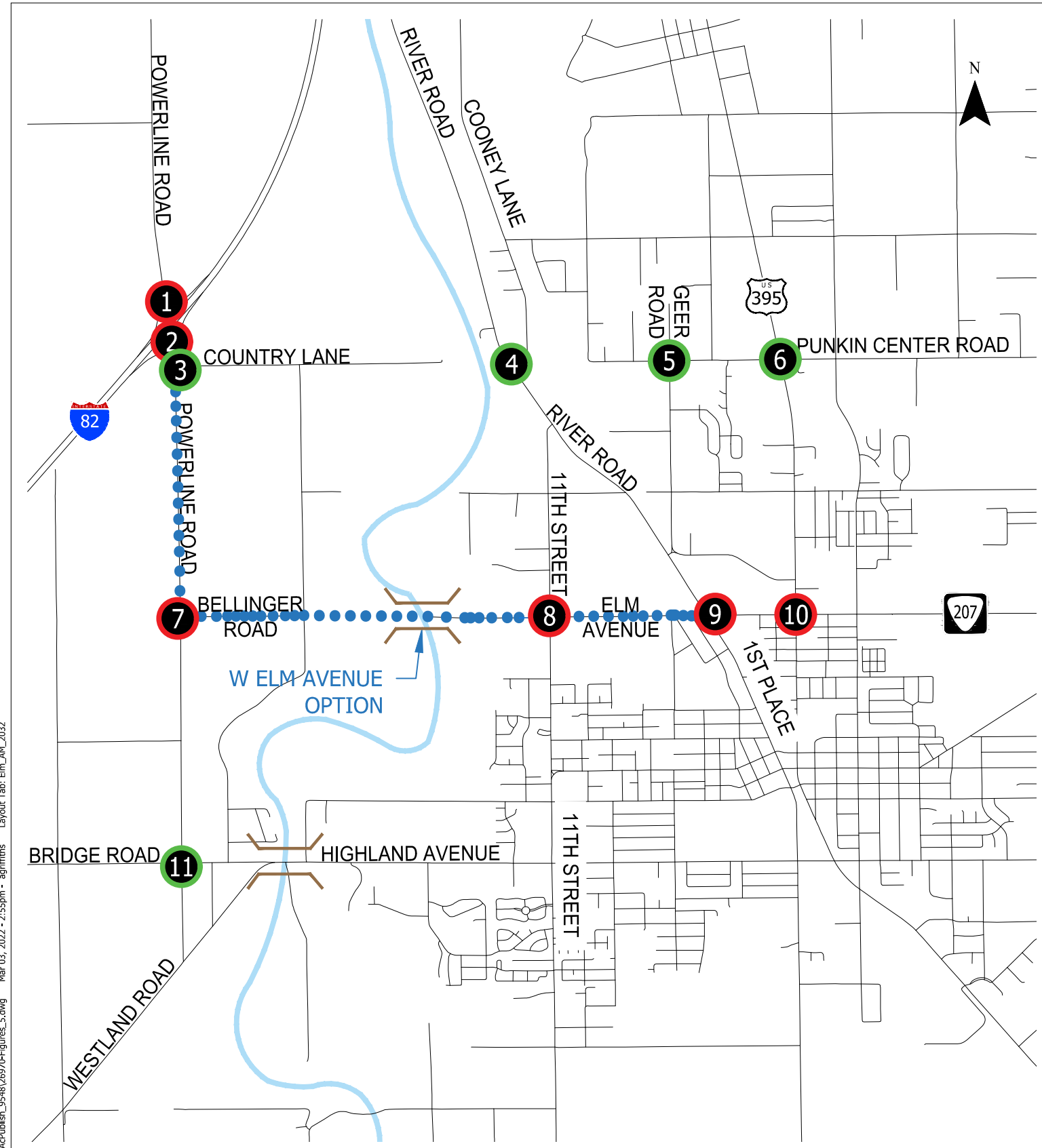


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Redistributed Trips Under W Elm Avenue Option
 Weekday PM Peak Hour (2032)
 Hermiston, OR

Figure
 12

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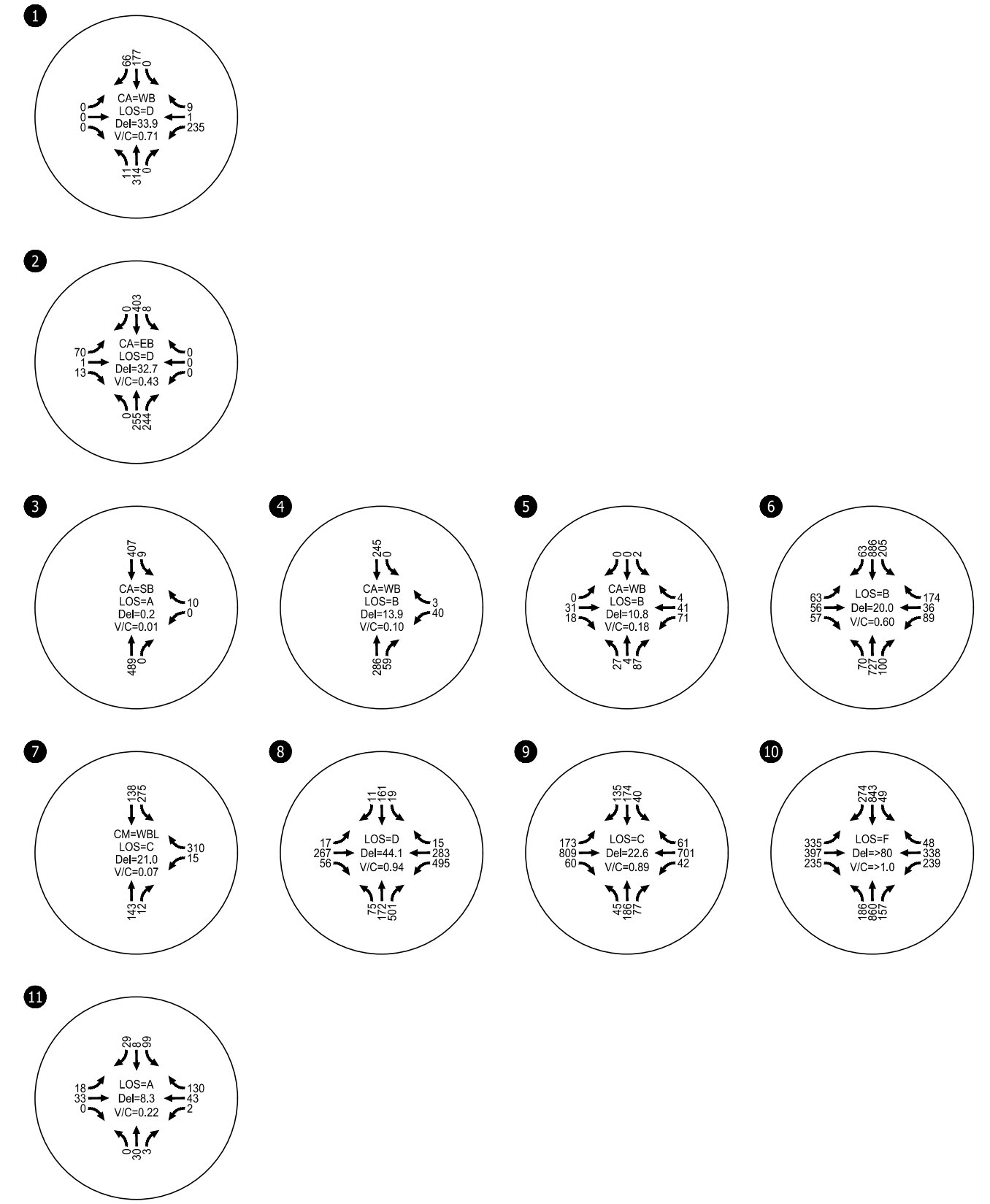
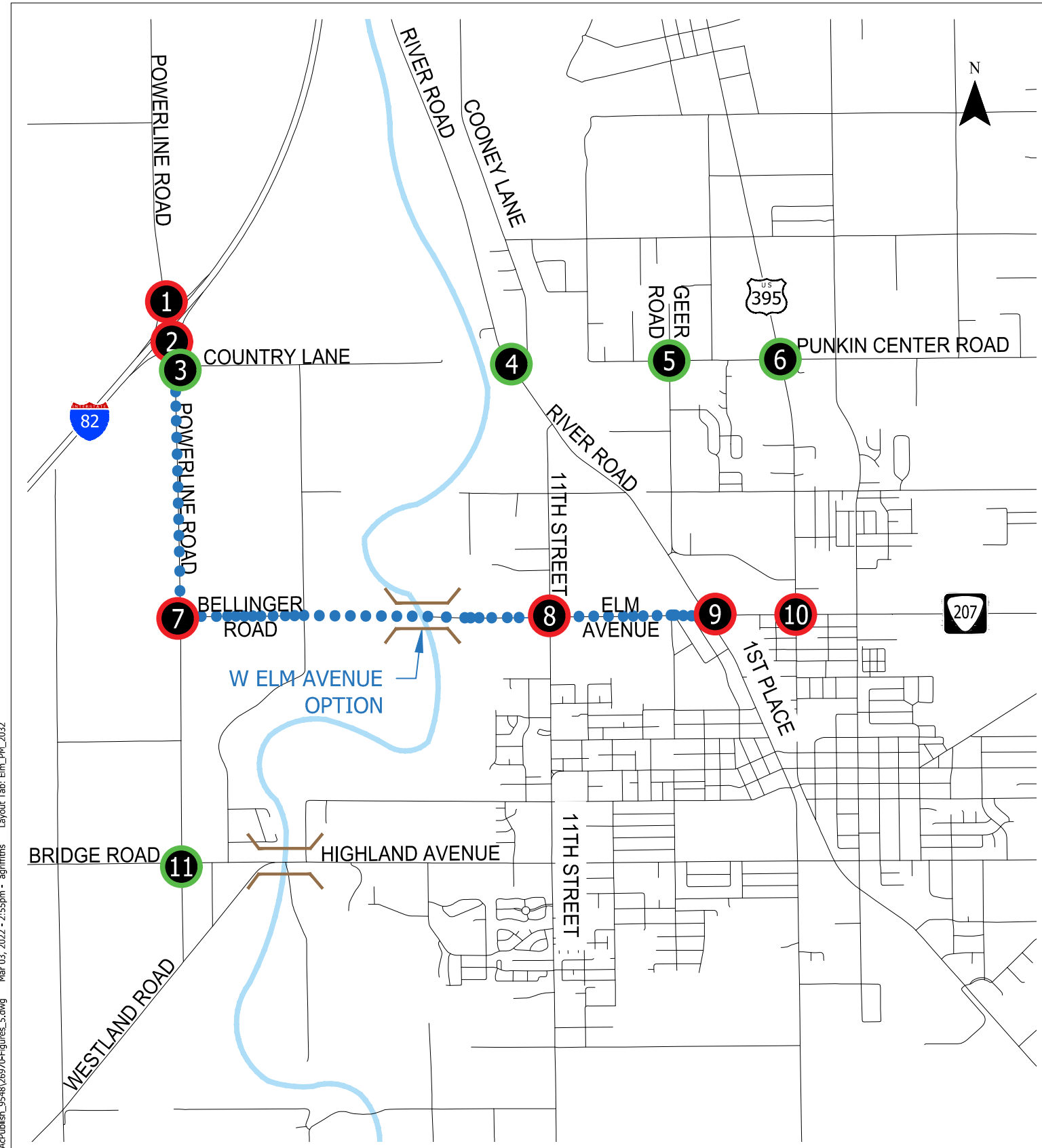


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Total Traffic Volumes Under W Elm Avenue Option
 Weekday AM Peak Hour (2032)
 Hermiston, OR

Figure
 13



LEGEND

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Total Traffic Volumes Under W Elm Avenue Option
 Weekday PM Peak Hour (2032)
 Hermiston, OR

Figure
 14

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Table 3 summarizes the future operational needs associated with alternative roadway extension options at key study intersections.

Table 3: Future Operational/Geometric Improvement Needs Associated with Roadway Extension Options

Intersection/ Roadway Corridor	W Punkin Center Option Improvement Needs	W Elm Avenue Option Improvement Needs
US 395 / Punkin Center Road	<ul style="list-style-type: none"> Construct separate eastbound right-turn lane to manage expected long-term vehicle queues 	<ul style="list-style-type: none"> None
River Road / Punkin Center Road / Cooney Lane	<ul style="list-style-type: none"> Construct separate left-turn and combined through and right-turn lanes on all approaches When warranted, construct a traffic signal Upgrade and modernize adjacent Union Pacific Railroad Crossing Realign Cooney Lane to intersect the new east-west extension of W Punkin Center Road 	<ul style="list-style-type: none"> None
Country Lane Corridor	<ul style="list-style-type: none"> Realign Country Lane and form a new intersection with Powerline Road to increase spacing from the I-82 interchange. The alignment and spacing should be determined through a separate multi-agency Interchange Area Management Plan (IAMP) Widen and modernize the remaining segment of Country Lane to the Umatilla River Bridge 	<ul style="list-style-type: none"> None
Powerline Road Corridor	<ul style="list-style-type: none"> Widen and modernize¹ Powerline Road from the I-82 interchange to a relocated Country Lane intersection 	<ul style="list-style-type: none"> Widen and modernize¹ Powerline Road from the I-82 interchange to Bellinger Road
Powerline Road / Country Lane	<ul style="list-style-type: none"> Construct a southbound left-turn lane on Powerline Road at the relocated Country Lane intersection Construct separate westbound right-turn and left-turn lanes on Country Lane at Powerline Road 	<ul style="list-style-type: none"> None
I-82 Ramp Terminals	<ul style="list-style-type: none"> Long-term widening/modernization needed. Specific improvements to be identified within the IAMP planning effort 	<ul style="list-style-type: none"> Long-term widening/modernization needed. Specific improvements to be identified within the IAMP planning effort
US 395 / Elm Avenue (OR 207)	<ul style="list-style-type: none"> Construct northbound right-turn lane, southbound right-turn lane, and westbound right-turn lane 	<ul style="list-style-type: none"> Construct northbound right-turn lane, southbound right-turn lane, and westbound right-turn lane
1 st Place / Elm Avenue (OR 207)	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Construct a southbound right-turn lane Construct an eastbound right-turn lane
11th Avenue / Elm Avenue (OR 207)	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Construct eastbound right-turn lane

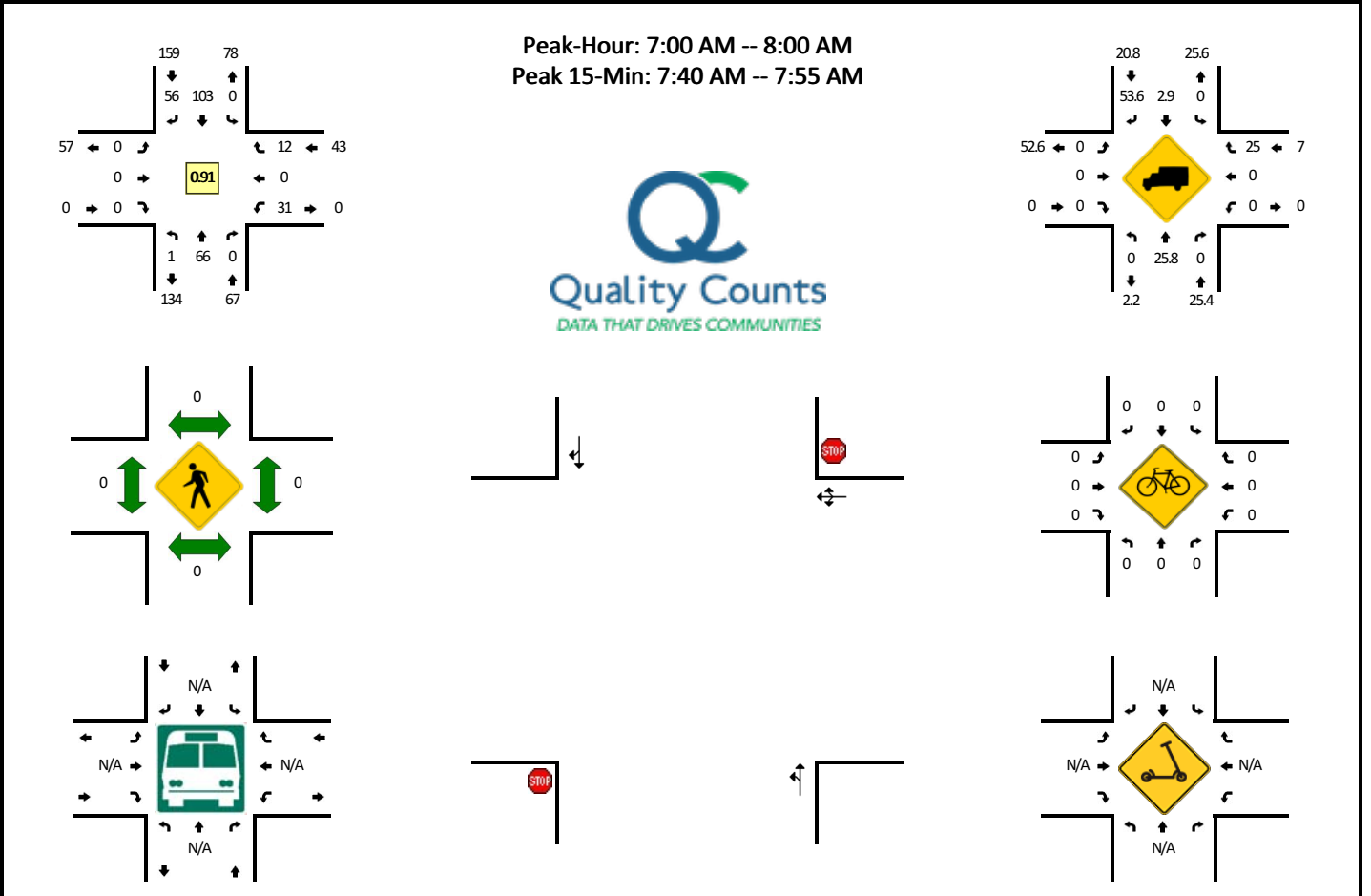
Intersection/ Roadway Corridor	W Punkin Center Option Improvement Needs	W Elm Avenue Option Improvement Needs
Powerline Road / Bellinger Road	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Construct southbound left-turn lane on Powerline Road at Bellinger Road • Upgrade of Bellinger Road corridor to the Urban Major Arterial roadway standard • Construct separate westbound right-turn and left-turn lanes on Bellinger Road at Powerline Road
Elm Avenue Corridor	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Widen and modernize W Elm Avenue from the new bridge over the Umatilla River to NW 11th Avenue. East of NW 11th Avenue to US 395, infill sidewalk curb, and gutter.
Bellinger Road Corridor	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Widen and modernize² Bellinger Road from Powerline Road to the new bridge over the Umatilla River bridge
<p>¹ Upgrade to modern roadway standards including two twelve-foot travel lanes (widened to include a southbound left-turn lane at major intersections such as Country Lane under W Punkin Center Option and Bellinger Road under the W Elm Avenue Option), five-foot shoulders/bike lanes, curb and gutter, and five-foot sidewalks.</p> <p>² Upgrade to modern roadway standards including two twelve-foot travel lanes, five-foot shoulders/bike lanes, curb and gutter, and five-foot sidewalks.</p>		

Appendix A

Traffic Count Worksheets

LOCATION: Powerline Rd -- I-82 WB Ramps
CITY/STATE: Umatilla, OR

QC JOB #: 15570919
DATE: Thu, Oct 7 2021

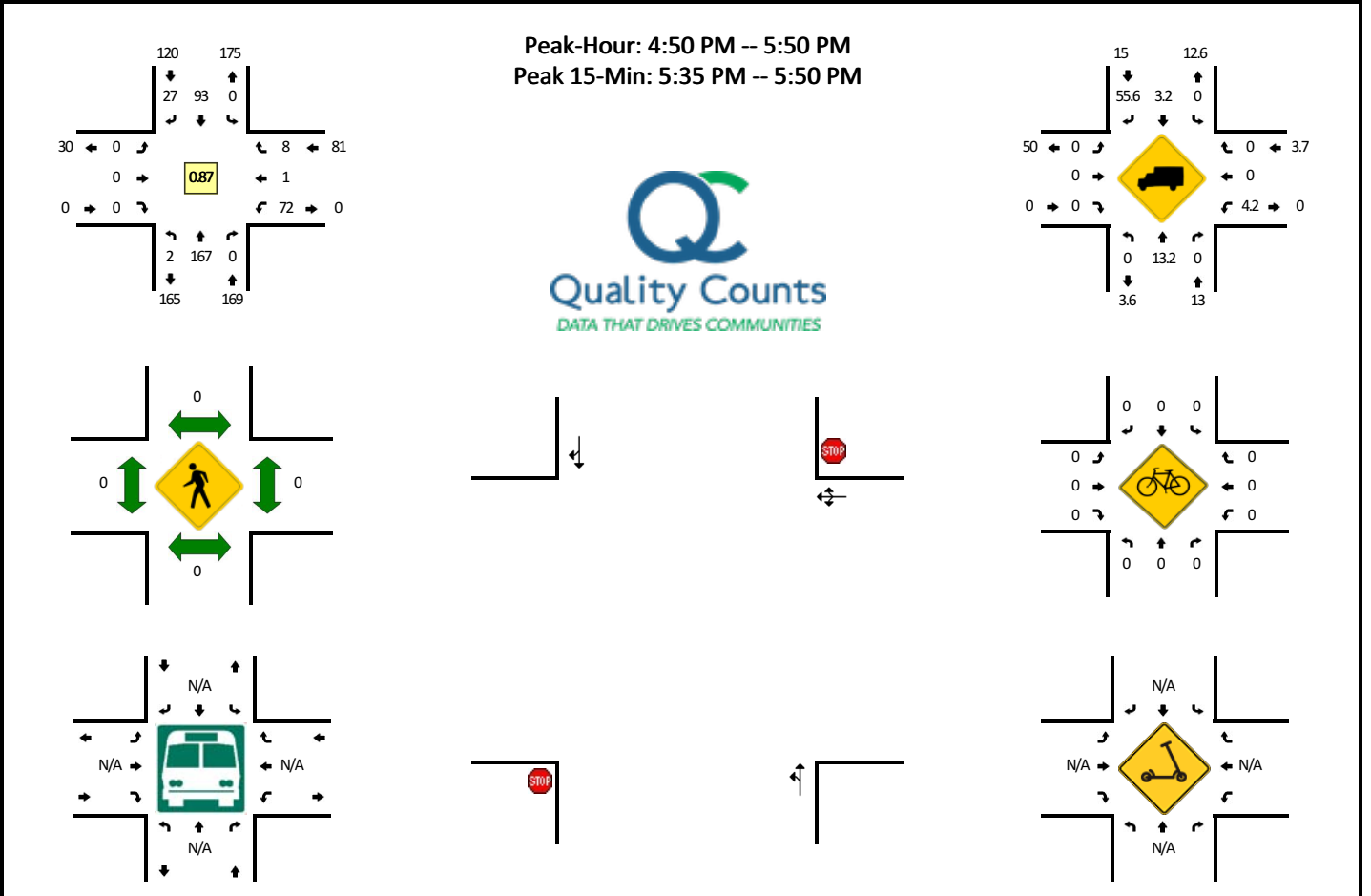


5-Min Count Period Beginning At	Powerline Rd (Northbound)				Powerline Rd (Southbound)				I-82 WB Ramps (Eastbound)				I-82 WB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	6	0	0	0	3	3	0	0	0	0	0	2	0	0	0	14	
7:05 AM	0	6	0	0	0	6	4	0	0	0	0	0	3	0	3	0	22	
7:10 AM	0	7	0	0	0	5	6	0	0	0	0	0	2	0	2	0	22	
7:15 AM	0	12	0	0	0	7	6	0	0	0	0	0	2	0	1	0	28	
7:20 AM	0	3	0	0	0	7	5	0	0	0	0	0	4	0	2	0	21	
7:25 AM	0	5	0	0	0	10	3	0	0	0	0	0	4	0	2	0	24	
7:30 AM	0	4	0	0	0	10	3	0	0	0	0	0	2	0	0	0	19	
7:35 AM	0	5	0	0	0	9	8	0	0	0	0	0	2	0	0	0	24	
7:40 AM	0	4	0	0	0	13	5	0	0	0	0	0	4	0	0	0	26	
7:45 AM	1	4	0	0	0	11	2	0	0	0	0	0	1	0	1	0	20	
7:50 AM	0	5	0	0	0	12	5	0	0	0	0	0	5	0	1	0	28	
7:55 AM	0	5	0	0	0	10	6	0	0	0	0	0	0	0	0	0	21	269
8:00 AM	0	5	0	0	0	5	1	0	0	0	0	0	2	0	0	0	13	268
8:05 AM	0	3	0	0	0	8	4	0	0	0	0	0	2	1	0	0	18	264
8:10 AM	0	6	0	0	0	11	5	0	0	0	0	0	2	0	1	0	25	267
8:15 AM	0	7	0	0	0	3	0	0	0	0	0	0	1	0	1	0	12	251
8:20 AM	0	6	0	0	0	5	4	0	0	0	0	0	3	0	0	0	18	248
8:25 AM	0	12	0	0	0	4	4	0	0	0	0	0	3	0	0	0	23	247
8:30 AM	0	9	0	0	0	5	4	0	0	0	0	0	1	1	0	0	20	248
8:35 AM	0	8	0	0	0	0	1	0	0	0	0	0	2	0	1	0	12	236
8:40 AM	1	5	0	0	0	4	6	0	0	0	0	0	0	0	0	0	16	226
8:45 AM	0	5	0	0	0	7	3	0	0	0	0	0	1	0	1	0	17	223
8:50 AM	0	8	0	0	0	1	3	0	0	0	0	0	0	0	2	0	14	209
8:55 AM	0	8	0	0	0	3	4	0	0	0	0	0	0	1	0	0	16	204
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	4	52	0	0	0	144	48	0	0	0	0	0	40	0	8	0	296	
Heavy Trucks	0	20	0	0	0	0	32	0	0	0	0	0	0	0	0	0	52	
Buses																	0	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																	0	

Comments:

LOCATION: Powerline Rd -- I-82 WB Ramps
CITY/STATE: Umatilla, OR

QC JOB #: 15570920
DATE: Wed, Oct 6 2021

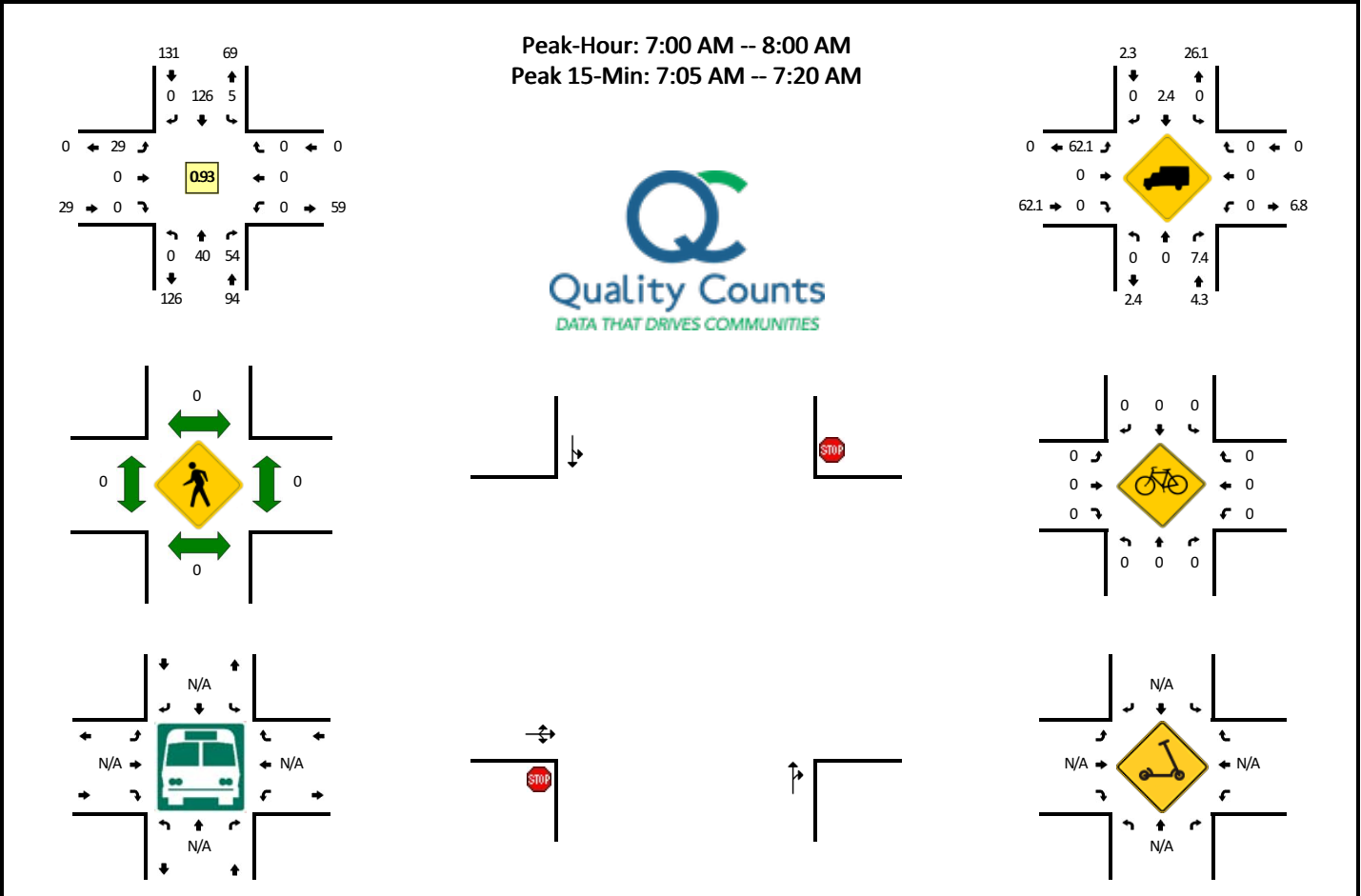


5-Min Count Period Beginning At	Powerline Rd (Northbound)				Powerline Rd (Southbound)				I-82 WB Ramps (Eastbound)				I-82 WB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	12	0	0	0	10	3	0	0	0	0	0	4	0	0	0	29	
4:05 PM	0	13	0	0	0	8	2	0	0	0	0	0	5	0	1	0	29	
4:10 PM	0	17	0	0	0	9	3	0	0	0	0	0	3	0	2	0	34	
4:15 PM	0	10	0	0	0	11	3	0	0	0	0	0	3	0	0	0	27	
4:20 PM	0	16	0	0	0	2	4	0	0	0	0	0	0	1	1	0	24	
4:25 PM	0	17	0	0	0	5	4	0	0	0	0	0	4	0	1	0	31	
4:30 PM	0	14	0	0	0	5	1	0	0	0	0	0	6	0	0	0	26	
4:35 PM	0	17	0	0	0	7	3	0	0	0	0	0	5	0	0	0	32	
4:40 PM	0	20	0	0	0	5	4	0	0	0	0	0	6	0	0	0	35	
4:45 PM	0	11	0	0	0	8	0	0	0	0	0	0	2	0	0	0	21	
4:50 PM	0	9	0	0	0	6	3	0	0	0	0	0	6	0	2	0	26	
4:55 PM	1	8	0	0	0	6	4	0	0	0	0	0	8	1	1	0	29	343
5:00 PM	0	18	0	0	0	4	4	0	0	0	0	0	7	0	0	0	33	347
5:05 PM	0	10	0	0	0	9	1	0	0	0	0	0	5	0	0	0	25	343
5:10 PM	0	14	0	0	0	6	3	0	0	0	0	0	3	0	1	0	27	336
5:15 PM	0	15	0	0	0	8	2	0	0	0	0	0	4	0	0	0	29	338
5:20 PM	0	15	0	0	0	9	2	0	0	0	0	0	5	0	1	0	32	346
5:25 PM	0	14	0	0	0	9	1	0	0	0	0	0	7	0	1	0	32	347
5:30 PM	0	12	0	0	0	11	1	0	0	0	0	0	6	0	1	0	31	352
5:35 PM	1	17	0	0	0	6	0	0	0	0	0	0	9	0	1	0	34	354
5:40 PM	0	16	0	0	0	12	3	0	0	0	0	0	5	0	0	0	36	355
5:45 PM	0	19	0	0	0	7	3	0	0	0	0	0	7	0	0	0	36	370
5:50 PM	0	6	0	0	0	4	6	0	0	0	0	0	6	0	0	0	22	366
5:55 PM	0	11	0	0	0	7	3	0	0	0	0	0	7	0	1	0	29	366
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	4	208	0	0	0	100	24	0	0	0	0	0	84	0	4	0	424	
Heavy Trucks	0	20	0	0	0	8	20	0	0	0	0	0	4	0	0	0	52	
Buses																	0	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																	0	

Comments:

LOCATION: Powerline Rd -- I-82 EB Ramps
CITY/STATE: Umatilla, OR

QC JOB #: 15570917
DATE: Thu, Oct 7 2021

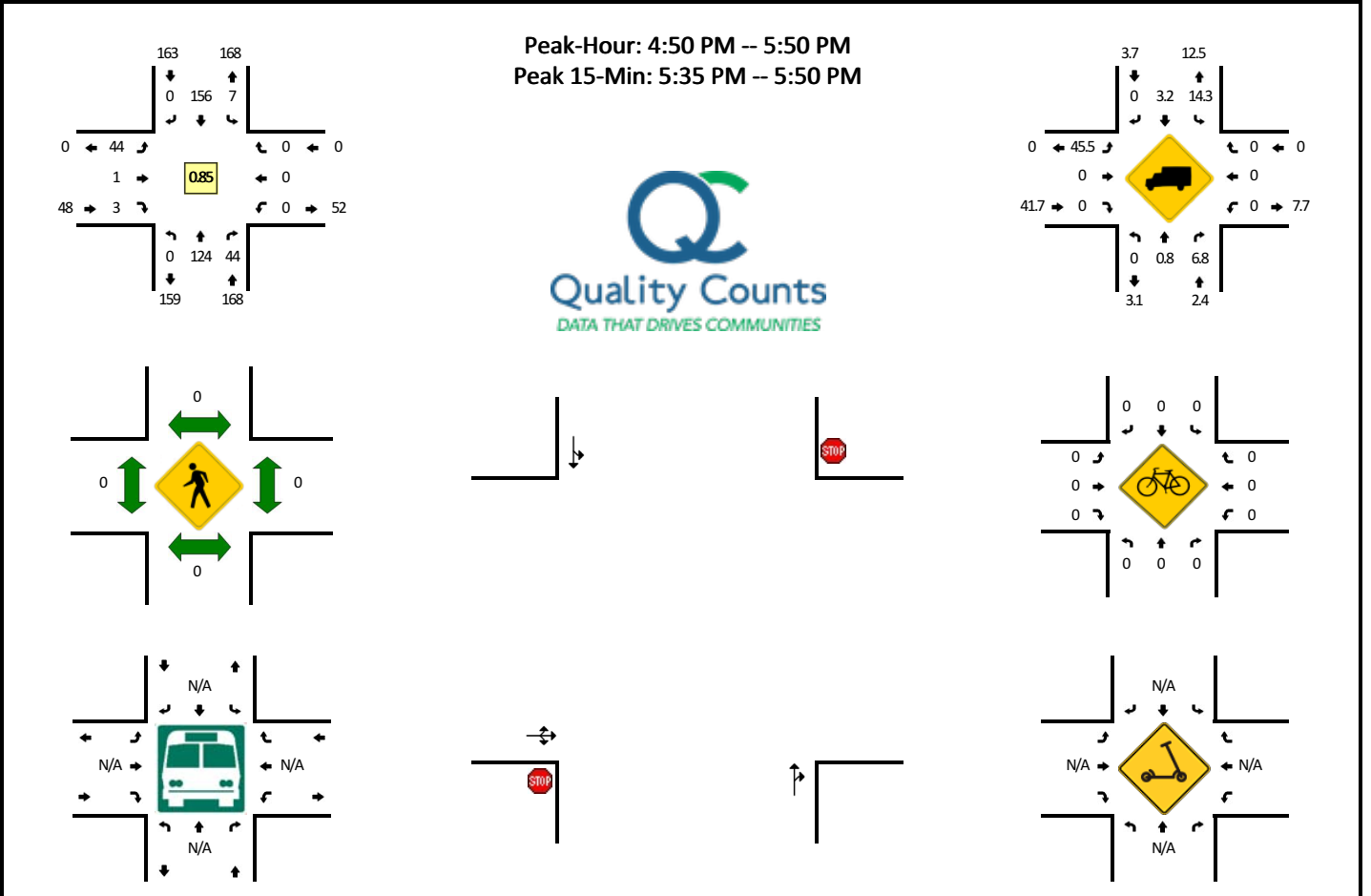


5-Min Count Period Beginning At	Powerline Rd (Northbound)				Powerline Rd (Southbound)				I-82 EB Ramps (Eastbound)				I-82 EB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	5	2	0	1	4	0	0	1	0	0	0	0	0	0	0	13	
7:05 AM	0	4	6	0	0	8	0	0	2	0	0	0	0	0	0	0	20	
7:10 AM	0	6	8	0	0	7	0	0	2	0	0	0	0	0	0	0	23	
7:15 AM	0	7	5	0	1	8	0	0	4	0	0	0	0	0	0	0	25	
7:20 AM	0	1	5	0	0	9	0	0	2	0	0	0	0	0	0	0	17	
7:25 AM	0	4	4	0	0	14	0	0	1	0	0	0	0	0	0	0	23	
7:30 AM	0	1	7	0	1	12	0	0	3	0	0	0	0	0	0	0	24	
7:35 AM	0	2	3	0	0	11	0	0	3	0	0	0	0	0	0	0	19	
7:40 AM	0	2	3	0	1	15	0	0	2	0	0	0	0	0	0	0	23	
7:45 AM	0	2	4	0	0	13	0	0	3	0	0	0	0	0	0	0	22	
7:50 AM	0	4	2	0	1	13	0	0	1	0	0	0	0	0	0	0	21	
7:55 AM	0	2	5	0	0	12	0	0	5	0	0	0	0	0	0	0	24	254
8:00 AM	0	1	1	0	0	8	0	0	2	0	0	0	0	0	0	0	12	253
8:05 AM	0	3	8	0	1	8	0	0	0	0	0	0	0	0	0	0	20	253
8:10 AM	0	4	4	0	0	13	0	0	2	0	0	0	0	0	0	0	23	253
8:15 AM	0	6	4	0	1	5	0	0	2	0	0	0	0	0	0	0	18	246
8:20 AM	0	3	7	0	0	7	0	0	2	0	0	0	0	0	0	0	19	248
8:25 AM	0	10	4	0	0	7	0	0	2	0	0	0	0	0	0	0	23	248
8:30 AM	0	6	2	0	0	7	0	0	3	0	0	0	0	0	0	0	18	242
8:35 AM	0	5	5	0	0	2	0	0	4	0	0	0	0	0	0	0	16	239
8:40 AM	0	2	4	0	0	5	0	0	3	0	0	0	0	0	0	0	14	230
8:45 AM	0	4	3	0	1	7	0	0	4	0	0	0	0	0	0	0	19	227
8:50 AM	0	5	2	0	0	1	0	0	0	0	0	0	0	0	0	0	8	214
8:55 AM	0	5	3	0	0	3	0	0	3	0	0	0	0	0	0	0	14	204
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	68	76	0	4	92	0	0	32	0	0	0	0	0	0	0	272	
Heavy Trucks	0	0	8	0	0	4	0	0	12	0	0	0	0	0	0	0	24	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: Powerline Rd -- I-82 EB Ramps
CITY/STATE: Umatilla, OR

QC JOB #: 15570918
DATE: Wed, Oct 6 2021

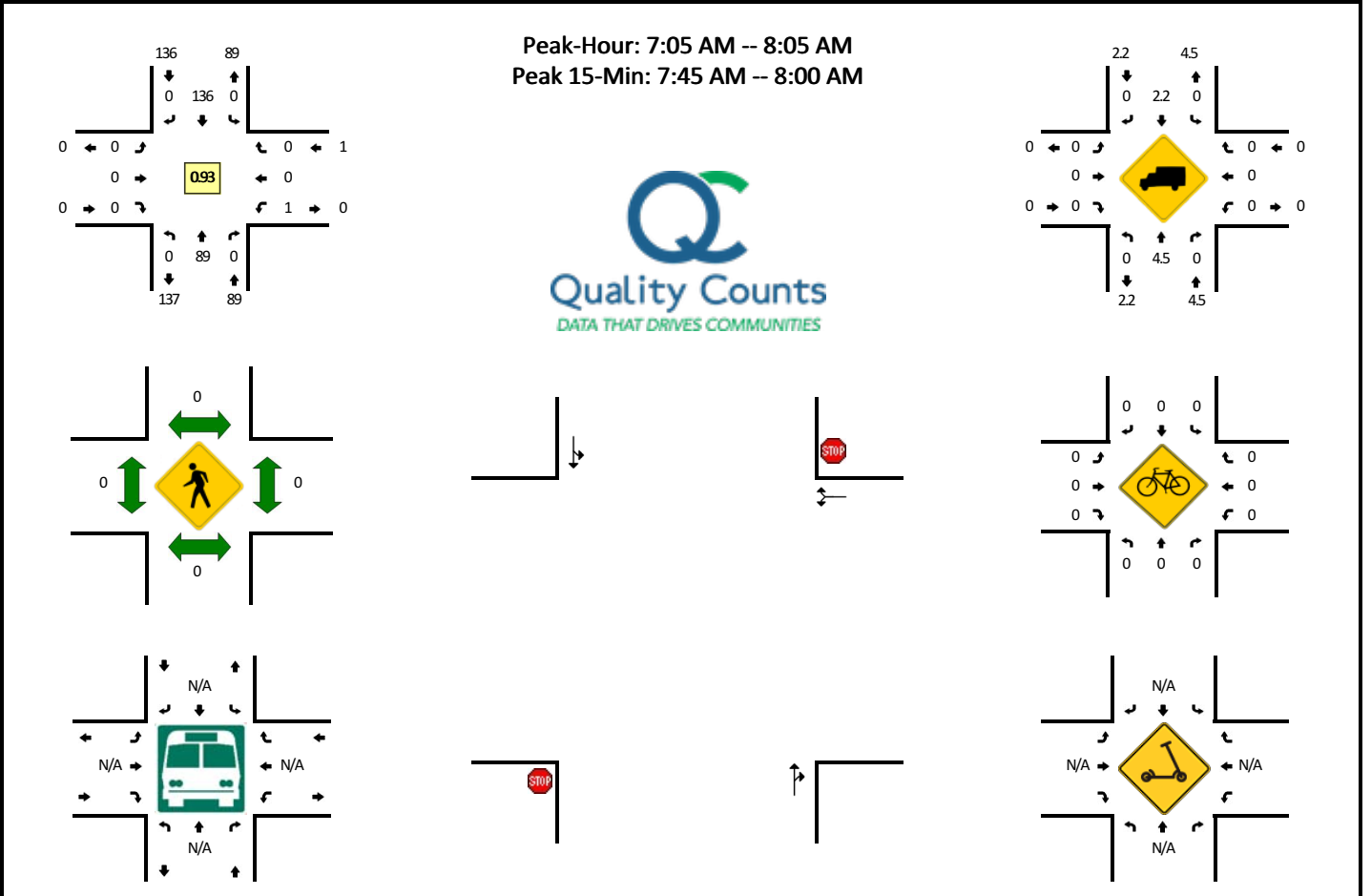


5-Min Count Period Beginning At	Powerline Rd (Northbound)				Powerline Rd (Southbound)				I-82 EB Ramps (Eastbound)				I-82 EB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	10	6	0	3	12	0	0	5	0	0	0	0	0	0	0	36	
4:05 PM	0	6	4	0	2	11	0	0	4	0	0	0	0	0	0	0	27	
4:10 PM	0	11	7	0	1	11	0	0	7	0	0	0	0	0	0	0	37	
4:15 PM	0	8	5	0	1	13	0	0	1	0	1	0	0	0	0	0	29	
4:20 PM	0	12	2	0	0	1	0	0	5	0	1	0	0	0	0	0	21	
4:25 PM	0	13	7	0	1	9	0	0	5	0	0	0	0	0	0	0	35	
4:30 PM	0	8	11	0	1	9	0	0	4	1	1	0	0	0	0	0	35	
4:35 PM	0	13	6	0	0	12	0	0	4	0	0	0	0	0	0	0	35	
4:40 PM	0	14	6	0	2	10	0	0	7	0	1	0	0	0	0	0	40	
4:45 PM	0	8	4	0	2	8	0	0	1	0	0	0	0	0	0	0	23	
4:50 PM	0	9	5	0	2	9	0	0	1	1	1	0	0	0	0	0	28	
4:55 PM	0	6	3	0	1	13	0	0	5	0	0	0	0	0	0	0	28	374
5:00 PM	0	12	6	0	0	11	0	0	4	0	0	0	0	0	0	0	33	371
5:05 PM	0	6	1	0	0	15	0	0	5	0	1	0	0	0	0	0	28	372
5:10 PM	0	13	3	0	0	8	0	0	1	0	0	0	0	0	0	0	25	360
5:15 PM	0	9	3	0	0	13	0	0	4	0	0	0	0	0	0	0	29	360
5:20 PM	0	10	3	0	0	12	0	0	4	0	0	0	0	0	0	0	29	368
5:25 PM	0	9	5	0	0	15	0	0	6	0	0	0	0	0	0	0	35	368
5:30 PM	0	10	4	0	0	15	0	0	4	0	0	0	0	0	0	0	33	366
5:35 PM	0	11	3	0	0	18	0	0	5	0	0	0	0	0	0	0	37	368
5:40 PM	0	14	2	0	2	14	0	0	3	0	1	0	0	0	0	0	36	364
5:45 PM	0	15	6	0	2	13	0	0	2	0	0	0	0	0	0	0	38	379
5:50 PM	0	7	3	0	0	10	0	0	0	0	0	0	0	0	0	0	20	371
5:55 PM	0	7	3	0	0	15	0	0	3	0	0	0	0	0	0	0	28	371
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	160	44	0	16	180	0	0	40	0	4	0	0	0	0	0	444	
Heavy Trucks	0	0	4	0	4	8	0	0	16	0	0	0	0	0	0	0	32	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles		0				0				0				0			0	
Scoters		0				0				0				0			0	

Comments:

LOCATION: Powerline Rd -- Bellinger Rd
CITY/STATE: Umatilla, OR

QC JOB #: 15570901
DATE: Thu, Oct 7 2021



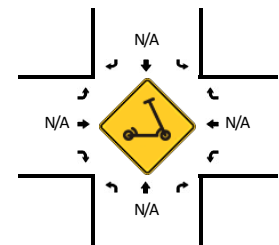
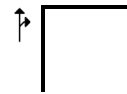
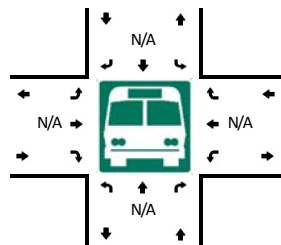
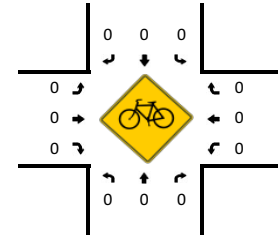
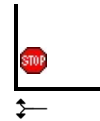
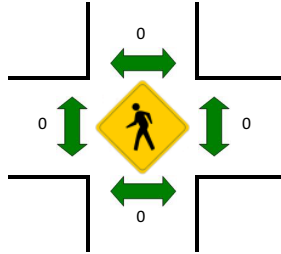
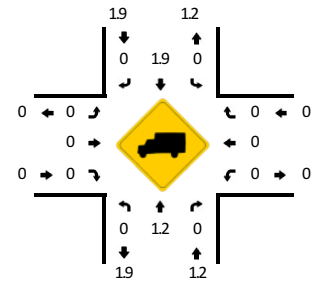
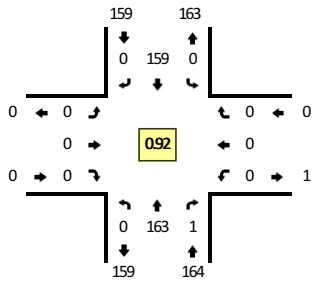
5-Min Count Period Beginning At	Powerline Rd (Northbound)				Powerline Rd (Southbound)				Bellinger Rd (Eastbound)				Bellinger Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	9	0	0	0	5	0	0	0	0	0	0	0	0	0	0	14	
7:05 AM	0	12	0	0	0	5	0	0	0	0	0	0	0	0	0	0	17	
7:10 AM	0	10	0	0	0	10	0	0	0	0	0	0	0	0	0	0	20	
7:15 AM	0	13	0	0	0	8	0	0	0	0	0	0	0	0	0	0	21	
7:20 AM	0	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	16	
7:25 AM	0	6	0	0	0	15	0	0	0	0	0	0	0	0	0	0	21	
7:30 AM	0	7	0	0	0	15	0	0	0	0	0	0	0	0	0	0	22	
7:35 AM	0	5	0	0	0	8	0	0	0	0	0	0	0	0	0	0	13	
7:40 AM	0	4	0	0	0	14	0	0	0	0	0	0	0	0	0	0	18	
7:45 AM	0	3	0	0	0	16	0	0	0	0	0	0	0	0	0	0	19	
7:50 AM	0	8	0	0	0	15	0	0	0	0	0	0	0	0	0	0	23	
7:55 AM	0	6	0	0	0	12	0	0	0	0	0	0	1	0	0	0	19	223
8:00 AM	0	7	0	0	0	10	0	0	0	0	0	0	0	0	0	0	17	226
8:05 AM	0	8	1	0	0	3	0	0	0	0	0	0	0	0	0	0	12	221
8:10 AM	0	7	0	0	0	16	0	0	0	0	0	0	0	0	0	0	23	224
8:15 AM	0	11	0	0	0	4	0	0	0	0	0	0	0	0	0	0	15	218
8:20 AM	0	11	0	0	0	7	0	0	0	0	0	0	0	0	0	0	18	220
8:25 AM	0	15	0	0	0	8	0	0	0	0	0	0	0	0	0	0	23	222
8:30 AM	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0	0	11	211
8:35 AM	0	8	0	0	0	4	0	0	0	0	0	0	0	0	0	0	12	210
8:40 AM	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0	0	11	203
8:45 AM	0	5	0	0	0	7	0	0	0	0	0	0	0	0	0	0	12	196
8:50 AM	0	6	0	0	0	2	0	0	0	0	0	0	0	0	0	0	8	181
8:55 AM	0	6	0	0	0	4	0	0	0	0	0	0	0	0	0	0	10	172
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	68	0	0	0	172	0	0	0	0	0	0	4	0	0	0	244	
Heavy Trucks	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	8	
Buses																		
Pedestrians		0				0					0			0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: Powerline Rd -- Bellinger Rd
CITY/STATE: Umatilla, OR

QC JOB #: 15570902
DATE: Wed, Oct 6 2021

Peak-Hour: 4:55 PM -- 5:55 PM
 Peak 15-Min: 5:25 PM -- 5:40 PM

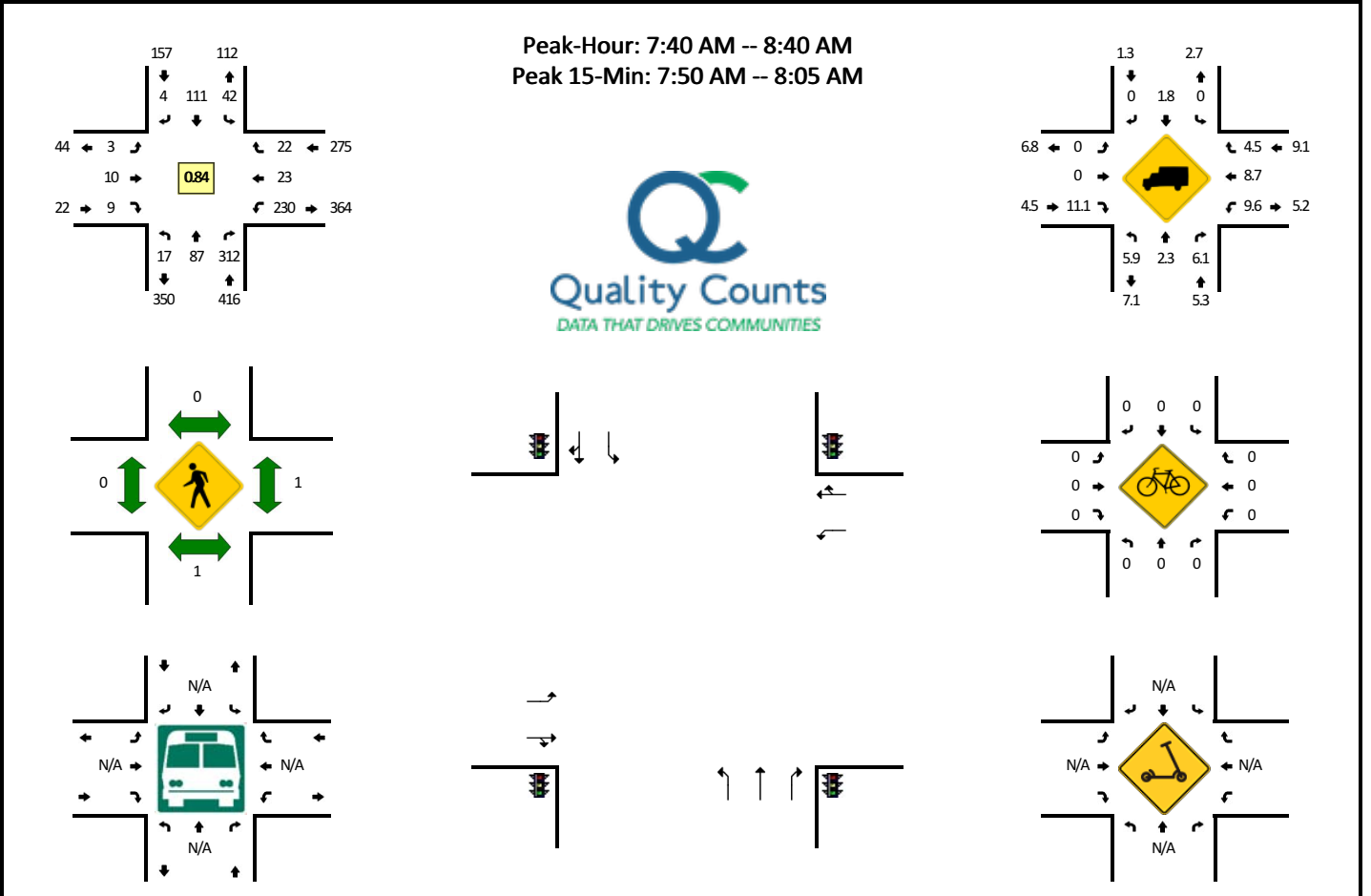


5-Min Count Period Beginning At	Powerline Rd (Northbound)				Powerline Rd (Southbound)				Bellinger Rd (Eastbound)				Bellinger Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	14	0	0	0	15	0	0	0	0	0	0	0	0	0	0	29	
4:05 PM	0	15	0	0	0	11	0	0	0	0	0	0	0	0	0	0	26	
4:10 PM	0	15	0	0	0	12	0	0	0	0	0	0	0	0	0	0	27	
4:15 PM	0	17	0	0	0	13	0	0	0	0	0	0	0	0	0	0	30	
4:20 PM	0	15	0	0	0	3	0	0	0	0	0	0	0	0	0	0	18	
4:25 PM	0	20	0	0	0	5	0	0	0	0	0	0	0	0	0	0	25	
4:30 PM	0	19	0	0	0	9	0	0	0	0	0	0	0	0	0	0	28	
4:35 PM	0	19	0	0	0	9	0	0	0	0	0	0	0	0	0	0	28	
4:40 PM	0	19	0	0	0	13	0	0	0	0	0	0	0	1	0	0	33	
4:45 PM	0	14	0	0	0	9	0	0	0	0	0	0	0	0	0	0	23	
4:50 PM	0	9	0	0	0	7	0	0	0	0	0	0	0	0	0	0	16	
4:55 PM	0	14	1	0	0	15	0	0	0	0	0	0	0	0	0	0	30	313
5:00 PM	0	12	0	0	0	11	0	0	0	0	0	0	0	0	0	0	23	307
5:05 PM	0	11	0	0	0	19	0	0	0	0	0	0	0	0	0	0	30	311
5:10 PM	0	20	0	0	0	9	0	0	0	0	0	0	0	0	0	0	29	313
5:15 PM	0	12	0	0	0	12	0	0	0	0	0	0	0	0	0	0	24	307
5:20 PM	0	11	0	0	0	13	0	0	0	0	0	0	0	0	0	0	24	313
5:25 PM	0	13	0	0	0	13	0	0	0	0	0	0	0	0	0	0	26	314
5:30 PM	0	15	0	0	0	18	0	0	0	0	0	0	0	0	0	0	33	319
5:35 PM	0	14	0	0	0	15	0	0	0	0	0	0	0	0	0	0	29	320
5:40 PM	0	14	0	0	0	11	0	0	0	0	0	0	0	0	0	0	25	312
5:45 PM	0	19	0	0	0	12	0	0	0	0	0	0	0	0	0	0	31	320
5:50 PM	0	8	0	0	0	11	0	0	0	0	0	0	0	0	0	0	19	323
5:55 PM	0	11	0	0	0	16	0	0	0	0	0	0	0	0	0	0	27	320
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	168	0	0	0	184	0	0	0	0	0	0	0	0	0	0	352	
Heavy Trucks	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4	
Buses																		
Pedestrians		0				0					0			0			0	
Bicycles	0	0	0		0	0	0			0	0	0		0	0		0	
Scoters																		

Comments:

LOCATION: NW 11th St -- W Elm Ave
CITY/STATE: Hermiston, OR

QC JOB #: 15570903
DATE: Thu, Oct 7 2021

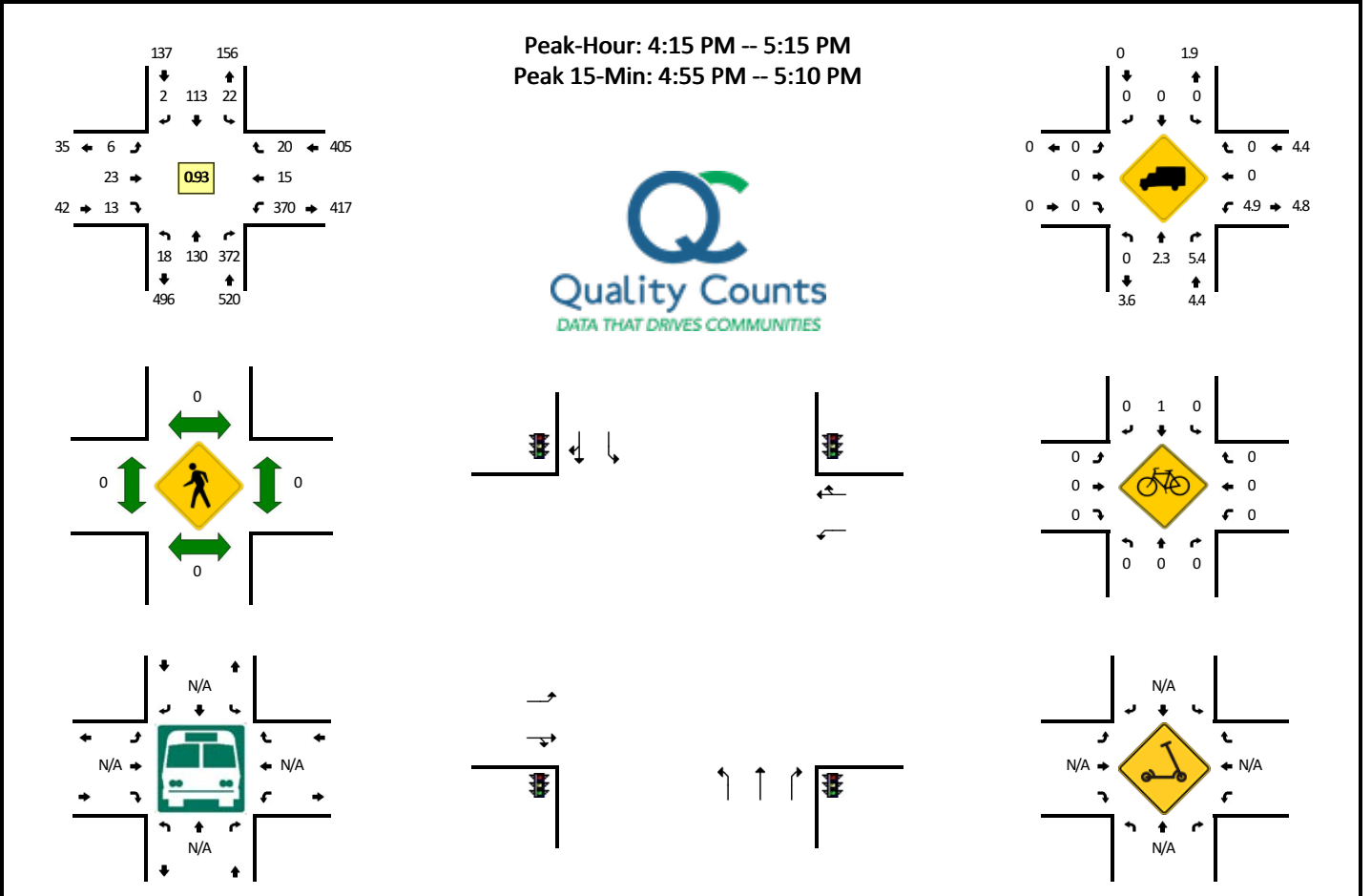


5-Min Count Period Beginning At	NW 11th St (Northbound)				NW 11th St (Southbound)				W Elm Ave (Eastbound)				W Elm Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	2	23	0	2	6	0	0	0	0	1	0	12	4	1	0	51	
7:05 AM	1	9	18	0	0	2	0	0	0	0	0	0	16	4	0	0	50	
7:10 AM	1	6	19	0	0	6	0	0	0	3	0	0	20	2	2	0	59	
7:15 AM	1	4	20	0	3	11	1	0	0	1	0	0	15	0	0	0	56	
7:20 AM	2	12	13	0	1	5	0	0	0	0	3	1	17	0	0	0	54	
7:25 AM	1	5	18	0	4	13	0	0	0	2	0	1	16	3	1	0	64	
7:30 AM	0	9	23	0	4	5	2	0	0	2	0	1	21	3	3	0	73	
7:35 AM	0	4	19	0	2	8	0	0	0	1	1	2	12	0	1	0	50	
7:40 AM	0	3	32	0	8	14	0	0	0	0	0	0	20	1	3	0	81	
7:45 AM	1	4	26	0	6	9	0	0	0	0	1	1	10	4	2	0	64	
7:50 AM	4	15	21	0	6	16	1	0	0	0	1	1	17	2	2	0	86	
7:55 AM	3	7	30	0	4	16	0	0	0	1	2	1	27	5	4	0	100	788
8:00 AM	3	7	22	0	2	12	1	0	0	1	0	2	18	4	0	0	72	809
8:05 AM	4	7	27	0	3	11	0	0	0	0	1	0	19	0	4	0	76	835
8:10 AM	0	16	26	0	1	7	0	0	0	0	2	0	19	2	1	0	74	850
8:15 AM	0	3	31	0	3	9	1	0	0	0	0	2	21	1	1	0	72	866
8:20 AM	0	5	22	0	3	5	0	0	0	0	0	0	19	0	1	0	55	867
8:25 AM	0	5	28	0	2	5	0	0	0	0	1	1	13	0	2	0	57	860
8:30 AM	1	8	27	0	1	3	1	0	0	1	1	0	25	1	2	0	71	858
8:35 AM	1	7	20	0	3	4	0	0	0	0	1	1	22	3	0	0	62	870
8:40 AM	1	6	27	0	1	7	0	0	0	0	2	0	22	3	2	0	71	860
8:45 AM	2	2	23	0	3	4	1	0	0	0	2	2	20	3	0	0	62	858
8:50 AM	3	3	29	0	1	3	0	0	0	0	0	0	30	2	3	0	74	846
8:55 AM	2	5	19	0	1	4	0	0	0	0	1	2	17	2	0	0	53	799
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	40	116	292	0	48	176	8	0	8	12	16	0	248	44	24	0	1032	
Heavy Trucks	4	4	12		0	0	0		0	0	0		20	8	0		48	
Buses																		
Pedestrians		4				0				0				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: NW 11th St -- W Elm Ave
CITY/STATE: Hermiston, OR

QC JOB #: 15570904
DATE: Wed, Oct 6 2021

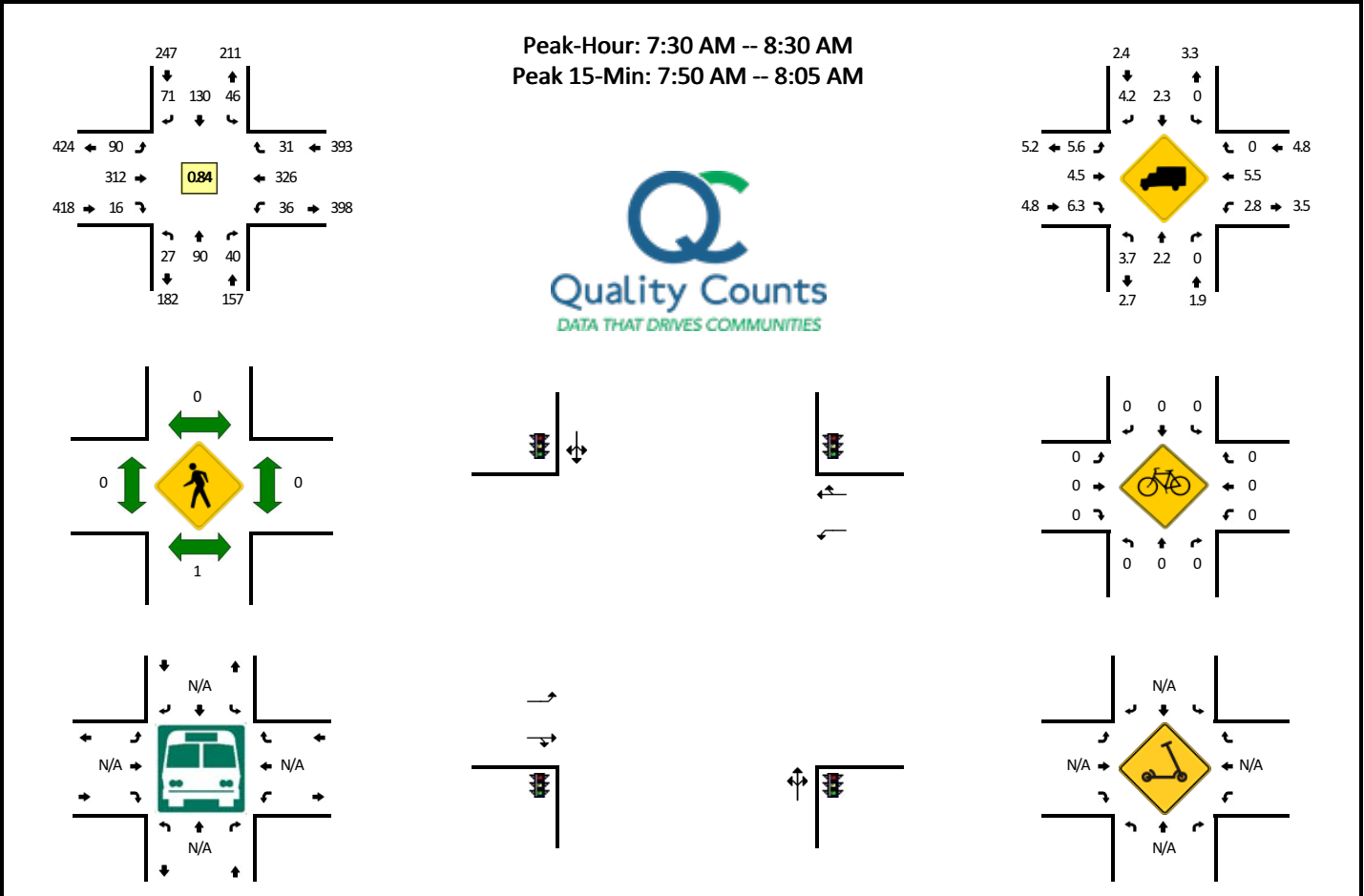


5-Min Count Period Beginning At	NW 11th St (Northbound)				NW 11th St (Southbound)				W Elm Ave (Eastbound)				W Elm Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	7	38	0	5	7	0	0	1	1	2	0	24	1	6	0	94	
4:05 PM	2	10	37	0	6	16	0	0	1	1	1	0	20	2	2	0	98	
4:10 PM	1	9	36	0	1	8	1	0	0	2	1	0	23	3	2	0	87	
4:15 PM	3	8	31	0	0	10	0	0	0	2	0	0	35	3	0	0	92	
4:20 PM	2	10	30	0	2	6	0	0	0	1	1	0	27	1	2	0	82	
4:25 PM	1	14	32	0	0	6	0	0	1	2	0	0	31	1	0	0	88	
4:30 PM	3	13	39	0	5	15	1	0	0	2	0	0	34	3	1	0	116	
4:35 PM	2	15	20	0	1	8	0	0	0	3	1	0	26	1	4	0	81	
4:40 PM	2	7	19	0	1	10	0	0	1	1	2	0	33	2	4	0	82	
4:45 PM	0	11	43	0	2	19	0	0	1	1	2	0	25	0	0	0	104	
4:50 PM	2	5	26	0	3	2	0	0	1	1	2	0	25	1	0	0	68	
4:55 PM	1	12	33	0	4	11	0	0	0	2	0	0	32	1	3	0	99	1091
5:00 PM	0	16	30	0	1	8	0	0	1	2	1	0	34	1	2	0	96	1093
5:05 PM	1	9	40	0	0	10	0	0	0	3	2	0	35	0	2	0	102	1097
5:10 PM	1	10	29	0	3	8	1	0	1	3	2	0	33	1	2	0	94	1104
5:15 PM	0	5	27	0	3	10	0	0	1	1	0	0	37	0	3	0	87	1099
5:20 PM	1	3	34	0	0	8	1	0	0	0	0	0	29	2	3	0	81	1098
5:25 PM	0	11	26	0	4	14	0	0	0	0	0	0	22	0	2	0	79	1089
5:30 PM	2	12	26	0	3	9	1	0	0	0	1	0	27	4	4	0	89	1062
5:35 PM	2	11	24	0	2	13	0	0	4	2	0	0	24	1	3	0	86	1067
5:40 PM	2	8	22	0	0	5	0	0	0	1	0	0	24	0	3	0	65	1050
5:45 PM	0	8	22	0	1	6	1	0	0	1	1	0	18	1	2	0	61	1007
5:50 PM	1	5	25	0	2	9	0	0	0	0	0	0	30	1	2	0	75	1014
5:55 PM	1	9	27	0	0	9	0	0	1	0	1	0	28	1	2	0	79	994
Peak 15-Min Flows	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	8	148	412	0	20	116	0	0	4	28	12	0	404	8	28	0	1188	
Heavy Trucks	0	4	16		0	0	0		0	0	0		0	0	0		20	
Buses																	0	
Pedestrians	0	0	0		0	0	0		0	0	0		0	0	0		0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																	0	

Comments:

LOCATION: N 1st Pl -- Hermiston Hwy
CITY/STATE: Hermiston, OR

QC JOB #: 15570905
DATE: Thu, Oct 7 2021

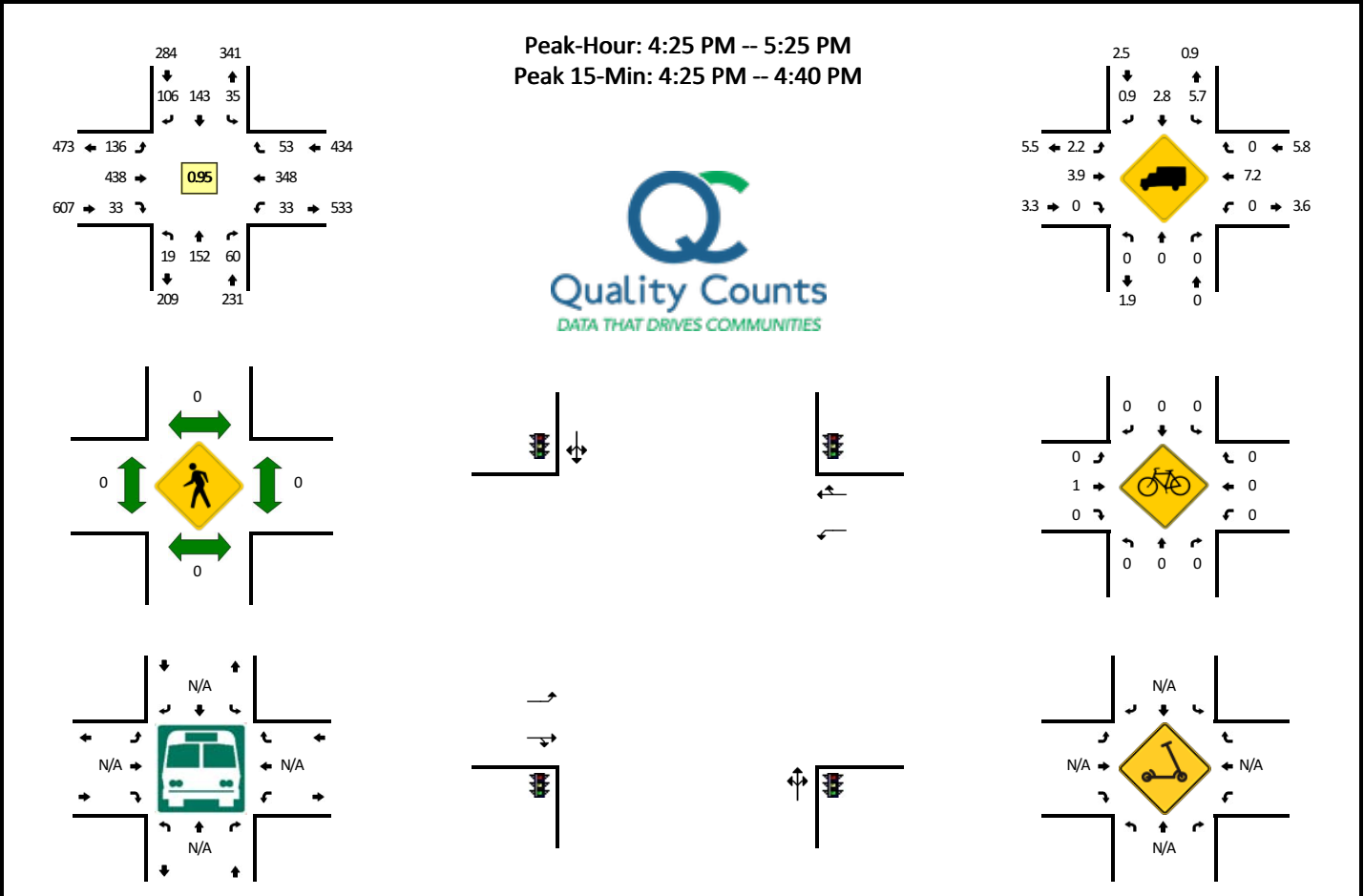


5-Min Count Period Beginning At	N 1st Pl (Northbound)				N 1st Pl (Southbound)				Hermiston Hwy (Eastbound)				Hermiston Hwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	3	3	0	2	6	8	0	5	14	1	0	1	21	2	0	68	
7:05 AM	2	2	3	0	2	5	9	0	0	15	0	0	1	23	2	0	64	
7:10 AM	3	6	4	0	3	7	9	0	1	22	2	0	0	22	2	0	81	
7:15 AM	1	5	1	0	3	11	5	0	4	22	0	0	1	21	3	0	77	
7:20 AM	0	2	5	0	2	4	5	0	3	22	1	0	3	19	2	0	68	
7:25 AM	0	6	3	0	2	14	2	0	4	20	1	0	0	31	1	0	84	
7:30 AM	3	2	3	0	7	11	2	0	6	24	1	0	5	34	0	0	98	
7:35 AM	0	5	5	0	1	14	2	0	3	30	1	0	3	23	2	0	89	
7:40 AM	2	7	9	0	3	17	8	0	7	16	3	0	5	26	2	0	105	
7:45 AM	2	8	1	0	7	13	8	0	13	32	1	0	3	26	3	0	117	
7:50 AM	3	13	6	0	3	13	6	0	12	26	3	0	4	33	4	0	126	
7:55 AM	2	4	2	0	4	12	10	0	7	34	3	0	4	33	3	0	118	1095
8:00 AM	2	13	4	0	4	12	5	0	8	32	1	0	3	30	4	0	118	1145
8:05 AM	3	5	2	0	4	8	2	0	10	22	0	0	2	32	4	0	94	1175
8:10 AM	3	8	2	0	0	8	6	0	7	18	1	0	3	21	4	0	81	1175
8:15 AM	1	7	4	0	5	7	8	0	8	26	0	0	1	20	2	0	89	1187
8:20 AM	1	8	2	0	4	9	7	0	4	26	1	0	1	25	3	0	91	1210
8:25 AM	5	10	0	0	4	6	7	0	5	26	1	0	2	23	0	0	89	1215
8:30 AM	2	7	4	0	2	3	3	0	13	22	2	0	2	25	0	0	85	1202
8:35 AM	4	7	4	0	3	12	7	0	3	21	0	0	3	24	1	0	89	1202
8:40 AM	2	5	4	0	4	8	7	0	8	27	0	0	1	32	1	0	99	1196
8:45 AM	1	3	4	0	5	7	2	0	6	24	2	0	5	31	2	0	92	1171
8:50 AM	3	8	6	0	2	6	10	0	11	25	1	0	2	23	1	0	98	1143
8:55 AM	0	8	1	0	1	8	4	0	6	18	1	0	4	16	2	0	69	1094
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	28	120	48	0	44	148	84	0	108	368	28	0	44	384	44	0	1448	
Heavy Trucks	4	0	0		0	0	0		4	16	0		4	28	0		56	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: N 1st Pl -- Hermiston Hwy
CITY/STATE: Hermiston, OR

QC JOB #: 15570906
DATE: Wed, Oct 6 2021



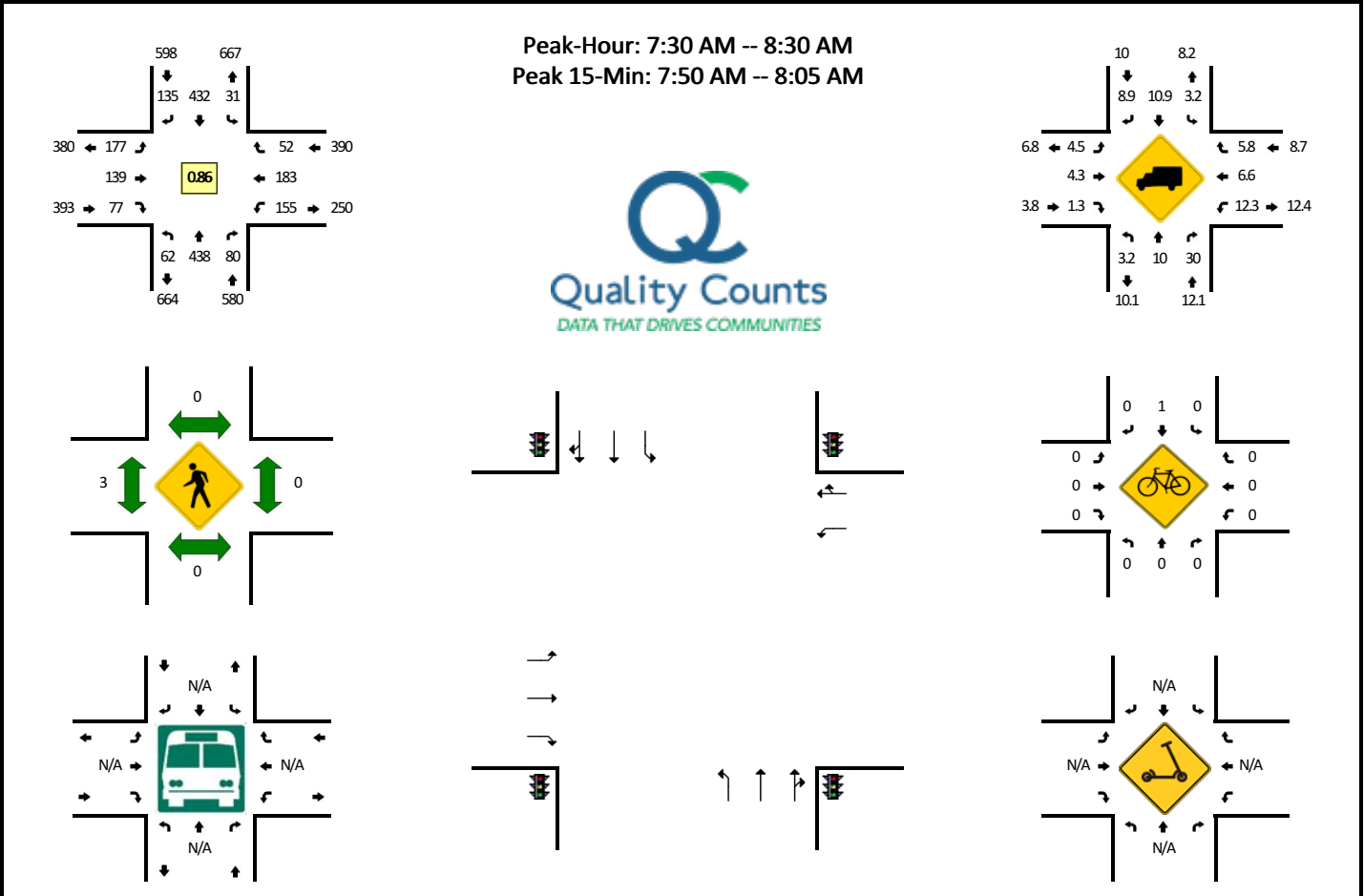
5-Min Count Period Beginning At	N 1st Pl (Northbound)				N 1st Pl (Southbound)				Hermiston Hwy (Eastbound)				Hermiston Hwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	18	7	0	3	10	10	0	10	28	6	0	1	18	2	0	114	
4:05 PM	2	16	5	0	3	12	5	0	14	44	4	0	2	27	5	0	139	
4:10 PM	2	11	8	0	5	12	7	0	7	40	1	0	6	30	5	0	134	
4:15 PM	0	15	3	0	6	12	6	0	6	34	3	0	6	30	4	0	125	
4:20 PM	6	11	4	0	3	12	12	0	7	22	3	0	3	24	6	0	113	
4:25 PM	2	14	8	0	3	11	10	0	14	46	5	0	4	27	4	0	148	
4:30 PM	4	15	10	0	1	7	8	0	10	38	4	0	2	29	6	0	134	
4:35 PM	3	12	4	0	1	11	4	0	11	38	3	0	3	33	3	0	126	
4:40 PM	4	11	4	0	3	8	9	0	10	33	3	0	5	26	5	0	121	
4:45 PM	0	9	2	0	3	11	4	0	9	46	3	0	2	31	9	0	129	
4:50 PM	0	20	5	0	5	16	17	0	12	29	0	0	1	28	3	0	136	
4:55 PM	0	8	4	0	3	10	6	0	13	31	3	0	4	33	3	0	118	1537
5:00 PM	1	6	6	0	2	15	8	0	13	33	3	0	0	29	2	0	118	1541
5:05 PM	2	20	7	0	6	14	11	0	18	35	2	0	2	22	5	0	144	1546
5:10 PM	0	14	3	0	1	15	10	0	7	47	2	0	3	30	5	0	137	1549
5:15 PM	1	12	3	0	5	13	15	0	10	31	0	0	1	28	2	0	121	1545
5:20 PM	2	11	4	0	2	12	4	0	9	31	5	0	6	32	6	0	124	1556
5:25 PM	2	14	2	0	3	12	9	0	11	31	2	0	4	32	6	0	128	1536
5:30 PM	0	13	1	0	6	7	10	0	12	35	4	0	7	22	4	0	121	1523
5:35 PM	1	6	8	0	0	11	6	0	13	30	2	0	1	24	6	0	108	1505
5:40 PM	0	14	5	0	5	6	4	0	9	26	1	0	3	24	2	0	99	1483
5:45 PM	0	13	5	0	1	11	7	0	8	25	5	0	2	26	5	0	108	1462
5:50 PM	0	10	3	0	2	11	16	0	9	25	2	0	4	26	6	0	114	1440
5:55 PM	1	13	4	0	3	13	11	0	8	24	0	0	4	25	7	0	113	1435

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	36	164	88	0	20	116	88	0	140	488	48	0	36	356	52	0	1632
Heavy Trucks	0	0	0		0	0	0		4	16	0		0	40	0		60
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scoters																	

Comments:

LOCATION: Hwy 395 -- Hermiston Hwy
CITY/STATE: Hermiston, OR

QC JOB #: 15570907
DATE: Thu, Oct 7 2021

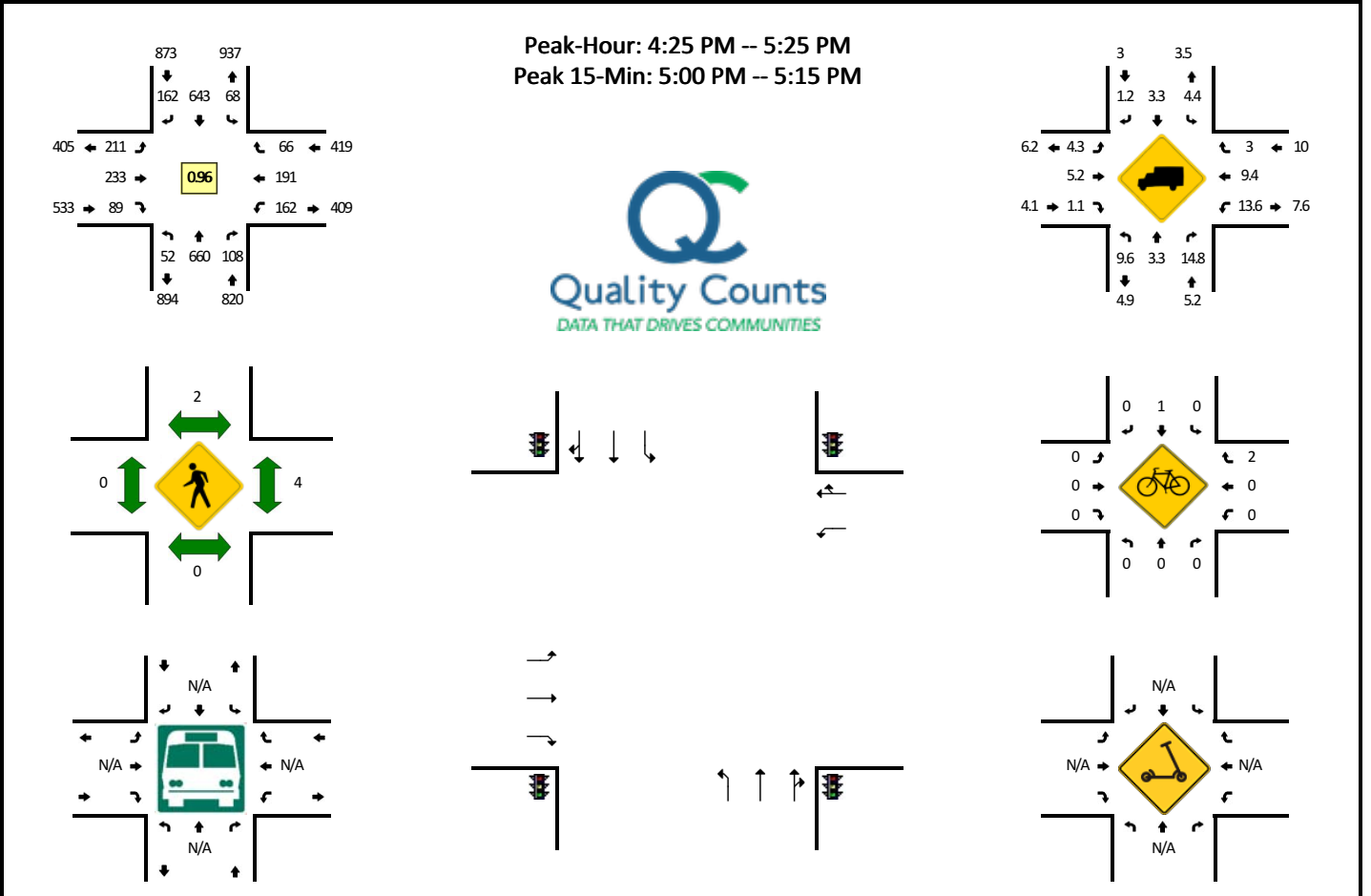


5-Min Count Period Beginning At	Hwy 395 (Northbound)				Hwy 395 (Southbound)				Hermiston Hwy (Eastbound)				Hermiston Hwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	18	1	0	2	22	4	0	11	3	2	0	4	14	1	0	83	
7:05 AM	3	25	1	0	4	31	8	0	10	14	3	0	8	21	5	0	133	
7:10 AM	4	25	5	0	0	22	9	0	10	12	4	0	7	15	5	0	118	
7:15 AM	3	25	3	0	1	26	8	0	12	10	0	0	10	13	3	0	114	
7:20 AM	6	25	7	0	2	20	5	0	12	13	4	0	11	17	7	0	129	
7:25 AM	2	27	5	0	2	24	13	0	8	4	2	0	7	19	4	0	117	
7:30 AM	12	30	8	0	3	20	15	0	23	7	4	0	19	10	3	0	154	
7:35 AM	2	29	9	0	6	42	12	0	9	13	5	0	11	7	2	0	147	
7:40 AM	5	47	4	0	2	34	9	0	14	16	2	0	12	22	2	0	169	
7:45 AM	6	36	6	0	2	33	11	0	15	11	13	0	7	20	5	0	165	
7:50 AM	10	39	9	0	3	41	9	0	14	12	7	0	11	19	2	0	176	
7:55 AM	2	44	10	0	1	51	14	0	19	10	5	0	14	19	5	0	194	1699
8:00 AM	4	56	5	0	0	44	13	0	22	12	8	0	13	17	9	0	203	1819
8:05 AM	6	23	5	0	2	37	13	0	15	12	6	0	19	19	5	0	162	1848
8:10 AM	2	45	9	0	2	30	12	0	12	11	6	0	9	15	4	0	157	1887
8:15 AM	2	33	8	0	4	35	9	0	8	12	4	0	12	15	3	0	145	1918
8:20 AM	8	32	2	0	2	34	9	0	17	12	10	0	11	11	7	0	155	1944
8:25 AM	3	24	5	0	4	31	9	0	9	11	7	0	17	9	5	0	134	1961
8:30 AM	10	46	3	0	5	22	5	0	8	13	8	0	6	17	3	0	146	1953
8:35 AM	0	27	3	0	1	29	12	0	10	19	2	0	7	17	4	0	131	1937
8:40 AM	7	39	4	0	2	31	13	0	7	13	12	0	9	11	8	0	156	1924
8:45 AM	5	43	10	0	5	37	17	0	7	16	4	0	7	16	4	0	171	1930
8:50 AM	8	30	8	0	3	26	11	0	16	16	7	0	11	11	5	0	152	1906
8:55 AM	4	30	5	0	4	32	9	0	15	9	4	0	8	11	4	0	135	1847
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	64	556	96	0	16	544	144	0	220	136	80	0	152	220	64	0	2292	
Heavy Trucks	4	44	28		0	28	16		12	0	0		0	8	0		140	
Buses																		
Pedestrians		0				0				4				0			4	
Bicycles	0	0	0		0	4	0		0	0	0		0	0	0		4	
Scoters																		

Comments:

LOCATION: Hwy 395 -- Hermiston Hwy
CITY/STATE: Hermiston, OR

QC JOB #: 15570908
DATE: Wed, Oct 6 2021

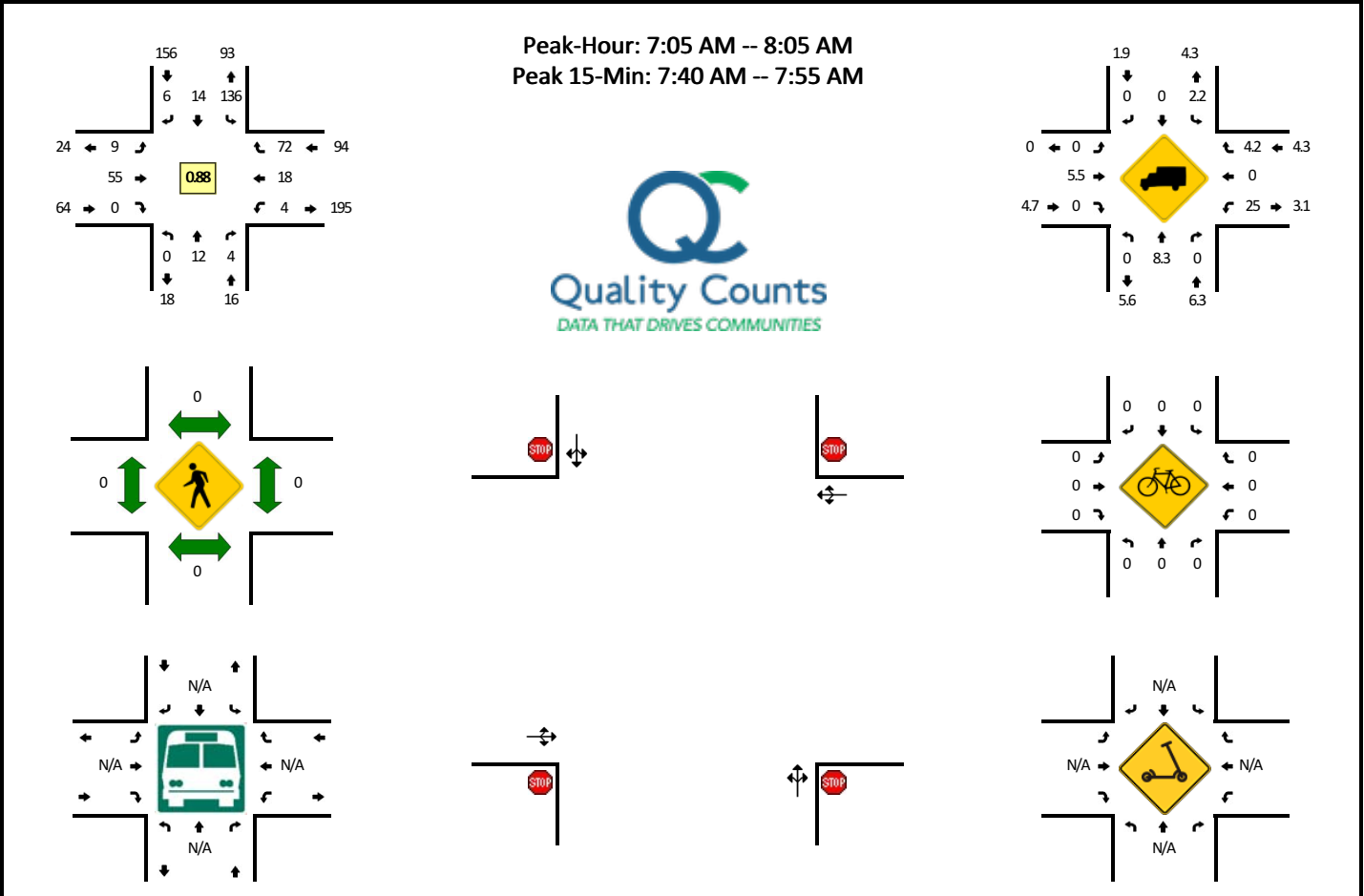


5-Min Count Period Beginning At	Hwy 395 (Northbound)				Hwy 395 (Southbound)				Hermiston Hwy (Eastbound)				Hermiston Hwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	7	42	6	0	5	41	6	0	14	14	5	0	16	14	3	0	173	
4:05 PM	5	57	7	0	4	47	7	0	18	21	10	0	11	19	5	0	211	
4:10 PM	5	66	6	0	1	46	13	0	22	27	6	0	9	10	4	0	215	
4:15 PM	12	55	10	0	6	53	14	0	15	22	4	0	6	20	3	0	220	
4:20 PM	2	39	6	0	5	69	9	0	10	20	6	0	13	20	8	0	207	
4:25 PM	4	61	10	0	6	62	15	0	15	19	8	0	12	9	3	0	224	
4:30 PM	4	37	8	0	3	51	16	0	15	31	11	0	7	23	7	0	213	
4:35 PM	3	61	7	0	2	43	21	0	19	18	13	0	15	13	7	0	222	
4:40 PM	7	52	7	0	3	47	7	0	20	13	6	0	12	20	3	0	197	
4:45 PM	5	69	12	0	4	53	9	0	17	25	7	0	7	17	10	0	235	
4:50 PM	4	54	11	0	6	41	14	0	17	20	9	0	19	17	7	0	219	
4:55 PM	7	59	14	0	10	57	17	0	12	9	5	0	11	14	3	0	218	2554
5:00 PM	4	58	5	0	5	54	14	0	17	20	8	0	12	17	7	0	221	2602
5:05 PM	4	51	7	0	9	62	10	0	20	10	7	0	20	13	9	0	222	2613
5:10 PM	2	58	10	0	11	60	13	0	24	27	7	0	14	14	3	0	243	2641
5:15 PM	3	50	7	0	7	56	17	0	18	19	5	0	14	13	4	0	213	2634
5:20 PM	5	50	10	0	2	57	9	0	17	22	3	0	19	21	3	0	218	2645
5:25 PM	4	51	9	0	6	49	11	0	13	20	4	0	20	24	2	0	213	2634
5:30 PM	6	49	6	0	2	34	10	0	18	16	10	0	16	16	10	0	193	2614
5:35 PM	5	46	3	0	11	63	7	0	12	21	4	0	11	15	0	0	198	2590
5:40 PM	6	54	16	0	5	53	13	0	10	14	8	0	11	9	3	0	202	2595
5:45 PM	3	45	7	0	9	46	9	0	13	11	6	0	11	20	9	0	189	2549
5:50 PM	5	59	10	0	9	44	8	0	12	20	6	0	10	21	10	0	214	2544
5:55 PM	7	51	3	0	3	43	10	0	15	16	3	0	7	17	8	0	183	2509
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	40	668	88	0	100	704	148	0	244	228	88	0	184	176	76	0	2744	
Heavy Trucks	4	24	16		4	20	4		12	16	0		28	4	0		132	
Buses																		
Pedestrians		0				4				0				8			12	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: Powerline Rd -- Bridge Rd
CITY/STATE: Umatilla, OR

QC JOB #: 15570909
DATE: Thu, Oct 7 2021

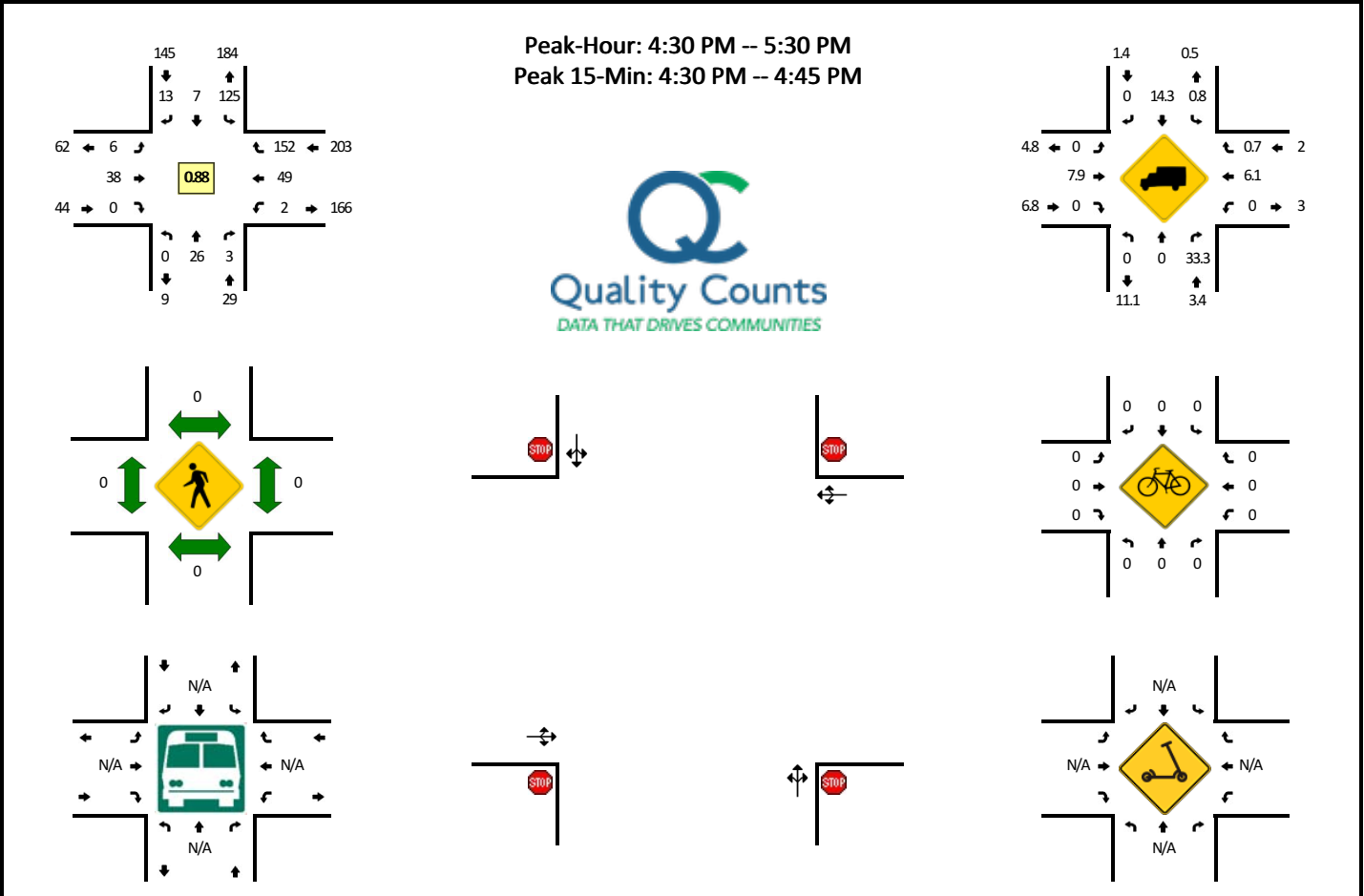


5-Min Count Period Beginning At	Powerline Rd (Northbound)				Powerline Rd (Southbound)				Bridge Rd (Eastbound)				Bridge Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	2	0	0	7	4	0	0	0	5	0	0	0	3	4	0	25	
7:05 AM	0	4	0	0	6	1	0	0	2	5	0	0	0	4	10	0	32	
7:10 AM	0	2	0	0	8	1	1	0	0	4	0	0	0	0	8	0	24	
7:15 AM	0	2	0	0	7	2	0	0	0	4	0	0	0	0	8	0	23	
7:20 AM	0	1	0	0	9	2	1	0	1	2	0	0	0	0	6	0	22	
7:25 AM	0	1	0	0	14	3	0	0	2	5	0	0	0	0	4	0	29	
7:30 AM	0	0	0	0	11	0	2	0	0	0	0	0	0	4	4	0	21	
7:35 AM	0	1	0	0	10	1	1	0	1	4	0	0	1	1	5	0	25	
7:40 AM	0	0	1	0	16	0	0	0	1	8	0	0	1	2	4	0	33	
7:45 AM	0	1	2	0	13	2	0	0	0	8	0	0	1	0	3	0	30	
7:50 AM	0	0	0	0	16	0	0	0	0	4	0	0	1	3	7	0	31	
7:55 AM	0	0	0	0	15	0	0	0	0	6	0	0	0	2	6	0	29	324
8:00 AM	0	0	1	0	11	2	1	0	2	5	0	0	0	2	7	0	31	330
8:05 AM	0	0	0	0	2	0	0	0	1	2	0	0	0	3	8	0	16	314
8:10 AM	0	3	0	0	10	1	0	0	0	1	0	0	0	2	7	0	24	314
8:15 AM	0	0	0	0	9	1	0	0	0	3	0	0	0	1	8	0	22	313
8:20 AM	0	0	0	0	4	0	0	0	0	1	0	0	0	5	13	0	23	314
8:25 AM	0	1	0	0	7	2	0	0	0	3	0	0	0	0	10	0	23	308
8:30 AM	0	1	0	0	6	1	0	0	0	0	0	0	1	1	7	0	17	304
8:35 AM	0	3	0	0	6	2	0	0	0	1	0	0	0	0	6	0	18	297
8:40 AM	0	0	0	0	2	0	0	0	0	4	0	0	1	0	4	0	11	275
8:45 AM	0	0	0	0	10	1	0	0	0	4	0	0	0	1	6	0	22	267
8:50 AM	0	0	0	0	4	0	0	0	1	2	0	0	0	2	8	0	17	253
8:55 AM	0	0	1	0	2	0	0	0	0	0	0	0	0	2	3	0	8	232
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	4	12	0	180	8	0	0	4	80	0	0	12	20	56	0	376	
Heavy Trucks	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	0	8	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: Powerline Rd -- Bridge Rd
CITY/STATE: Umatilla, OR

QC JOB #: 15570910
DATE: Wed, Oct 6 2021

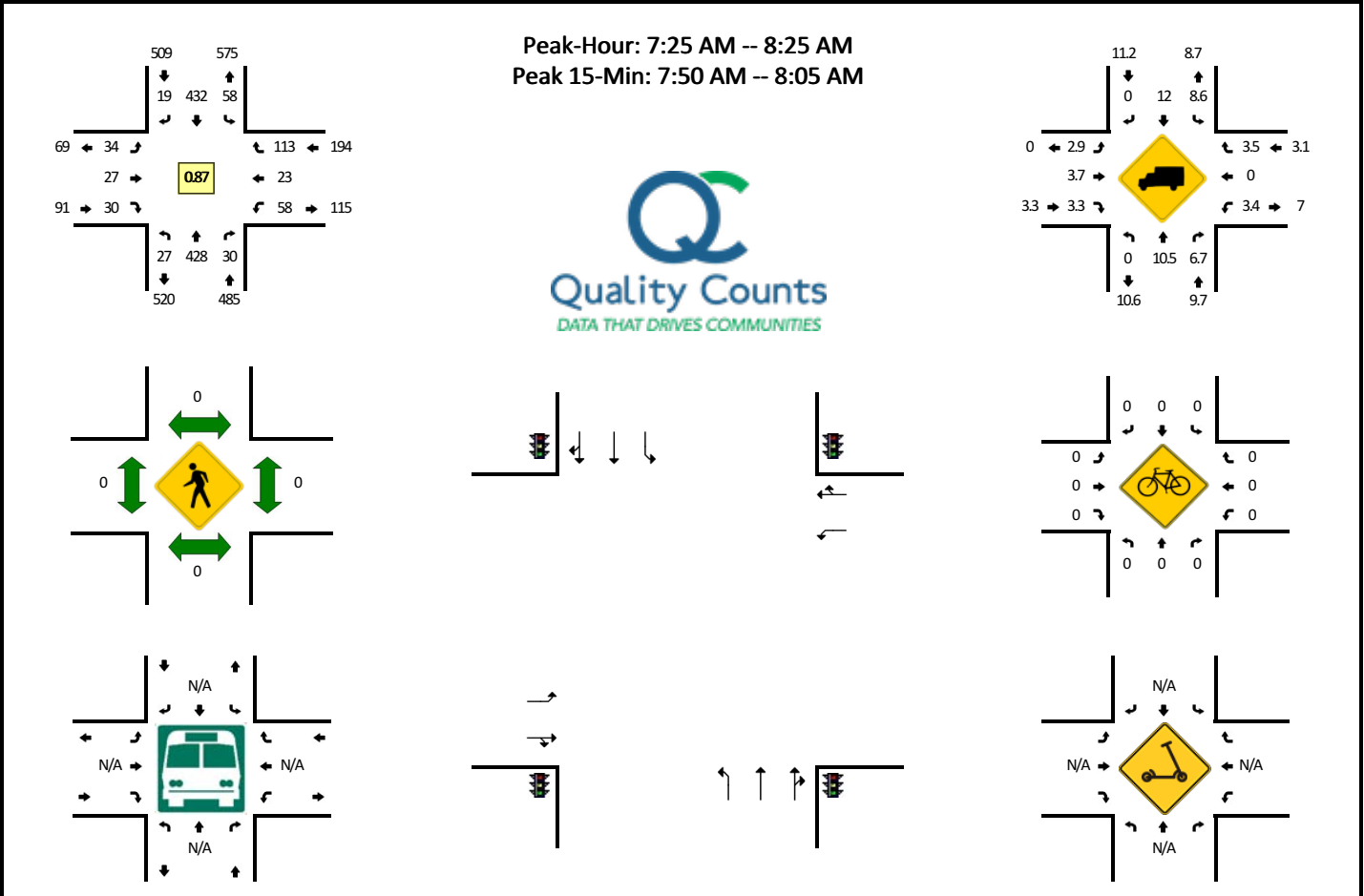


5-Min Count Period Beginning At	Powerline Rd (Northbound)				Powerline Rd (Southbound)				Bridge Rd (Eastbound)				Bridge Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	3	0	0	15	1	1	0	0	3	0	0	1	2	12	0	39	
4:05 PM	0	1	0	0	12	2	0	0	0	2	0	0	1	8	14	0	40	
4:10 PM	0	3	0	0	10	0	0	0	1	3	0	0	0	1	14	0	32	
4:15 PM	0	3	0	0	11	1	2	0	1	2	0	0	0	2	13	0	35	
4:20 PM	0	1	0	0	6	1	0	0	0	2	0	0	0	3	16	0	29	
4:25 PM	0	4	1	0	3	0	0	0	0	2	0	0	0	2	15	0	27	
4:30 PM	0	7	0	0	11	0	0	0	1	1	0	0	1	5	18	0	44	
4:35 PM	0	4	0	0	5	0	1	0	0	5	0	0	0	1	13	0	29	
4:40 PM	0	2	1	0	14	1	1	0	0	2	0	0	0	4	21	0	46	
4:45 PM	0	1	1	0	4	2	3	0	1	3	0	0	0	3	12	0	30	
4:50 PM	0	1	0	0	8	0	2	0	1	3	0	0	0	3	8	0	26	
4:55 PM	0	2	0	0	13	0	0	0	0	1	0	0	0	7	12	0	35	412
5:00 PM	0	2	1	0	9	0	4	0	0	2	0	0	0	2	11	0	31	404
5:05 PM	0	3	0	0	11	1	0	0	1	3	0	0	1	6	8	0	34	398
5:10 PM	0	3	0	0	13	2	0	0	0	4	0	0	0	2	15	0	39	405
5:15 PM	0	0	0	0	7	0	1	0	1	6	0	0	0	6	12	0	33	403
5:20 PM	0	1	0	0	17	0	0	0	0	4	0	0	0	6	13	0	41	415
5:25 PM	0	0	0	0	13	1	1	0	1	4	0	0	0	4	9	0	33	421
5:30 PM	0	1	1	0	16	1	0	0	1	4	0	0	0	2	15	0	41	418
5:35 PM	0	2	0	0	12	1	0	0	0	0	0	0	0	1	13	0	29	418
5:40 PM	0	3	1	0	12	0	1	0	0	2	0	0	0	2	17	0	38	410
5:45 PM	0	1	0	0	15	0	0	0	1	1	0	0	0	1	10	0	29	409
5:50 PM	0	1	0	0	9	0	0	0	0	5	0	0	0	5	10	0	30	413
5:55 PM	0	1	0	0	10	1	0	0	0	5	0	0	0	3	12	0	32	410
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	52	4	0	120	4	8	0	4	32	0	0	4	40	208	0	476	
Heavy Trucks	0	0	0	0	0	0	0	0	0	4	0	0	0	8	0	0	12	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: Hwy 395 -- W Punkin Center Rd
CITY/STATE: Umatilla, OR

QC JOB #: 15570911
DATE: Thu, Oct 7 2021

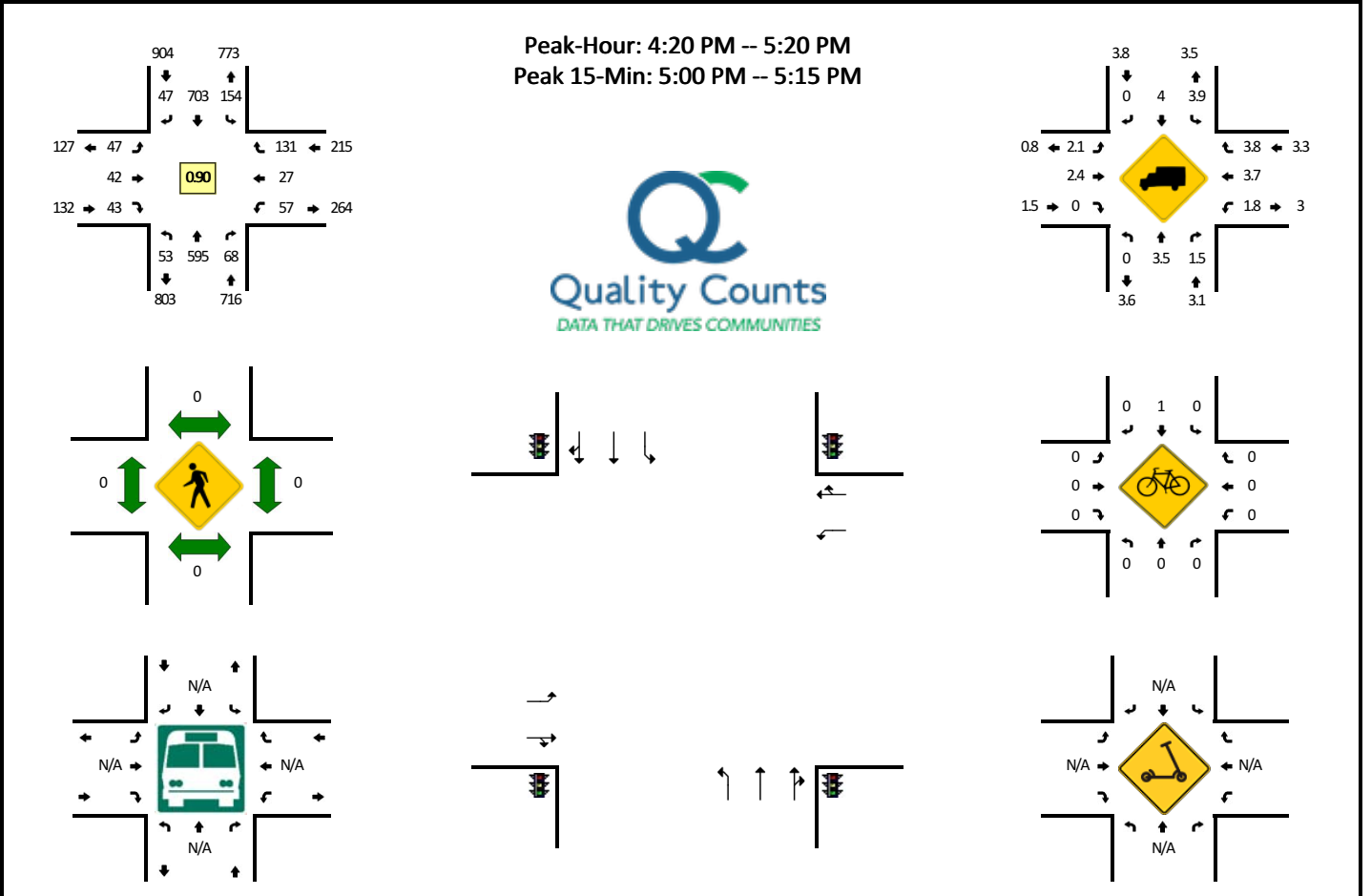


5-Min Count Period Beginning At	Hwy 395 (Northbound)				Hwy 395 (Southbound)				W Punkin Center Rd (Eastbound)				W Punkin Center Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	24	2	0	5	29	1	0	0	0	2	0	4	4	6	0	77	
7:05 AM	1	24	2	0	1	36	1	0	1	2	3	0	2	0	15	0	88	
7:10 AM	2	29	3	0	6	27	1	0	0	1	2	0	9	3	10	0	93	
7:15 AM	0	31	1	0	6	23	2	0	2	1	3	0	8	2	5	0	84	
7:20 AM	3	36	3	0	3	20	3	0	3	2	2	0	3	2	14	0	94	
7:25 AM	1	28	0	0	4	35	2	0	2	0	3	0	4	2	7	0	88	
7:30 AM	4	34	2	0	6	35	1	0	3	1	1	0	5	4	10	0	106	
7:35 AM	2	27	2	0	4	36	2	0	3	4	1	0	0	0	9	0	90	
7:40 AM	1	45	0	0	4	36	2	0	2	2	7	0	6	3	9	0	117	
7:45 AM	3	34	2	0	2	23	3	0	2	5	7	0	5	1	8	0	95	
7:50 AM	3	37	3	0	9	37	0	0	4	5	1	0	6	4	22	0	131	
7:55 AM	1	44	7	0	4	37	0	0	5	1	1	0	8	2	8	0	118	1181
8:00 AM	3	31	3	0	5	45	4	0	4	1	3	0	2	3	13	0	117	1221
8:05 AM	0	43	2	0	5	39	2	0	3	3	2	0	6	1	14	0	120	1253
8:10 AM	2	34	4	0	8	39	0	0	2	0	1	0	5	1	4	0	100	1260
8:15 AM	4	33	3	0	2	41	1	0	1	1	2	0	8	0	5	0	101	1277
8:20 AM	3	38	2	0	5	29	2	0	3	4	1	0	3	2	4	0	96	1279
8:25 AM	6	20	1	0	4	31	2	0	2	0	3	0	2	2	13	0	86	1277
8:30 AM	5	25	2	0	3	32	1	0	2	1	3	0	1	2	4	0	81	1252
8:35 AM	4	27	4	0	4	31	0	0	2	4	5	0	2	3	9	0	95	1257
8:40 AM	2	27	3	0	4	27	1	0	2	1	6	0	4	4	5	0	86	1226
8:45 AM	7	33	1	0	3	43	0	0	6	1	5	0	5	0	7	0	111	1242
8:50 AM	3	36	3	0	5	36	4	0	1	1	1	0	0	2	7	0	99	1210
8:55 AM	3	26	0	0	4	39	1	0	1	2	2	0	4	5	8	0	95	1187
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	28	448	52	0	72	476	16	0	52	28	20	0	64	36	172	0	1464	
Heavy Trucks	0	44	4		4	40	0		0	4	0		4	0	0		100	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: Hwy 395 -- W Punkin Center Rd
CITY/STATE: Umatilla, OR

QC JOB #: 15570912
DATE: Wed, Oct 6 2021

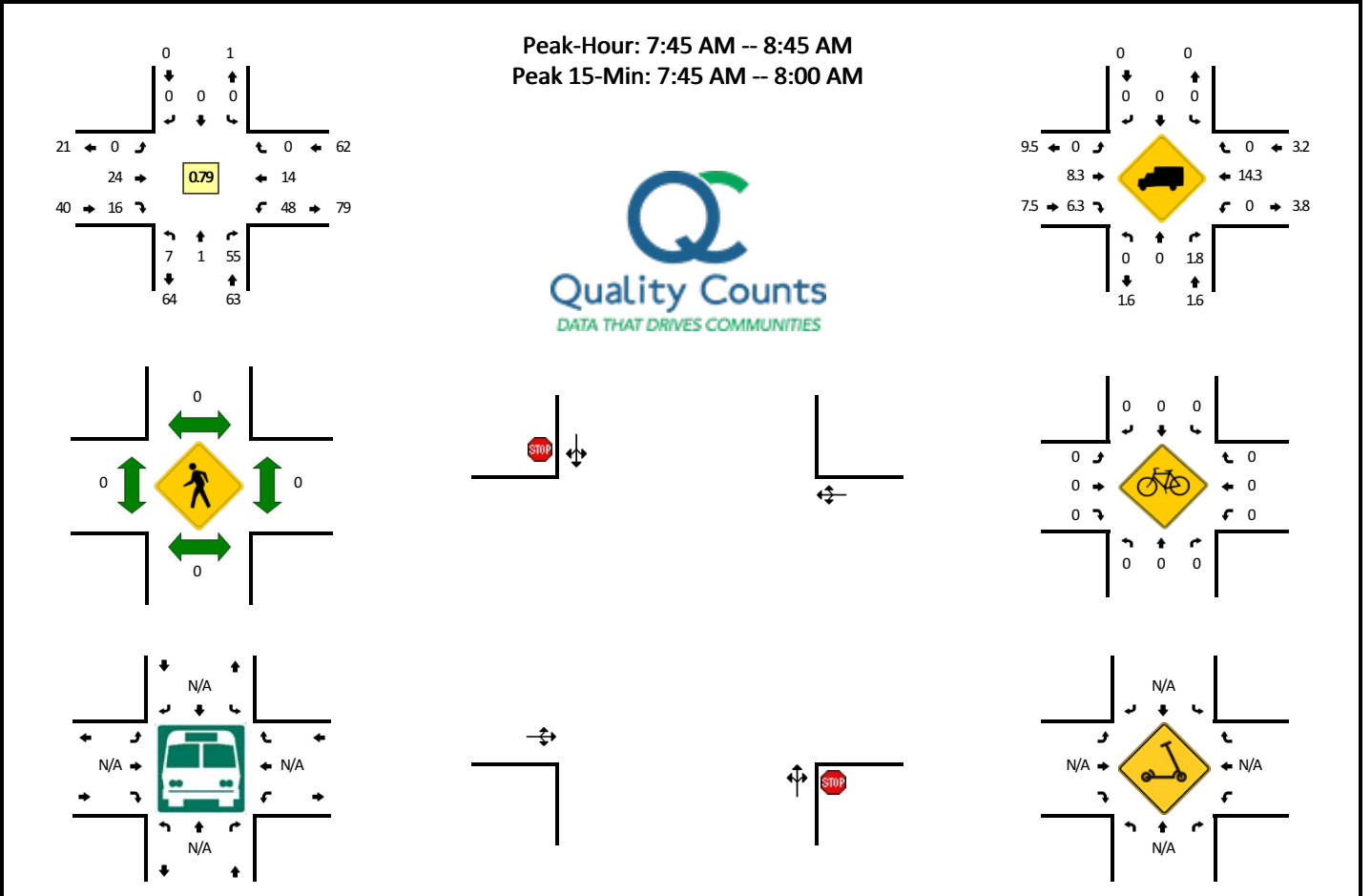


5-Min Count Period Beginning At	Hwy 395 (Northbound)				Hwy 395 (Southbound)				W Punkin Center Rd (Eastbound)				W Punkin Center Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	47	5	0	12	50	6	0	11	1	4	0	6	4	13	0	160	
4:05 PM	1	47	8	0	13	56	3	0	9	2	4	0	7	2	8	0	160	
4:10 PM	6	69	6	0	15	56	4	0	3	1	6	0	4	3	6	0	179	
4:15 PM	2	45	3	0	9	45	5	0	5	1	6	0	9	1	15	0	146	
4:20 PM	6	44	2	0	10	78	5	0	3	2	4	0	7	1	4	0	166	
4:25 PM	1	35	3	0	14	53	3	0	8	6	5	0	7	3	13	0	151	
4:30 PM	2	50	4	0	9	53	1	0	1	3	3	0	7	1	11	0	145	
4:35 PM	10	49	6	0	18	55	3	0	2	1	5	0	2	2	5	0	158	
4:40 PM	3	63	5	0	9	56	2	0	5	5	4	0	2	4	9	0	167	
4:45 PM	8	50	9	0	14	46	2	0	4	5	2	0	1	2	11	0	154	
4:50 PM	3	43	11	0	14	56	4	0	2	1	4	0	5	2	7	0	152	
4:55 PM	2	44	5	0	11	52	6	0	7	5	4	0	7	2	25	0	170	1908
5:00 PM	3	48	4	0	8	60	7	0	3	2	3	0	5	3	17	0	163	1911
5:05 PM	3	60	8	0	16	81	5	0	3	4	3	0	3	3	16	0	205	1956
5:10 PM	7	58	7	0	18	57	5	0	5	4	3	0	6	3	6	0	179	1956
5:15 PM	5	51	4	0	13	56	4	0	4	4	3	0	5	1	7	0	157	1967
5:20 PM	4	45	4	0	13	40	4	0	5	4	0	0	10	4	16	0	149	1950
5:25 PM	2	49	3	0	9	53	7	0	8	1	3	0	5	3	9	0	152	1951
5:30 PM	3	39	7	0	16	46	3	0	5	1	0	0	4	2	8	0	134	1940
5:35 PM	4	35	4	0	8	55	2	0	4	4	7	0	3	1	6	0	133	1915
5:40 PM	2	37	4	0	3	34	1	0	4	7	3	0	8	3	4	0	110	1858
5:45 PM	1	38	4	0	8	60	2	0	1	3	1	0	4	2	12	0	136	1840
5:50 PM	5	52	4	0	6	35	3	0	5	4	3	0	8	4	7	0	136	1824
5:55 PM	4	35	6	0	15	49	1	0	6	2	5	0	6	4	5	0	138	1792
Peak 15-Min Flows	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	52	664	76	0	168	792	68	0	44	40	36	0	56	36	156	0	2188	
Heavy Trucks	0	16	4	0	0	40	0	0	0	0	0	0	0	4	8	0	72	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	4	0		0	0	0		0	0	0		4	
Scoters																		

Comments:

LOCATION: NW Geer Rd -- W Punkin Center Rd
CITY/STATE: Hermiston, OR

QC JOB #: 15570913
DATE: Thu, Oct 7 2021

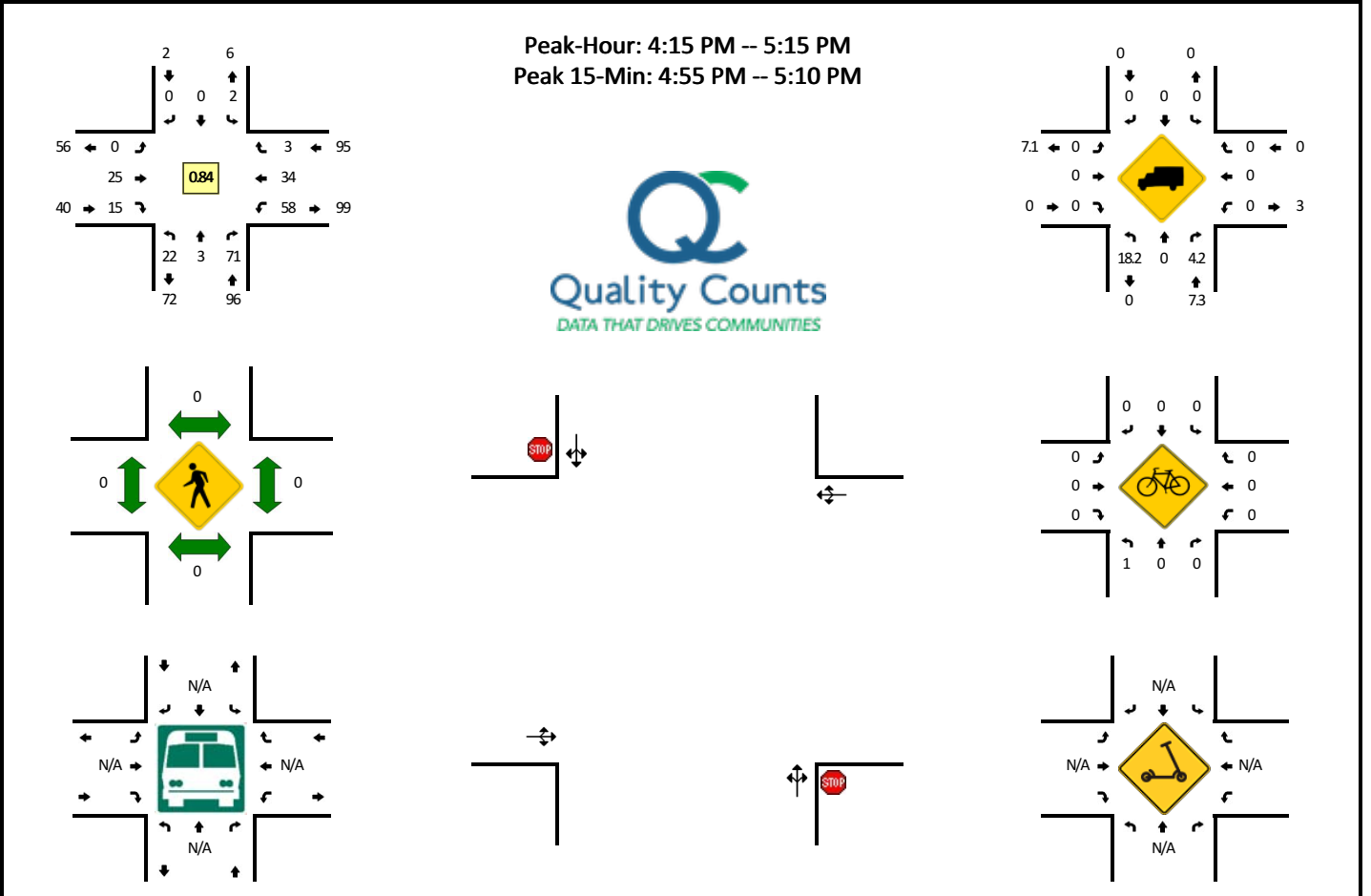


5-Min Count Period Beginning At	NW Geer Rd (Northbound)				NW Geer Rd (Southbound)				W Punkin Center Rd (Eastbound)				W Punkin Center Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	3	
7:05 AM	0	0	0	0	0	0	0	0	0	4	0	0	4	2	0	0	10	
7:10 AM	0	0	1	0	0	0	0	0	0	3	2	0	1	1	0	0	8	
7:15 AM	0	0	2	0	0	0	0	0	0	3	0	0	3	1	0	0	9	
7:20 AM	2	0	2	0	0	0	0	0	0	1	1	0	2	0	1	0	9	
7:25 AM	0	1	3	0	0	2	0	0	0	3	0	0	2	2	0	0	13	
7:30 AM	1	0	2	0	0	0	0	0	0	1	0	0	1	1	0	0	6	
7:35 AM	1	0	2	0	0	0	0	0	0	3	2	0	5	0	1	0	14	
7:40 AM	0	0	4	0	0	0	0	0	0	2	3	0	3	0	0	0	12	
7:45 AM	0	0	6	0	0	0	0	0	0	5	2	0	4	1	0	0	18	
7:50 AM	0	0	9	0	0	0	0	0	0	4	5	0	5	0	0	0	23	
7:55 AM	1	0	5	0	0	0	0	0	0	1	1	0	3	0	0	0	11	136
8:00 AM	1	0	5	0	0	0	0	0	0	1	1	0	4	0	0	0	12	145
8:05 AM	2	0	3	0	0	0	0	0	0	1	1	0	1	1	0	0	9	144
8:10 AM	0	0	2	0	0	0	0	0	0	2	1	0	6	0	0	0	11	147
8:15 AM	1	0	3	0	0	0	0	0	0	0	3	0	4	2	0	0	13	151
8:20 AM	0	0	6	0	0	0	0	0	0	2	1	0	5	1	0	0	15	157
8:25 AM	1	0	3	0	0	0	0	0	0	1	0	0	3	4	0	0	12	156
8:30 AM	0	0	2	0	0	0	0	0	0	3	1	0	6	1	0	0	13	163
8:35 AM	0	0	8	0	0	0	0	0	0	0	0	0	4	1	0	0	13	162
8:40 AM	1	1	3	0	0	0	0	0	0	4	0	0	3	3	0	0	15	165
8:45 AM	0	0	7	0	0	0	0	0	0	3	1	0	2	2	0	0	15	162
8:50 AM	0	1	4	0	0	0	0	0	0	2	0	0	5	1	0	0	13	152
8:55 AM	0	0	4	0	0	0	0	0	0	1	0	0	5	2	0	0	12	153
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	4	0	80	0	0	0	0	0	0	40	32	0	48	4	0	0	208	
Heavy Trucks	0	0	0	0	0	0	0	0	0	4	4	0	0	4	0	0	12	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: NW Geer Rd -- W Punkin Center Rd
CITY/STATE: Hermiston, OR

QC JOB #: 15570914
DATE: Wed, Oct 6 2021

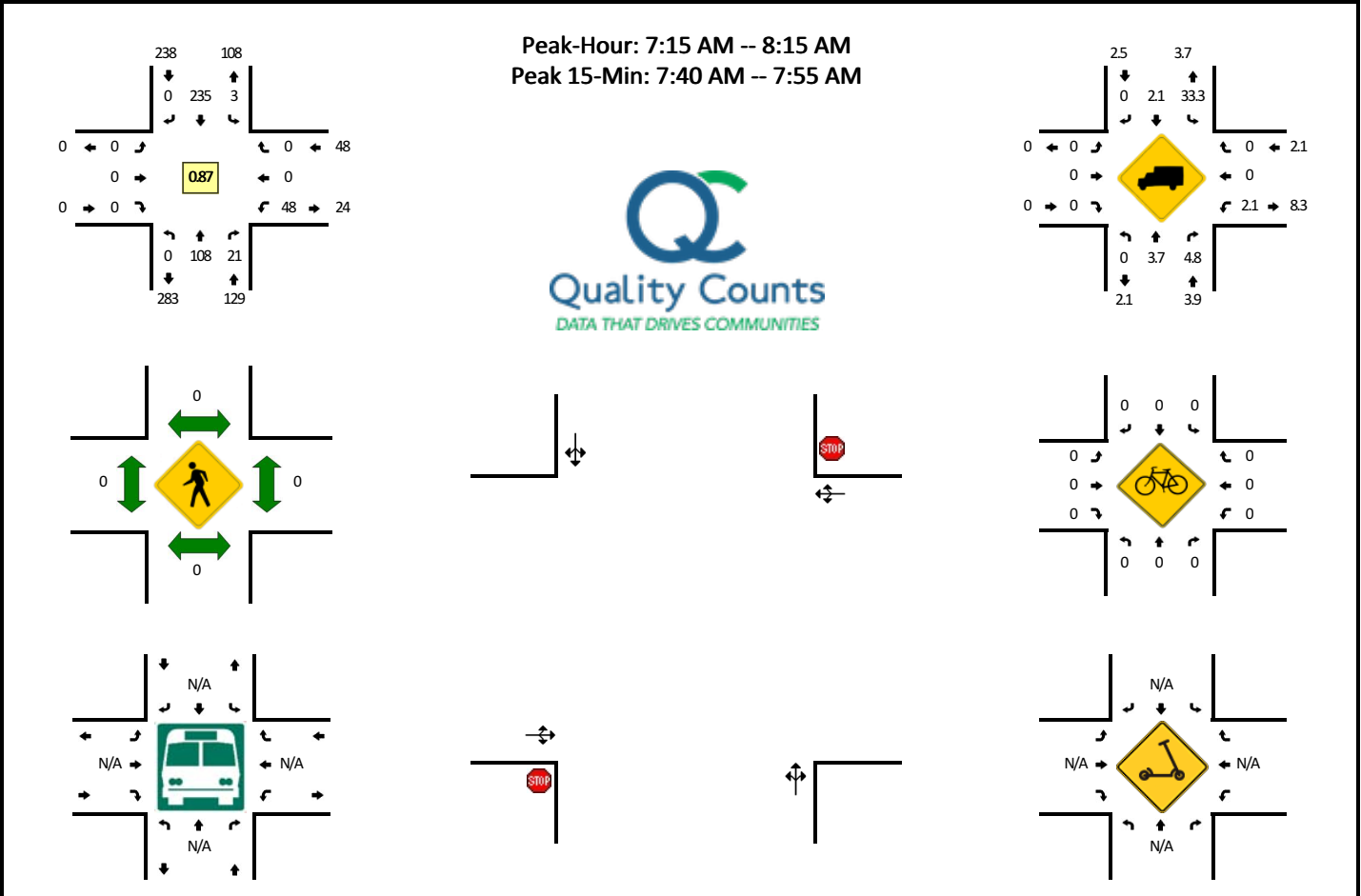


5-Min Count Period Beginning At	NW Geer Rd (Northbound)				NW Geer Rd (Southbound)				W Punkin Center Rd (Eastbound)				W Punkin Center Rd (Westbound)				Total	Hourly Totals	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
4:00 PM	3	0	10	0	0	0	0	0	0	0	2	1	0	4	3	0	0	23	
4:05 PM	3	0	8	0	0	0	0	0	0	0	2	1	0	2	3	0	0	19	
4:10 PM	1	0	7	0	0	0	0	0	0	0	1	2	0	4	5	0	0	20	
4:15 PM	3	0	6	0	0	0	0	0	0	0	2	2	0	4	2	0	0	19	
4:20 PM	2	0	5	0	0	0	0	0	0	0	2	3	0	1	3	0	0	16	
4:25 PM	4	0	8	0	0	0	0	0	0	0	1	1	0	5	2	0	0	21	
4:30 PM	2	0	2	0	0	0	0	0	0	0	1	0	0	3	0	0	0	8	
4:35 PM	1	0	4	0	0	0	0	0	0	0	5	2	0	7	2	0	0	21	
4:40 PM	1	2	7	0	0	0	0	0	0	0	1	3	0	3	2	0	0	19	
4:45 PM	3	0	7	0	0	0	0	0	0	0	2	0	0	4	2	0	0	18	
4:50 PM	0	0	2	0	0	0	0	0	0	0	2	2	0	8	3	0	0	17	
4:55 PM	3	0	9	0	1	0	0	0	0	0	3	0	0	7	2	1	0	26	227
5:00 PM	0	0	3	0	0	0	0	0	0	0	1	1	0	4	5	0	0	14	218
5:05 PM	3	0	12	0	0	0	0	0	0	0	0	0	0	6	7	0	1	29	228
5:10 PM	0	1	6	0	1	0	0	0	0	0	5	1	0	5	4	2	0	25	233
5:15 PM	1	0	5	0	2	0	0	0	0	0	1	0	0	3	1	0	0	13	227
5:20 PM	0	0	5	0	0	0	0	0	0	0	0	0	0	8	5	0	0	18	229
5:25 PM	1	0	6	0	2	0	0	0	0	0	1	0	0	7	1	0	0	18	226
5:30 PM	1	0	8	0	0	0	0	0	0	0	0	1	0	3	1	0	0	14	232
5:35 PM	0	1	6	0	1	0	0	0	0	0	4	1	0	2	1	0	0	16	227
5:40 PM	3	0	5	0	0	1	0	0	0	0	3	1	0	3	1	0	0	17	225
5:45 PM	4	0	4	0	0	0	0	0	0	0	2	1	0	2	1	0	0	14	221
5:50 PM	1	0	6	0	0	0	0	0	0	0	3	0	0	6	2	0	0	18	222
5:55 PM	1	1	8	0	0	1	0	0	0	0	0	2	0	7	3	0	0	23	219
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total		
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
All Vehicles	24	0	96	0	4	0	0	0	0	16	4	0	68	56	4	4	276		
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Buses																			
Pedestrians		0				0				0				0			0		
Bicycles	0	0	0		0	0	0			0	0		0	0	0		0		
Scoters																			

Comments:

LOCATION: Umatilla River Rd -- Cooney Ln
CITY/STATE: Hermiston, OR

QC JOB #: 15570915
DATE: Thu, Oct 7 2021

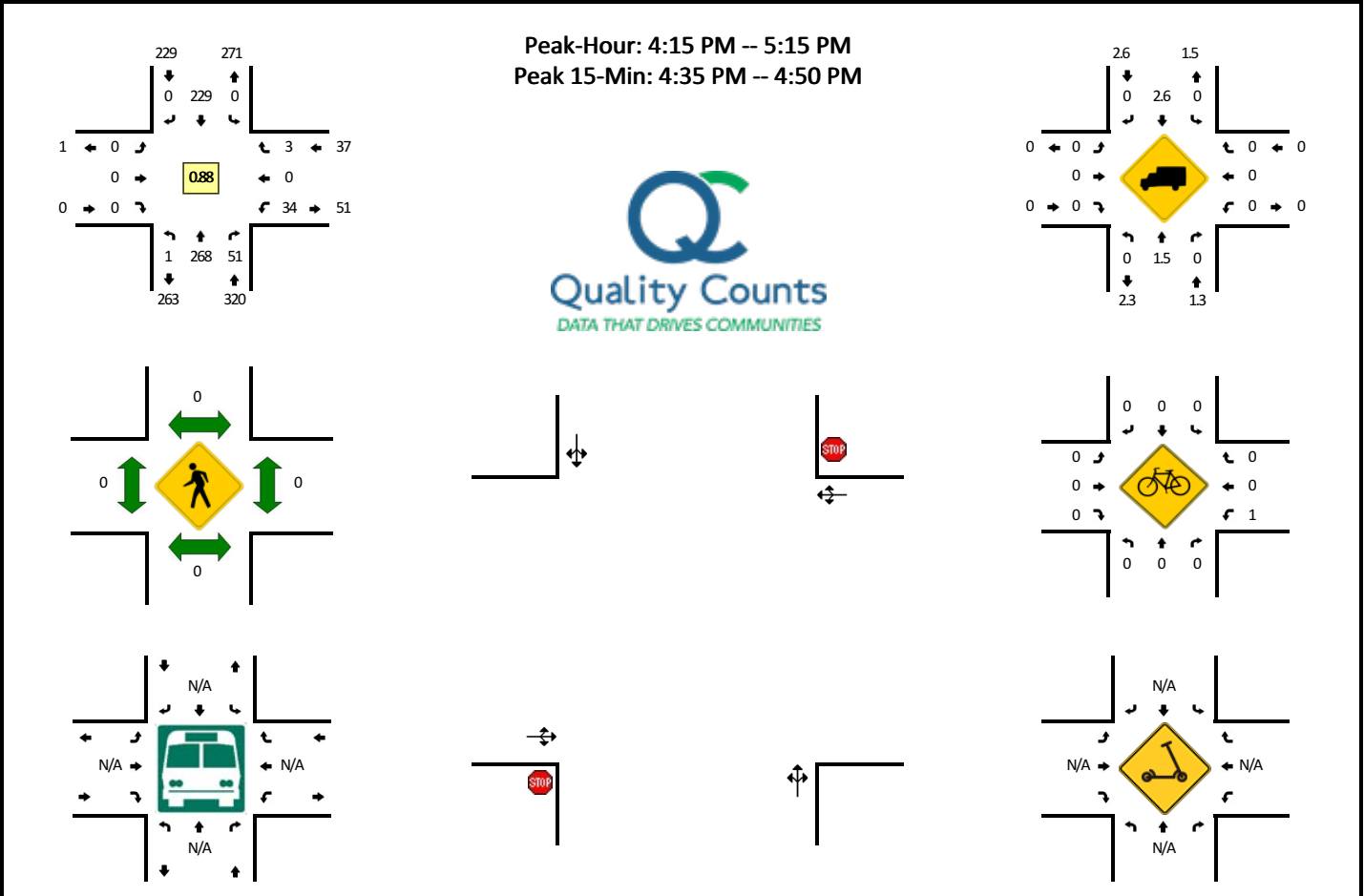


5-Min Count Period Beginning At	Umatilla River Rd (Northbound)				Umatilla River Rd (Southbound)				Cooney Ln (Eastbound)				Cooney Ln (Westbound)				Total	Hourly Totals	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
7:00 AM	0	10	2	0	0	8	0	0	0	1	0	0	0	1	0	0	0	22	
7:05 AM	0	9	1	0	0	13	0	0	0	0	0	0	0	0	0	0	0	23	
7:10 AM	0	8	1	0	0	10	0	0	0	0	0	0	0	4	0	0	0	23	
7:15 AM	0	13	1	0	0	19	0	0	0	0	0	0	0	5	0	0	0	38	
7:20 AM	0	8	0	0	0	11	0	0	0	0	0	0	0	8	0	0	0	27	
7:25 AM	0	6	2	0	0	18	0	0	0	0	0	0	0	2	0	0	0	28	
7:30 AM	0	7	2	0	0	27	0	0	0	0	0	0	0	1	0	0	0	37	
7:35 AM	0	11	2	0	2	15	0	0	0	0	0	0	0	3	0	0	0	33	
7:40 AM	0	7	3	0	0	18	0	0	0	0	0	0	0	7	0	0	0	35	
7:45 AM	0	7	2	0	0	23	0	0	0	0	0	0	0	4	0	0	0	36	
7:50 AM	0	11	1	0	0	30	0	0	0	0	0	0	0	6	0	0	0	48	
7:55 AM	0	7	2	0	0	17	0	0	0	0	0	0	0	5	0	0	0	31	381
8:00 AM	0	6	1	0	0	21	0	0	0	0	0	0	0	4	0	0	0	32	391
8:05 AM	0	11	2	0	1	20	0	0	0	0	0	0	0	2	0	0	0	36	404
8:10 AM	0	14	3	0	0	16	0	0	0	0	0	0	0	1	0	0	0	34	415
8:15 AM	0	12	2	0	0	13	0	0	0	0	0	0	0	3	0	0	0	30	407
8:20 AM	0	11	2	0	0	12	0	0	0	0	0	0	0	0	0	0	0	25	405
8:25 AM	0	5	7	0	0	18	0	0	0	0	0	0	0	2	0	0	0	32	409
8:30 AM	0	11	2	0	0	10	0	0	0	0	0	0	0	2	0	0	0	25	397
8:35 AM	0	5	0	0	0	14	0	0	0	0	0	0	0	2	0	0	0	21	385
8:40 AM	0	9	2	0	0	10	0	0	0	0	0	0	0	1	0	0	0	22	372
8:45 AM	0	4	0	0	0	12	0	0	0	0	0	0	0	3	0	0	0	19	355
8:50 AM	0	9	2	0	0	10	0	0	0	0	0	0	0	4	0	0	0	25	332
8:55 AM	0	9	1	0	0	13	0	0	0	0	0	0	0	0	0	0	0	23	324
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total		
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
All Vehicles	0	100	24	0	0	284	0	0	0	0	0	0	0	68	0	0	0	476	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Buses																			
Pedestrians		0				0					0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0			0	
Scoters																			

Comments:

LOCATION: Umatilla River Rd -- Cooney Ln
CITY/STATE: Hermiston, OR

QC JOB #: 15570916
DATE: Wed, Oct 6 2021



5-Min Count Period Beginning At	Umatilla River Rd (Northbound)				Umatilla River Rd (Southbound)				Cooney Ln (Eastbound)				Cooney Ln (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	18	3	0	1	19	0	0	0	0	0	0	1	0	0	0	42	
4:05 PM	0	20	3	0	0	15	0	0	0	0	0	0	4	0	0	0	42	
4:10 PM	0	25	2	0	0	18	0	0	0	0	0	0	1	0	0	0	46	
4:15 PM	0	19	4	0	0	24	0	0	0	0	0	0	2	0	0	0	49	
4:20 PM	0	22	3	0	0	23	0	0	0	0	0	0	0	0	0	0	48	
4:25 PM	0	24	2	0	0	15	0	0	0	0	0	0	3	0	0	0	44	
4:30 PM	0	18	3	0	0	15	0	0	0	0	0	0	2	0	1	0	39	
4:35 PM	0	21	9	0	0	18	0	0	0	0	0	0	1	0	0	0	49	
4:40 PM	0	33	4	0	0	23	0	0	0	0	0	0	3	0	0	0	63	
4:45 PM	0	18	5	0	0	30	0	0	0	0	0	0	1	0	1	0	55	
4:50 PM	0	23	5	0	0	16	0	0	0	0	0	0	3	0	0	0	47	
4:55 PM	1	17	4	0	0	18	0	0	0	0	0	0	3	0	0	0	43	567
5:00 PM	0	24	2	0	0	17	0	0	0	0	0	0	7	0	0	0	50	575
5:05 PM	0	25	5	0	0	13	0	0	0	0	0	0	5	0	0	0	48	581
5:10 PM	0	24	5	0	0	17	0	0	0	0	0	0	4	0	1	0	51	586
5:15 PM	0	12	1	0	0	13	0	0	0	0	0	0	1	0	0	0	27	564
5:20 PM	0	16	1	0	1	20	0	0	0	0	0	0	3	0	0	0	41	557
5:25 PM	0	16	4	0	0	13	0	0	0	0	0	0	3	0	0	0	36	549
5:30 PM	0	14	5	0	0	18	0	0	0	0	0	0	4	0	1	0	42	552
5:35 PM	0	27	4	0	0	14	0	0	0	0	0	0	3	0	0	0	48	551
5:40 PM	0	15	7	0	0	12	0	0	0	0	0	0	1	0	0	0	35	523
5:45 PM	0	18	3	0	0	15	0	0	0	0	0	0	2	0	1	0	39	507
5:50 PM	0	13	2	0	0	21	1	0	0	0	0	0	2	0	0	0	39	499
5:55 PM	0	20	5	0	0	19	0	0	0	0	0	0	1	0	1	0	46	502
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	288	72	0	0	284	0	0	0	0	0	0	20	0	4	0	668	
Heavy Trucks	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	
Buses																		
Pedestrians		0				0					0			0			0	
Bicycles	0	0	0		0	0	0			0	0	0	0	0	0		0	
Scoters																		

Comments:

Appendix B
Seasonal Adjustment Calculations

SEASONAL ADJUSTMENT CALCULATIONS

Version 2 of the APM identifies three methods for identifying seasonal adjustment factors for highway traffic volumes. All three methods utilize information provided by Automatic Traffic Recorders (ATR) located in select locations throughout the State Highway System that collect traffic data 24-hours a day/365 days a year. Within the study area, ATR #30-019 is located on US 395 south of Hermiston while ATR #30-002 is located on US 730 east of Hermiston. Using the average of these two ATRs, the On-Site ATR Method was used to adjust the intersection turning movement counts to 30th highest hour conditions. The proposed seasonal adjustment factor calculations are summarized in the Table below.

Table 4: Seasonal Adjustment Factor Calculations

	2019	2018	2017	2016	2015	Avg
ATR #30-002						
Peak Month (August)	124	126	157	123	129	126.33%
Count Month (October)	114	101	123	106	109	109.67%
ATR #30-019						
Peak Month (August)	114	110	116	110	111	111.67%
Count Month (October)	109	107	111	107	109	108.33%

Source: ODOT 2020 Transportation Volume Tables. September 2021.

For ATR 30-002:

- The average peak month (August) is: $(124\% + 126\% + 129\%) / 3 = 126.33\%$
- The average count month (October) is: $(114\% + 106\% + 109\%) / 3 = 109.67\%$
- The seasonal adjustment factor is $126.33\% / 109.67\% = \mathbf{1.15}$

For ATR 30-019

- The average peak month (August) is: $(114\% + 110\% + 111\%) / 3 = 111.67\%$
- The average count month (October) is: $(109\% + 107\% + 109\%) / 3 = 108.33\%$
- The seasonal adjustment factor is $111.67\% / 108.33\% = \mathbf{1.03}$

Combined

- The season adjustment factor is $(1.15 + 1.03) / 2 = \mathbf{1.09}$

APPENDIX B
Cost Estimates for Infrastructure
Improvements and Land Acquisition

**CITY OF HERMISTON, OREGON
 UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT
 ELM AVENUE TRAVEL CORRIDOR
 PRELIMINARY COST ESTIMATE
 YEAR 2022 COSTS**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	\$ 348,500	All Req'd	\$ 348,500
2	Temporary Protection and Direction of Traffic/Project Safety	LS	40,000	All Req'd	40,000
3	Land Acquisition (90-foot right-of-way) ¹	LS	2,271,000	All Req'd	2,271,000
4	Concrete Curb and Gutter	LF	30	28,900	867,000
5	5-foot Concrete Sidewalk	LF	35	31,000	1,085,000
6	Asphalt Concrete Pavement	TON	130	11,900	1,547,000
7	Aggregate Base	TON	35	34,900	1,221,500
8	Pavement Striping and Marking	LS	20,000	All Req'd	20,000
Total Estimated Construction Cost					\$ 7,400,000
Design and Construction Engineering @ 20%					1,480,000
Contingencies @ 30%					2,220,000
TOTAL ESTIMATED PROJECT COST (2022)					\$ 11,100,000

¹ See Figures 4-1 and 4-3 in Chapter 4 for right-of-way acquisition information.

**CITY OF HERMISTON, OREGON
 UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT
 PUNKIN CENTER TRAVEL CORRIDOR
 PRELIMINARY COST ESTIMATE
 YEAR 2022 COSTS**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	\$ 406,500	All Req'd	\$ 406,500
2	Temporary Protection and Direction of Traffic/Project Safety	LS	30,000	All Req'd	30,000
3	Land Acquisition (90-foot right-of-way) ¹	LS	3,650,000	All Req'd	3,650,000
4	Concrete Curb and Gutter	LF	30	25,400	762,000
5	5-foot Concrete Sidewalk	LF	35	25,400	889,000
6	Asphalt Concrete Pavement	TON	130	11,400	1,482,000
7	Aggregate Base	TON	35	33,300	1,165,500
8	Pavement Striping and Marking	LS	15,000	All Req'd	15,000
Total Estimated Construction Cost					\$ 8,400,000
Design and Construction Engineering @ 20%					1,680,000
Contingencies @ 30%					2,520,000
TOTAL ESTIMATED PROJECT COST (2022)					\$ 12,600,000

¹ See Figures 4-2 and 4-4 in Chapter 4 for right-of-way acquisition information.

**CITY OF HERMISTON, OREGON
 UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT
 ELM AVENUE BRIDGE¹
 PRELIMINARY COST ESTIMATE
 YEAR 2022 COSTS**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	\$ 610,000	All Req'd	\$ 610,000
2	Bridge Structure	LS	11,150,000	All Req'd	11,150,000
3	Earthwork (Cut/Fill) ²	CY	30	38,000	1,140,000
Total Estimated Construction Cost					\$ 12,900,000
Design and Construction Engineering @ 20%					2,600,000
Contingencies @ 30%					3,900,000
TOTAL ESTIMATED PROJECT COST (2022)					\$ 19,400,000

¹ Estimate does not include sidewalk, asphalt, or aggregate base as estimated costs for these items are included in the Elm Avenue Travel Corridor cost estimate.

² Earthwork quantities were estimated using Figure 3-1 in Chapter 3. Assumes a cut/fill slope of 3:1.

**CITY OF HERMISTON, OREGON
 UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT
 PUNKIN CENTER BRIDGE¹
 PRELIMINARY COST ESTIMATE
 YEAR 2022 COSTS**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	\$ 450,000	All Req'd	\$ 450,000
2	Bridge Structure	LS	8,950,000	All Req'd	8,950,000
3	Earthwork (Cut/Fill) ²	CY	30	10,000	300,000
Total Estimated Construction Cost					\$ 9,700,000
Design and Construction Engineering @ 20%					1,900,000
Contingencies @ 30%					2,900,000
TOTAL ESTIMATED PROJECT COST (2022)					\$ 14,500,000

¹ Estimate does not include sidewalk, asphalt, or aggregate base as estimated costs for these items are included in the Punkin Center Travel Corridor cost estimate.

² Earthwork quantities were estimated using Figure 3-2 in Chapter 3. Assumes a cut/fill slope of 3:1.

**CITY OF HERMISTON, OREGON
 UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT
 U.S. 395/W. ELM AVENUE INTERSECTION IMPROVEMENTS
 PRELIMINARY COST ESTIMATE
 YEAR 2022 COSTS**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	\$ 345,800	All Req'd	\$ 345,800
2	Temporary Protection and Direction of Traffic/Project Safety	LS	100,000	All Req'd	100,000
3	Signal Modifications	LS	800,000	All Req'd	800,000
4	Americans with Disabilities Act Ramps	EA	10,000	8	80,000
5	Land Acquisition ¹	LS	5,636,000	All Req'd	5,636,000
6	Structure Demolition	LS	300,000	All Req'd	300,000
Northbound, Southbound, and Westbound Right-Turn Lanes²					
7	Concrete Curb and Gutter	LF	50	430	21,500
8	5-foot Concrete Sidewalk	LF	40	430	17,200
9	Asphalt Concrete Pavement	TON	150	130	19,500
10	Aggregate Base (12 inches)	TON	40	250	10,000
Total Estimated Construction Cost					\$ 7,330,000
Design and Construction Engineering @ 20%					1,470,000
Contingencies @ 30%					2,200,000
TOTAL ESTIMATED PROJECT COST (2022)					\$ 11,000,000

¹ See Chapter 4 for discussion on land acquisition.

² Turn lane geometry for estimation purposes was derived using general design guidelines in the 2012 Highway Design Manual. A minimum storage length of 100 feet was assumed for comparison purposes, unless otherwise noted.

**CITY OF HERMISTON, OREGON
 UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT
 N.W. 11TH STREET/W. ELM AVENUE INTERSECTION IMPROVEMENTS¹
 PRELIMINARY COST ESTIMATE
 YEAR 2022 COSTS**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	\$ 28,100	All Req'd	\$ 28,100
2	Temporary Protection and Direction of Traffic/Project Safety	LS	50,000	All Req'd	50,000
3	Signal Modifications	LS	400,000	All Req'd	400,000
4	Americans with Disabilities Act Ramps	EA	10,000	2	20,000
Eastbound Right-Turn Lane²					
5	Concrete Curb and Gutter	LF	50	260	13,000
6	5-foot Concrete Sidewalk	LF	40	260	10,400
7	Asphalt Concrete Pavement	TON	150	70	10,500
8	Aggregate Base (12 inches)	TON	40	200	8,000
Total Estimated Construction Cost					\$ 540,000
Design and Construction Engineering @ 20%					108,000
Contingencies @ 30%					162,000
TOTAL ESTIMATED PROJECT COST (2022)					\$ 810,000

¹ Land acquisition was not accounted for in this cost estimate as it is already included in the Elm Avenue Travel Corridor cost estimate.

² Turn lane geometry for estimation purposes was derived using general design guidelines in the 2012 Highway Design Manual. A minimum storage length of 100 feet was assumed for comparison purposes, unless otherwise noted.

**CITY OF HERMISTON, OREGON
 UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT
 POWERLINE ROAD/BELLINGER ROAD¹
 PRELIMINARY COST ESTIMATE
 YEAR 2022 COSTS**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	\$ 9,800	All Req'd	\$ 9,800
2	Temporary Protection and Direction of Traffic/Project Safety	LS	30,000	All Req'd	30,000
3	Americans with Disabilities Act Ramps	EA	10,000	6	60,000
Southbound Left-Turn Lane, and Westbound Right-Turn Lanes²					
4	Concrete Curb and Gutter	LF	30	800	24,000
5	5-foot Concrete Sidewalk	LF	35	800	28,000
6	Asphalt Concrete Pavement	TON	150	180	27,000
7	Aggregate Base (12 inches)	TON	35	520	18,200
Total Estimated Construction Cost					\$ 197,000
Design and Construction Engineering @ 20%					39,000
Contingencies @ 30%					59,000
TOTAL ESTIMATED PROJECT COST (2022)					\$ 295,000

¹ Land acquisition was not accounted for in this cost estimate as it is already included in the Elm Avenue Travel Corridor cost estimate.

² Turn lane geometry for estimation purposes was derived using general design guidelines in the 2012 Highway Design Manual. A minimum storage length of 100 feet was assumed for comparison purposes, unless otherwise noted.



**CITY OF HERMISTON, OREGON
 UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT
 UMATILLA RIVER ROAD/W. PUNKIN CENTER ROAD
 INTERSECTION IMPROVEMENTS¹
 PRELIMINARY COST ESTIMATE
 YEAR 2022 COSTS**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	\$ 155,000	All Req'd	\$ 155,000
2	Temporary Protection and Direction of Traffic/Project Safety	LS	50,000	All Req'd	50,000
3	Traffic Signal	LS	1,500,000	All Req'd	1,500,000
4	Americans with Disabilities Act Ramps	EA	10,000	4	40,000
5	Land Acquisition ²	LS	48,000	All Req'd	48,000
6	Modernize/Upgrade Railroad Crossing	LS	800,000	All Req'd	800,000
Left-Turn Lane on All Four Approaches³					
7	Concrete Curb and Gutter	LF	30	3,300	99,000
8	5-foot Concrete Sidewalk	LF	35	3,300	115,500
9	Asphalt Concrete Pavement	TON	130	1,700	221,000
10	Aggregate Base (12 inches)	TON	35	4,900	171,500
Total Estimated Construction Cost					\$ 3,200,000
Design and Construction Engineering @ 20%					640,000
Contingencies @ 30%					960,000
TOTAL ESTIMATED PROJECT COST (2022)					\$ 4,800,000

¹ Asphalt through the travel corridor is not included in this estimate as it is already included in the Punkin Center Travel Corridor cost estimate.

² Land acquisition was accounted for only on the southbound approach since land acquisition for the eastbound and westbound approaches is already included in the Punkin Center Travel Corridor cost estimate. Land acquisition for the northbound approach was not included as the land is owned by the City of Hermiston.

³ Turn lane geometry for estimation purposes was derived using general design guidelines in the 2012 Highway Design Manual. A minimum storage length of 100 feet was assumed for comparison purposes, unless otherwise noted.

**CITY OF HERMISTON, OREGON
 UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT
 POWERLINE ROAD/COUNTRY LANE INTERSECTION IMPROVEMENTS¹
 PRELIMINARY COST ESTIMATE
 YEAR 2022 COSTS**

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	\$ 9,700	All Req'd	\$ 9,700
2	Temporary Protection and Direction of Traffic/Project Safety	LS	20,000	All Req'd	20,000
3	Americans with Disabilities Act Ramps	EA	10,000	3	30,000
4	Land Acquisition ²	LS	45,000	All Req'd	45,000
Southbound Turn-Lane Westbound Left and Right-Turn Lanes³					
5	Asphalt Concrete Pavement	TON	150	330	49,500
6	Aggregate Base (12 inches)	TON	40	970	38,800
Total Estimated Construction Cost					\$ 193,000
Design and Construction Engineering @ 20%					39,000
Contingencies @ 30%					58,000
TOTAL ESTIMATED PROJECT COST (2022)					\$ 290,000

¹ Asphalt through the travel corridor is not included in this estimate as it is already included in the Punkin Center Travel Corridor cost estimate.

² Land acquisition in addition to what was accounted for in the Punkin Center Travel Corridor cost estimate, is included to account for re-routing Country Lane through private property.

³ Turn lane geometry for estimation purposes was derived using general design guidelines in the 2012 Highway Design Manual. A minimum storage length of 100 feet was assumed for comparison purposes, unless otherwise noted. Curb, gutter, and sidewalk is already accounted for in the Punkin Center Travel Corridor cost estimate.

**CITY OF HERMISTON, OREGON
 UMATILLA RIVER BRIDGE PRELIMINARY ENGINEERING REPORT
 U.S. 395/PUNKIN CENTER ROAD INTERSECTION IMPROVEMENTS¹
 PRELIMINARY COST ESTIMATE
 YEAR 2022 COSTS**

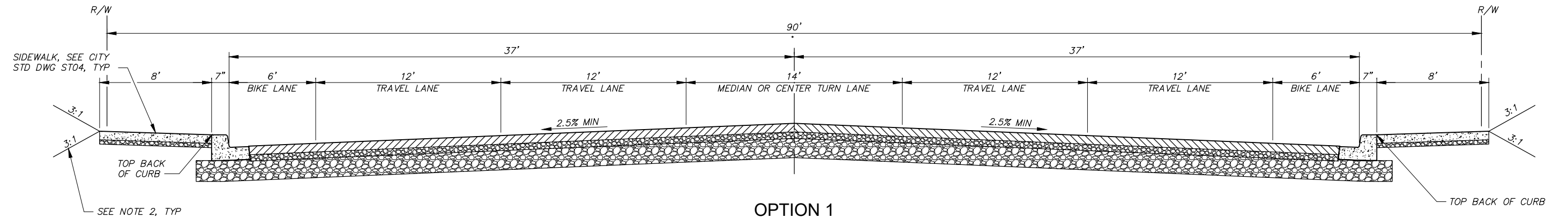
NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	\$ 8,900	All Req'd	\$ 8,900
2	Temporary Protection and Direction of Traffic/Project Safety	LS	40,000	All Req'd	40,000
3	Americans with Disabilities Act Ramps	EA	10,000	2	20,000
4	Concrete Island	LS	30,000	All Req'd	30,000
5	Utility Relocation	LS	30,000	All Req'd	30,000
Eastbound Right-Turn Lane²					
6	Concrete Curb and Gutter	LF	50	260	13,000
7	5-foot Concrete Sidewalk	LF	35	260	9,100
8	Asphalt Concrete Pavement	TON	200	70	14,000
9	Aggregate Base (12 inches)	TON	40	200	8,000
Total Estimated Construction Cost					\$ 173,000
Design and Construction Engineering @ 20%					35,000
Contingencies @ 30%					52,000
TOTAL ESTIMATED PROJECT COST (2022)					\$ 260,000

¹ Land acquisition was not included in this cost estimate as it is already included in the Punkin Center Travel Corridor cost estimate.

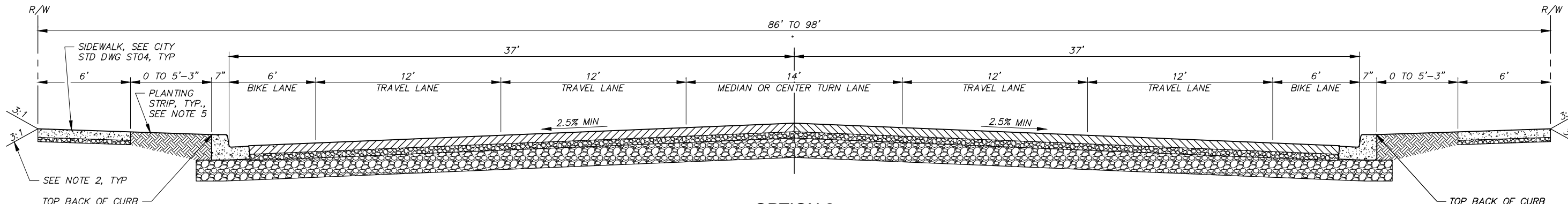
² Turn lane geometry for estimation purposes was derived using general design guidelines in the 2012 Highway Design Manual. A minimum storage length of 100 feet was assumed for comparison purposes, unless otherwise noted.

APPENDIX C
City of Hermiston, Oregon, Major Arterial
Standard Drawing

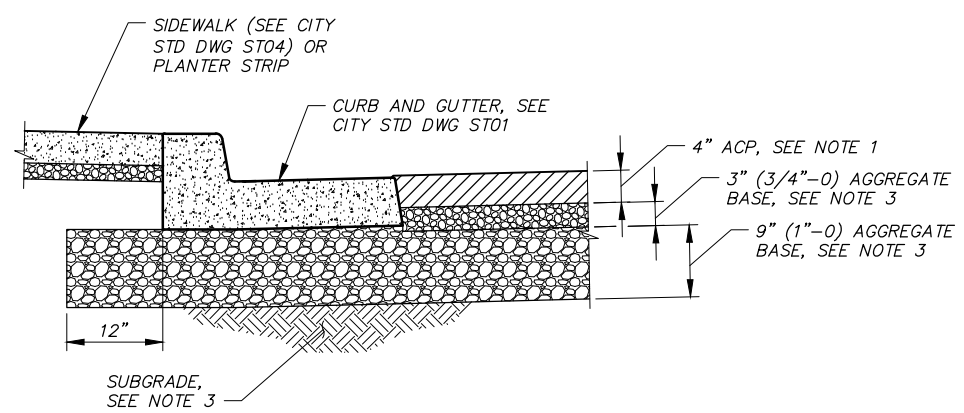
Q:\HERMISTON\736-94_CityStandardDwgs\736-94_CityStandardDwgs\UPDATED\Drafting\736-94-010ST-MAJ_ARTR-CROSS-SEC.dwg, FIG ST07, 10/22/2021 10:58 AM, GSaurbier



OPTION 1
(IN CENTRAL BUSINESS DISTRICT)
NTS



OPTION 2
(OUTSIDE CENTRAL BUSINESS DISTRICT)
NTS



PAVEMENT SECTION
NTS

NOTES

1. ASPHALT CONCRETE PAVEMENT SHALL BE CONSTRUCTED IN 2 EQUAL 2" LIFTS.
2. SLOPES SHALL NOT EXCEED 3:1 UNLESS APPROVED BY THE CITY.
3. COMPACT AGGREGATE BASE AND SUBGRADE TO 95% MAXIMUM DRY DENSITY PER ASTM D1557.
4. THE DISTANCE BETWEEN TOP BACK OF CURBS IS A CRITICAL DIMENSION. CURBS POURED IN AN INCORRECT LOCATION SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR.
5. TREES ARE PROHIBITED IN THE PLANTING STRIP.

REVISION	DATE



**CITY OF
HERMISTON, OREGON
STANDARD DRAWINGS**

**URBAN MAJOR ARTERIAL
CROSS SECTIONS**

**FIGURE
ST07**