Reedsport Waterfront and Downtown Plan

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Background Documents and Meeting Summaries (by reference):

1. Technical Memorandum 1, Inventory and Analysis
2. Technical Memorandum 2, Alternatives Analysis
3. Project Advisory Committee Meeting Summaries
4. Public Meeting Summaries

EXECUTIVE SUMMARY

Adoption of the Reedsport Waterfront and Downtown Plan completes a two-phase planning process that began during the winter of 2010-2011. The plan defines the desired character of the waterfront and downtown areas with an overall vision supported by a future development strategy. The plan recommends specific land use changes and transportation improvements for downtown revitalization and waterfront redevelopment.

The planning process included Project Advisory Committee (PAC) meetings, public work sessions, and an interagency coordination meeting with City of Reedsport and Oregon Department of Transportation (ODOT) staff. The consultant team and staff developed plan alternatives, based on input from the PAC and broader community. The alternatives were then evaluated and refined with further input from the PAC and community.

In summary, the Preferred Alternative provides for:

- Land use and transportation improvements needed over a 20-year horizon;
- New housing, including 237 multi-family housing units;
- About 100,000 square feet of new retail commercial uses;
- Roughly 112,000 square feet of new industrial uses;
- A new 100-room hotel; 60-interim RV spaces; and
- Visitor destination uses (23,000 square feet), and improved river access.
- An additional 70,000 square feet of live/work mixed-use employment space north of the downtown core for small businesses, offices, light assembly and showrooms with housing above, to develop beyond 20 years.

At build-out, the plan is expected to increases in gross domestic product ranging from $76 to $86 million per year for the local and regional economy. This includes direct and indirect/induced spending, which supports 354 direct jobs and 230 indirect/induced jobs throughout the region annually.

1. INTRODUCTION

Reedsport' is a tidewater town located eight river miles inland from the Pacific Ocean at the confluence of the Umpqua, Smith and Scholfield rivers. Its economy has shifted away from natural resource-based industry since the close of International Paper in Gardiner (1963-1999), the first paper mill on the west coast. The community recognizes the need to revitalize downtown and usher in the next wave of economic opportunity and job growth.

A STRATEGIC LOCATION

Located at the intersection of US 101 and OR 38, Reedsport anchors the west end of this important route to the Willamette Valley. Both US 101 and OR 38 are Oregon State Freight Routes, and US 101 is a National Bicycle Route.

Reedsport is also the gateway to the Oregon Dunes National Recreation Area and is one of the largest sports fishing ports on the west coast. The scenic Umpqua River Highway (OR 38) provides arguably the most direct connection between Interstate 5 and the southern Oregon Coast.

OVERALL PLAN

The Reedsport Waterfront and Downtown Plan (RWDP) proposes a revitalized Old Town and Umpqua River waterfront area through the following strategies:

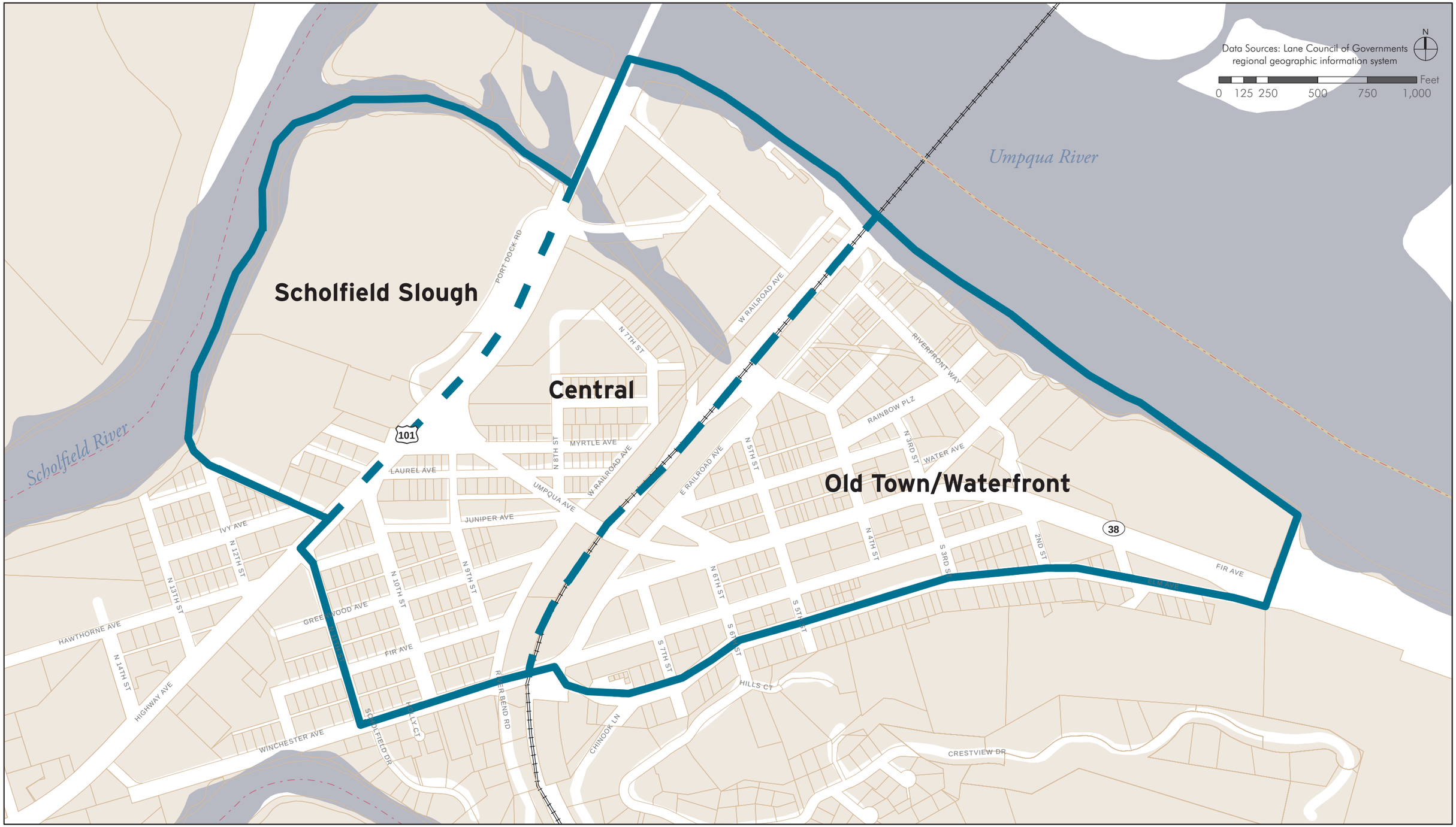
- Establish a community-based vision for local economic development
- Recommend transportation system improvements, including facilities for automobiles, pedestrians and bicyclists
- Illustrate desired streetscape and building design improvements, consistent with local economic development objectives
- Amend the Reedsport Comprehensive Plan and Transportation System Plan to implement the RWDP
- Amend Reedsport's zoning ordinance, consistent with the RWDP; some code amendments are deferred until the city completes a required coastal shorelands (State Goal 17) analysis.

PUBLIC PLANNING PROCESS

The plan process is described in the Executive Summary. Background documents and meeting summaries are on file at Reedsport City Hall.

PLAN AREA

Figures 1 – 4 illustrate the plan area, which is defined by the Scholfield Slough and 11th Street to the west, Elm Avenue to the south, and the Umpqua River to the east and north. Historically the area was designated for primarily for commercial and industrial uses, with housing limited to pockets west of the Coos Bay Rail Link. The maps depict the comprehensive plan and zoning that existed when the RWDP was developed. The RWDP, as presented in Part 2, amends the plan and zoning to implement the new vision.



Land Use Study Area
City Limits
Land Use Study Area Sub Area Boundary
Urban Growth Boundary
Water Feature
Parcels

Study Area (Figure 1 - Plan Area)

Waterfront and Downtown Plan, City of Reedsport, Oregon

REEDSPORT

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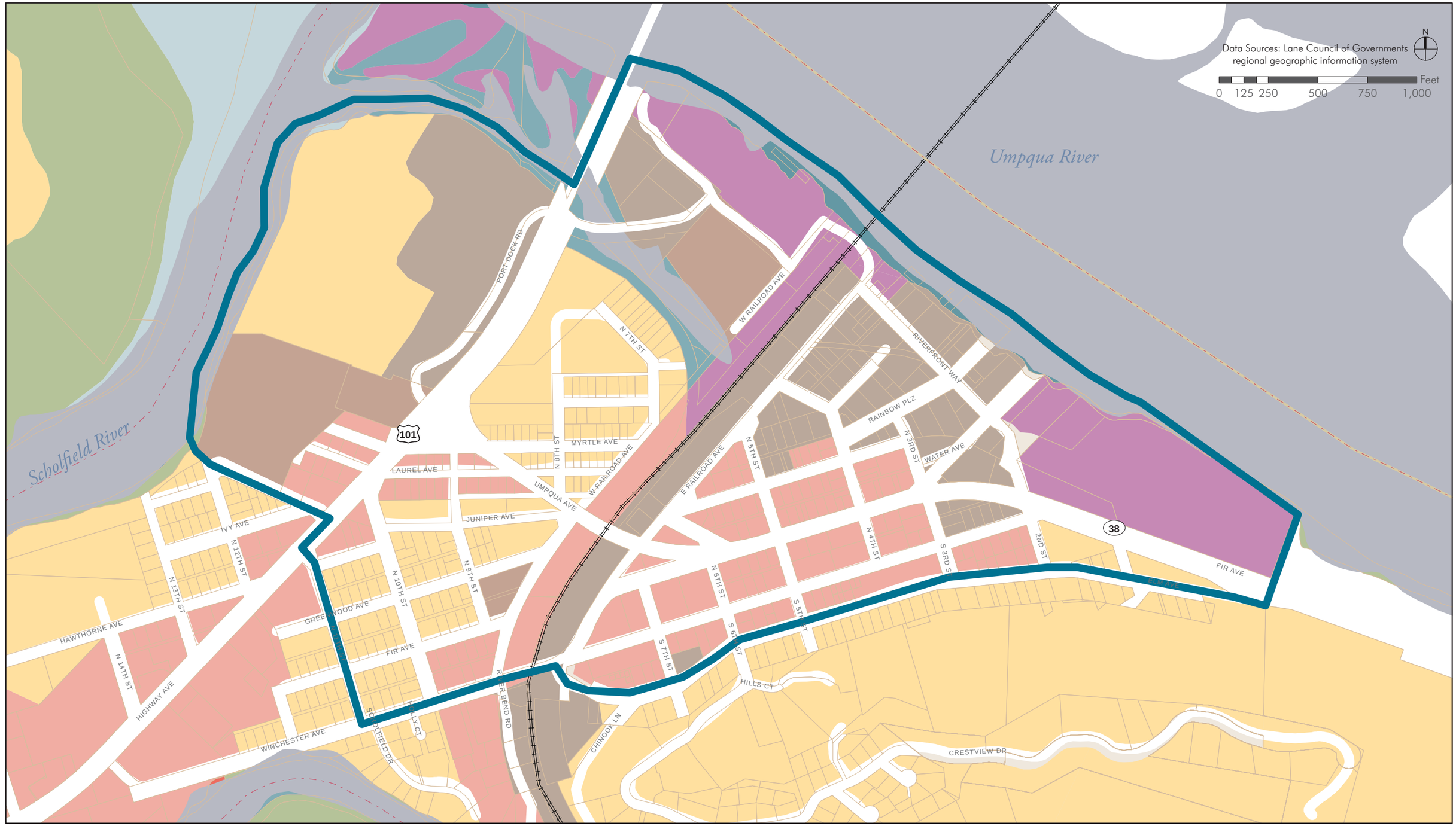

Comprehensive Plan Designations (Figure 2)

Waterfront and Downtown Plan, City of Reedsport, Oregon

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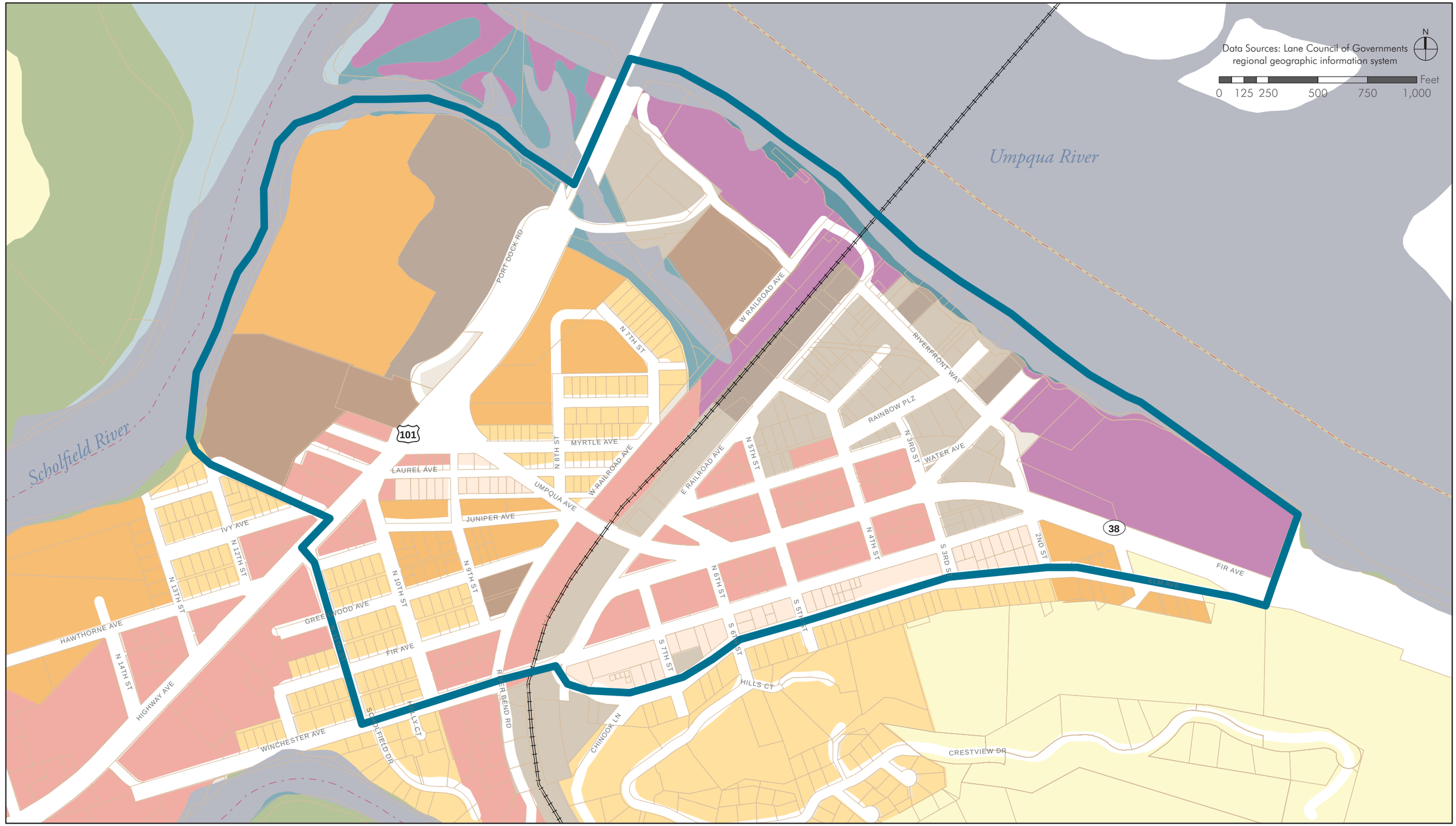

Zoning Designations (Figure 3)

Waterfront and Downtown Plan, City of Reedsport, Oregon

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Data Sources: Lane Council of Governments regional geographic information system

0 125 250 500 750 1,000 Feet

Phase 2 Study Area
City Limits
Water Feature
Urban Growth Boundary
Parcels
Arterial
Collector
Local
Below Grade
At Grade Crossing
Traffic Signal
Speed Limit

Transportation (Figure 4)

Waterfront and Downtown Plan, City of Reedsport, Oregon

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OPPORTUNITIES AND CONSTRAINTS

This plan responds to the following opportunities and constraints, as identified by the community through the plan process. **Figure 5** maps the items listed in **Table 1**; the symbols in the table correspond to those on the map.

Table 1 Opportunities and Constraints

Opportunities	
Rainbow Plaza redevelopment (Site 4)	Boardwalk expansion (Site 2)
Knife River site (Site 6)	Natural areas, Estuary and River
Rubber Plant site (Site 5)	Waterfront
Pedestrian/bike connectivity ("<->")	Umpqua Discovery Center
New gateways and signage ("*")	Scholfield Riverfront (Site 1)
Expanded boat launch (Site 3)	
Constraints/Challenges	
Coos Bay Rail Link divides plan area	Flood zone
Industrial transition area	Tsunami evacuation area
Pedestrian safety ("!")	Levee boundary and setbacks
Lack of gateways and signage ("*")	Limited waterfront visibility
Storm drainage deficiencies	Levee recertification

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Phase 2 Study Area
City Limits
Water Feature
Urban Growth Boundary
Parcels
Barrier: Levee & Railroad
Dangerous Bike/Ped Crossing
Railroad Crossing
Connections & Access
Street Trees & Streetscape Improvements
Gateway
Views
Opportunity Site

1. Potential Housing/Mixed Use
2. Discovery Center/Boardwalk
3. Boat Launch
4. Rainbow Plaza
5. Rubber Plant
6. Knife River

Opportunities and Constraints (Figure 5)

Waterfront and Downtown Plan, City of Reedsport, Oregon

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2. LAND USE PLAN

This chapter describes the Proposed Reedsport Waterfront and Downtown Plan (RWDP). The RWDP expresses the interests and desires of the community, as identified through a public planning process during 2010-2012. It will be implemented through amendments to the City of Reedsport Comprehensive Plan, Transportation System Plan, and Zoning Ordinance, as described in the following section.

LAND USE SUMMARY

Table 2 summarizes the land use envisioned by the RWDP. Those uses are illustrated in **Figure 6**[1]. The land use projections in the table are based on the economic opportunities analysis prepared for the RWDP.

Table 2 Land Use Summary

Land Use	Area/Units Total	
Employment Uses		
Commercial/Waterfront	132,863	floor area SF*
Light Industrial	149,880	floor area SF*
Total	*282,743*	*floor area SF**
Commercial Uses		
Hotel	100	hotel units
Total	*100*	*hotel units*
Residential Uses		
Multi-Family & Cottage Housing	161	dwelling units
Live/Work Units	76	dwelling units
Interim RV Park Units	60	RV sites
Total	*297*	*units/sites*
Other/Public Attractions & Amenities		
Visitor Destination	23,121	floor area SF
Total	*23,121*	*floor area SF*

- Includes 70,000 square feet of Live/Work Mixed-Use employment area likely to develop beyond the 20-year planning horizon.

[1] The project numbers in Figure 6 refer to planned transportation improvements, which are described in **Parts 3 and 5** of the plan.

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Study Area
City Limits
Parcels
Multi-Use Path/Trail
Existing Boardwalk
Boardwalk Extension
Kayak Trail
Landscaping/Vegetation
Planning Zones
Trailhead
Pedestrian Signal or Flashing Beacon
Gateway
Coos Bay Rail Link
Railroad Crossing
Signalized Intersection
New/Improved Road
Highway Enhancements
Enhanced Crossing
Public Facilities
Levee
Commercial
Light Industrial
Public/Semi-Public
Live/Work Mixed-Use
Multi-Family Housing

Preferred Concept Plan (Figure 6)

Waterfront and Downtown Plan, City of Reedsport, Oregon

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SUBAREA LAND USES

Old Town/Waterfront Subarea

- *Waterfront Commercial.* Create a new and expanded waterfront commercial area providing for improved river access and open spaces along the water's edge. (See comprehensive plan amendments in Part 6.)
- *Downtown Core.* Reinforce the downtown core with gateway and other streetscape improvements, particularly the three blocks between 3rd Street and 6th Street on OR 38. (Current zoning allows these improvements.)
- *Winchester Avenue and Residential Transition.* Maintain and enhance the commercial district along Winchester Avenue, and protect the residential district to the south of OR 38, per current zoning.
- *Railroad Industrial.* Plan for light industrial uses adjacent to the Coos Bay Rail Link and along the northern portion of East Railroad Avenue and River Front Way. Consider targeting this area for a future business park. (Current zoning allows this.)
- *Mixed-Use Commercial.* Allow mixed-use development—commercial, light industrial, and residential uses—north of the downtown core and south of the proposed light industrial area. This would allow bakeries, laundries, and other existing commercial/industrial uses that are enclosed in buildings and where outdoor storage is screened. (See comprehensive plan and zoning amendments in Part 6.)
- *Public Open Spaces.* Designate publicly owned open space properties for public use, and adopt standards for compatibility between industrial/commercial uses and adjacent open spaces, such as Rainbow Plaza. See zoning amendment recommendations in Part 6. Improve public open spaces within the downtown, as follows:
    - A gateway/plaza at the western entrance to downtown, along OR 38.
    - Rainbow Plaza, a public gathering space for residents and visitors.
    - An expanded boat launch with public parking.
    - An eastern gateway to the recreational area, which may include a park with a small fishing pier.
- *Knife River Redevelopment Opportunity Site.* Allow commercial uses, such as retail, a hotel, or other visitor attraction, on the Knife River site. Future redevelopment would orient to the Umpqua River and contain an extended boardwalk and/or multi-use trail running the length of the water's edge and connecting to adjacent properties. Access to the site is possible from two new roads: an extension of Water Avenue and an access road off OR 38 through the levee at existing Gate No 6. (A comprehensive plan amendment to allow commercial uses in this location requires a Goal 17 analysis. See Part 6.)

Scholfield Slough Subarea

The Schofield Sough Subarea is comprised of three land use districts, as follows:

- *Residential.* The residential area between the Scholfield Slough, McIntosh Slough, and the levee, at northwestern plan area boundary, provides for approximately 161 multifamily and cottage housing units. Development would be setback from the sloughs behind vegetative buffers. The buffers would extend around the northwest and northeastern edges of the residential area, creating a boundary between residential and industrial uses, and allowing for an open space connection to the waterfront. A multi-use path running along the sloughs would connect to both areas. (Current zoning allows the proposed land uses.)
- *Light Industrial/Interim RV Park.* The light industrial area occupies approximately 6.2 acres along the eastern boundary of the sub-area and abuts the northern half of Port Dock Road. The area is accessed by a new drive of Port Dock Road, which would also access the residential area. (Current zoning allows the proposed land uses.)
- *Tourist Commercial.* A commercial area designated for visitor/tourist commercial services occupies 3.7 acres (1.3 acres net of roads) adjacent to the Oregon Dunes Visitor Center on Port Dock Road. This area is east of proposed residential area described above, and is separated from the light industrial area by the new access road connecting to Port Dock Road.

Central

The RWDP proposes no land use changes to the Central subarea, which is residential and industrial in nature.

DEVELOPMENT PROGRAM DETAIL

Table 3 describes the proposed development program, which is based on a 20-year planning horizon. It is intended to provide general parameters for planning. The projections should be reviewed periodically.

Table 3 Development Program Detail

Land Use	Gross Sq Ft	Acres	Site Coverage	Bldg Foot-print	Avg. stories	Net Developed Sq Ft	Units *	units/ acre
Multi-Family and Cottage Housing	536,746	12.32	20%	107,349	1.5	161,024	161	13.1
Commercial	57,817	1.33	25%	14,454	1	14,454	n/a	n/a
Light Industrial/Interim RV Park	269,700	6.19	20%	53,940	1	53,940	n/a	n/a
Light Industrial	288,938	6.63	20%	57,788	1	57,788	n/a	n/a
Live/Work Mixed-Use	406,964	9.34	25%	101,741	1.5	152,611	76	8.2
Waterfront Commercial (west)**	8,500	0.20	25%	2,125	1.5	3,188	n/a	n/a
Waterfront Commercial (east)	513,792	11.80						
Commercial			10%	51,379	1.5	77,069	n/a	n/a
Hotel/Cabins			7%	35,965	1.25	44,957	100	n/a
Visitor Destination			3%	15,414	1.5	23,121	n/a	n/a
Park/Open Space	299,513	6.88	n/a	n/a	n/a	n/a	n/a	n/a

*Assumes 1,000 SF per dwelling unit and 450 SF per hotel unit.
** Excludes Umpqua Discovery Center and adjacent parking lot.
na = not applicable.
tbd = to be determined in the future after public and property owner input.

The figures in Table 3 are the same as those used in preparing the RWDP traffic impact analysis contained in Appendix B. It

3. STREETSCAPE PLAN

This following concepts are intended to create streets that safely accomodate motor vehicles, pedestrians and bicyclists, while making the downtown more attractive to visitors, residents, businesses, and other potential investors. The concepts also offer flexibility, so that the options can be phased.

This streetscape concepts are presented from west to east, as follows. The project numbers relate to **Figure 6** (page 17). **Table 4** (page 39) contains cost estimates for selected projects.

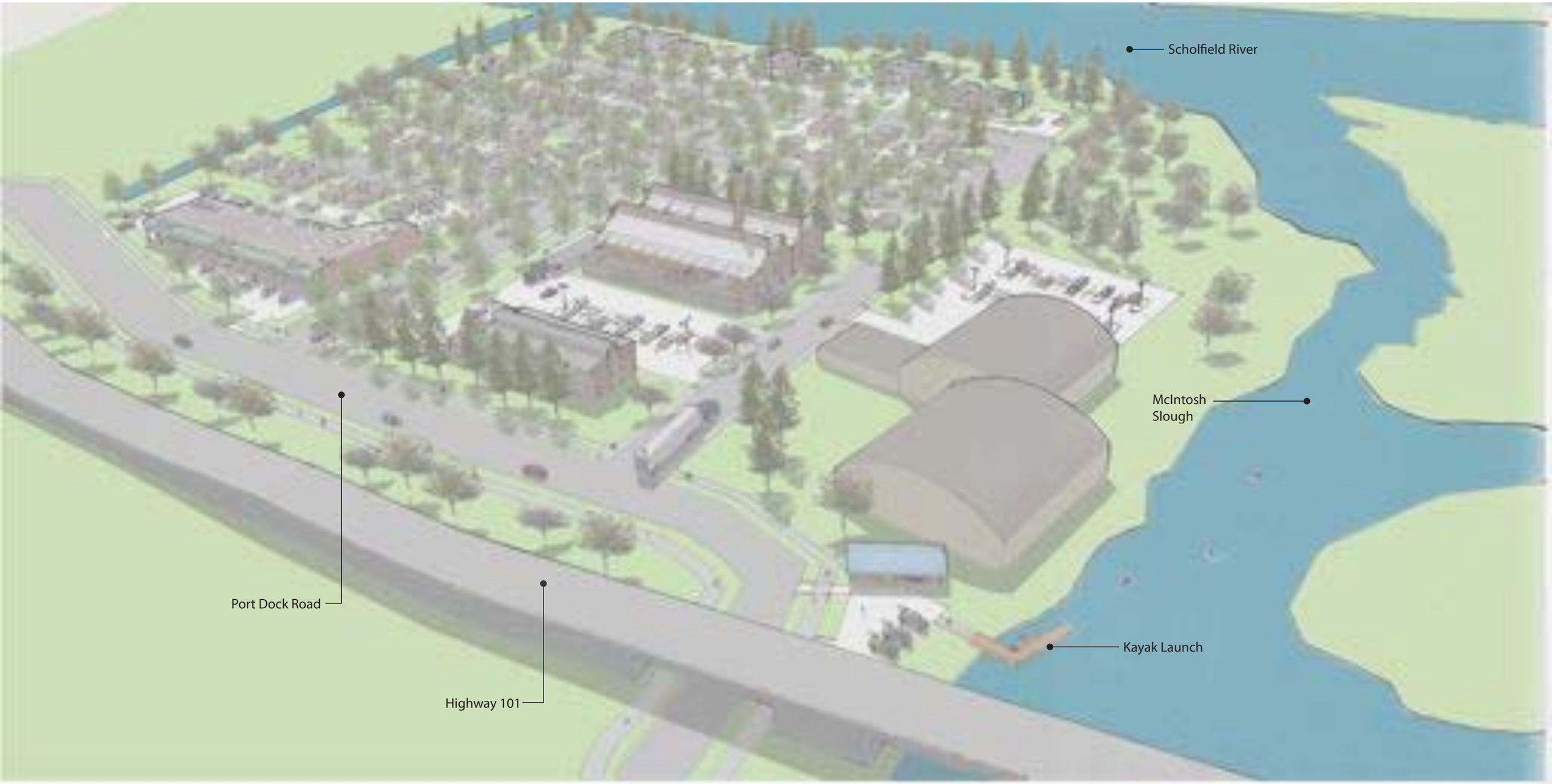
- Port Dock Road in Scholfield Slough Area
- Umpqua Avenue (OR 38) in Central Area
- East Railroad Avenue in Old Town/Waterfront Area
- Umpqua Avenue (OR 38) in Old Town/Waterfront Area
- River Front Way in Old Town/Waterfront Area

PORT DOCK ROAD IN SCHOLFIELD SLOUGH AREA

Streetscape improvements along Port Dock Road **(Project #2)** support the needs of light industrial uses, as well as commercial and resiential development. The plan provides for landscaped planting strips, pedestrian-scale lighting and other street furnishings that promote pedestrian visibility and traffic calming, particularly in the vicinity of US 101 and the Visitors Center. **(Figure 7)**

The portion of the new street adjacent to the proposed commercial area should have a high level of design for aesthetics and pedestrian safety, including crosswalks and well-lit public areas. The portion of the new road adjacent to the multifamily residential area should additionally include landscaped planting strips, decorative pavement, trash receptacles and other features that help define the transition from commercial to residential uses.

The plan for the Scholfield Sloug area also includes a multi-use path. This is intended to improve local access for future employees and residents, as well as provide an alternate route for cyclists entering Reedsport on Highway 101. The path should contain pedestrian-scaled lighting and picnic areas.



Scholfield Slough Perspective (Figure 7)

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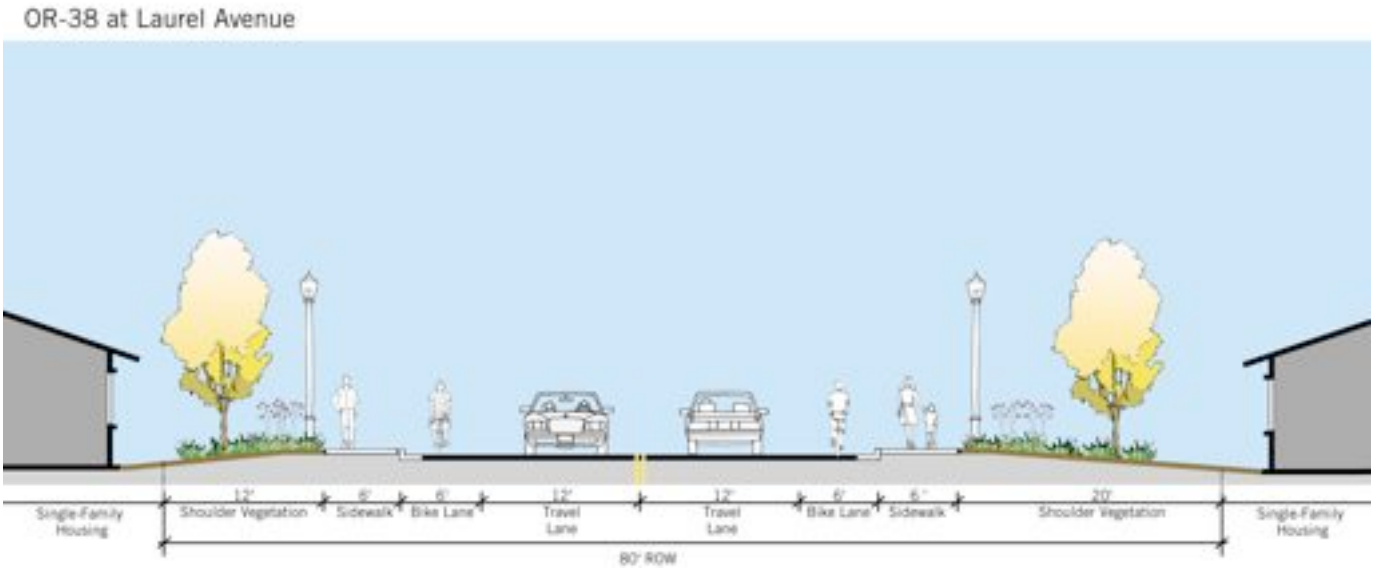
UMPQUA AVENUE (OR 38) IN CENTRAL AREA

The plan for Umpqua Avenue (OR 38) enhances its function as a gateway **(Project #6)**, a through route for cars, trucks, bikes, and pedestrians **(Project #5)**, and a means of local residential access **(Project #7)**. **Figure 8** shows the typical street section for OR 38 through the Central Area, including pedestrian and bicycle facilities, and a landscaped buffer to minimize visual and other impacts to adjacent residences. The intent is to provide a safer and more appealing route for pedestrians and bicyclists. At the street's connection with US 101, the proposed design includes new landscaping and a gateway feature to welcome visitors into the Old Town/Waterfront.

Figure 8 Central Umpqua Avenue (OR 38) Typical Section



On the following page, **Figure 9** illustrates the gateway proposed for Umpqua Avenue/OR 38 east of Hwy 101. The gateway, planned for the eastbound approach to the railroad and entry to downtown, is intended to greet motorists turning east off of US 101 and headed to the Downtown core.

Given higher traffic speeds on US 101, it will be important to add signage and wayfinding elements along US 101 leading up to the approach to this gateway feature. The gateway is envisioned as a sculpture, monument, or other physical structure set off by street trees and landscaping.

Other landscaping improvements proposed within this section include addition of sidewalks and street trees for noise buffering along Umpqua Avenue, between US 101 and 6th Street. Where there is insufficient room to place the landscape buffer between the sidewalk and roadway (i.e., due to the roadbed grade), the buffer may be placed along the outside of the sidewalk, per Figures 8 and 9.

Note: While the City supports these roadway design features, ODOT review and approval is required for any modifications to OR 38 and US 101.

Figure 9 Umpqua Avenue Western Gateway

EAST RAILROAD AVENUE IN OLD TOWN/WATERFRONT AREA

The plan for East Railroad Avenue **(Projects #4, #6, and #12)** is intended to improve the compatibilty of light industrial uses adjacent to the live/work, mixed use area to to south. Planned improvements include widening of the roadway within the existing right-of-way limits, to construct a shared multi-use path and to provide more truck maneuvering area. The plan also provides landscaping to buffer the railway from adjoining residential and live-work uses. **Figure 10** shows the typical street section as proposed. (The landscape buffer is on the west side of the street, and the multi-use pathway is on the east side.)

Figure 10 East Railroad Avenue Typical Section

UMPQUA AVENUE (OR 38) IN OLD TOWN/WATERFRONT AREA

Umpqua Avenue (OR 38) is an important thoroughfare used to access Reedsport's downtown and its waterfront. Two proposed gateway features (Project #6) along Fir/Umpqua will help guide vehicular and pedestrian traffic towards the downtown core. The gateways should be designed to complement each other and provide navigational clues to drivers, bicyclists and pedestrians.

The eastern gateway, proposed at the intersection of OR 38 and Winchester Avenue, should include a combination of improved crossings, public art, landscaping and signage (**Figure 11**). The intersection connects to future waterfront commercial development north of the levee along a new Knife River Site access road. This gateway should incorporate features highlighting Reedsport's heritage as a tidal town, its commerce, and recreational amenities.

Figure 11 Westbound OR 38/Winchester Gateway

The central downtown gateway planned at East Railroad and Umpqua Avenues where the present day Veterans Memorial is located. This gateway includes street trees, a pedestrian plaza or small park and other landscape features to better define the western extent of downtown.

Other streetscape improvements include new curb extension "bulb-outs" **(Project #7)** at the intersections of Fir Avenue (Hwy 38) and 3rd, 4th, 5th and 6th Streets (**Figure 12**). The bulb-outs reduce crossing distances for pedestrians while making them more visible to motorists. Well-appointed crossings can help calm traffic and slow speeds through the downtown core, thereby improving pedestrian safety. Space should be provided at each curb bulb-out for plantings and furnishings, such as benches, trash receptacles, signage, and light posts **(Project #11)**.

Note: While the City supports these roadway design features, ODOT review and approval is required for any modifications to OR 38 and US 101.

Figure 12 View North from OR 38/3rd Ave. to Waterfront

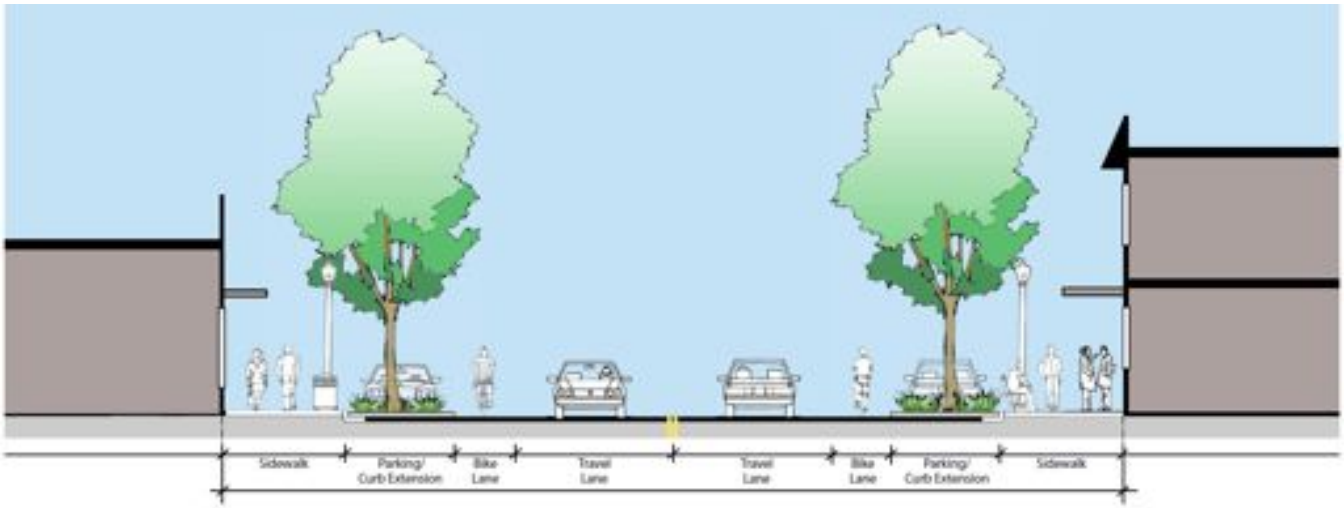
A pedestrian signal, rapid flashing beacon, or similar device is planned at 3rd Street **(Project #7)** to create safer and more direct access to Rainbow Plaza from the downtown core (**Figures 12 and 13**).

Note: While the City supports these roadway design features, ODOT review and approval is required for any modifications to OR 38 and US 101.

Figure 13 Pedestrian Signal/Crosswalk OR 38/3rd St (View West).

Figure 14 gives a typical downtown street section with curb extensions that "shadow" or match parallel parking width.

Figure 14 OR 38 Downtown Intersections with Curb Extensions



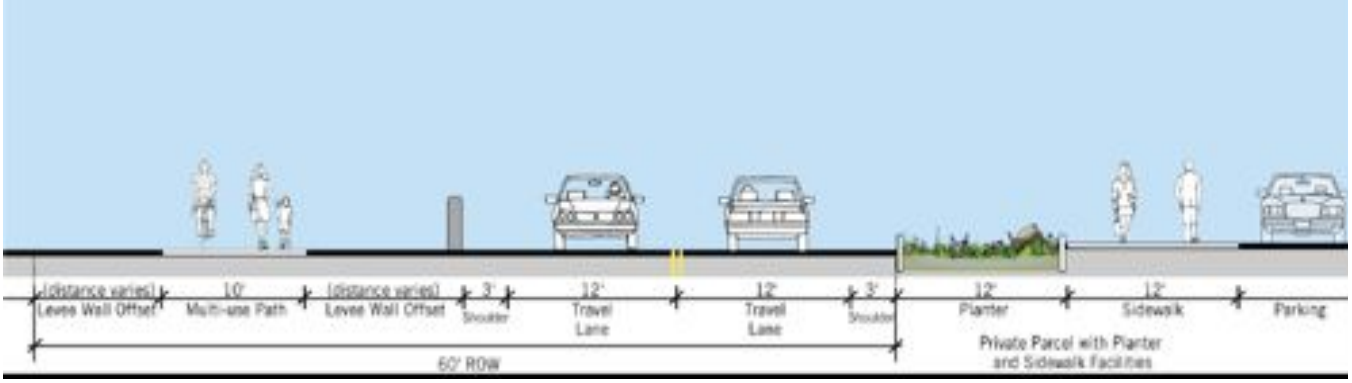
RIVER FRONT WAY IN OLD TOWN/WATERFRONT AREA

The Waterfront Area provides substaintial opportunity to attract visitors and strengthen Reedsport's unique identity as a riverfront town. With anticipated future redevelopment along the riverfront, and the planned improvements to Rainbow Plaza, River Front Way is poised to become an even more important travel route for pedestrians, bicyclists and local vehicle traffic. The types of land uses planned along River Front Way will require a street that is safe and inviting to pedestrians and bicyclists, while allowing for motorized vehicle access for residents, businesses and visitors.

As shown in **Figure 15**, on the river-facing edge of River Front Way, private landowners will be encouraged to extend the existing 12-foot sidewalk and 12-foot roadside planter currently located at the Umpqua Discovery Center **(Project #13)**. This planting area can be redesigned to manage urban stormwater runoff by allowing water to enter along both sides of the planter via perforated curbs and the choice of appropriate planting material. The 12-foot wide travel lanes along River Front Way are flanked by 3-foot (minimum) width shoulders to accommodate cyclists and pedestrian crossings.

The position of the concrete levee wall remains unchanged. Beyond the levee, an expanse of land within the public right of way is currently used for parking, storage and other undefined uses. As the riverfront area becomes more established as a destination, this publicly owned land should be considered for future improvements to the pedestrian and bicycle network.

Figure 15 River Front Way



On the following page, **Figure 16** shows a bird'e eye perspective of how the waterfront may build out under the plan.

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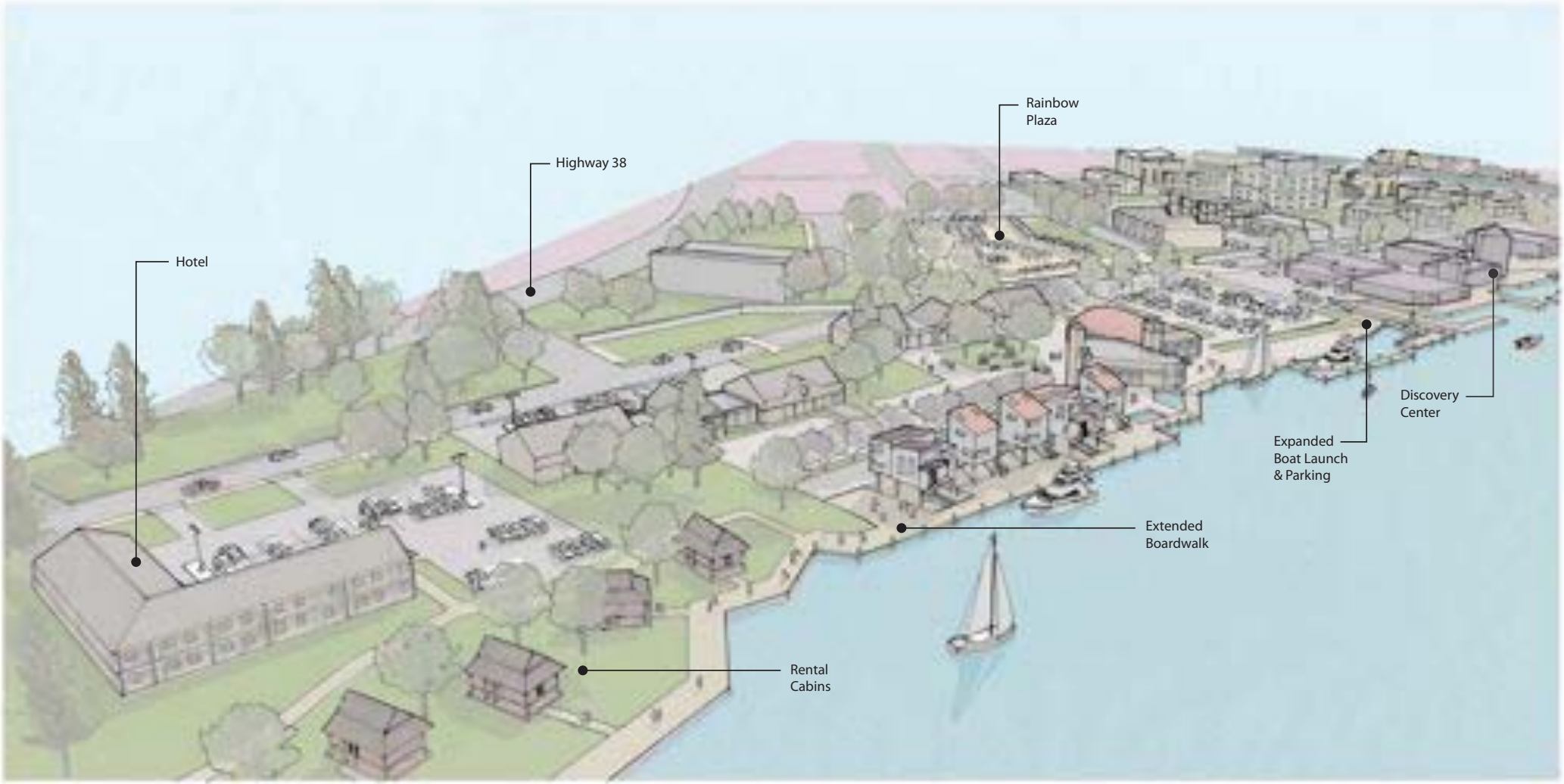

Waterfront Perspective (Figure 16)

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4. BUILDING DESIGN

The RWDP is predicated on the idea that private building development or redevelopment will follow public investment. At the time of publication of this plan, the most significant barrier to building development was the need for levee recertification; a recertified levee would significantly improve Reedsport's position for development because it would make it possible to obtain flood insurance on new buildings.

In addition, there is need for infrastructure improvements, particularly the transportation and streetscape projects outlined in this plan, but also storm drainage improvements, as outlined in the City's Capital Improvement Program. The City of Reedsport, Reedsport's Urban Renewal Agency, the Port of Coos Bay, and ODOT can all play a role in improving conditions for new building development in the plan area.

Figure 17 Typical Storefront Building Design Elements

BUILDING DESIGN GUIDELINES

Design guidelines can help a community establish a distinctive look or brand. Guidelines can also ensure that public funds are used appropriately, for example, when they are used in awarding facade improvement grants. When adopted as code, guidelines can require new development conform to a specific look or aesthetic; such guidelines, for example, might promote a "tidal town" theme, resulting in a waterfront that is welcoming and fun for visitors as well as residents.

Public input during production of this plan suggested that the City was not in a position to adopt new design guidelines; economic conditions made it impractical to do so at that time. However, the Project Advisory Committee expressed that Reedsport should have guidelines addressing view protection from important vantage points in Old Town and in the South Hill residential area. Where guidelines are incorporated into code, they should be specific and measureable.

Over time, the City should consider adopting the following guidelines in order to ensure that future development is consistent with the RWDP:

- New and redeveloped buildings in highly visible locations, such as at designated gateways, per Figure 6, and on properties facing OR 38, should be placed at or near the sidewalk and have appropriate storefront design (e.g., front entrance, windows, pedestrian awnings/canopies, etc.).
- For industrial buildings, facade improvements should be simple and focus on general aesthetic changes while maintaing the building's utilitarian purpose. Outdoor storage areas and yards should be kept clean, and vegetated buffers should be provided between and adjacent residential, public, and commercial uses.

- The focus for residential exterior remodels should be on general home repairs/maintenance, weatherization, and 'curb appeal' improvements (e.g., porch, window box, paint, etc.). Existing neighborhoods can be significantly improved with simple aesthetic alterations to buildings and landscaping.
- Several areas within the Old Town/Waterfront area can also benefit from adaptive reuse, or the conversion of underutilized or obsolete buildings to flexible live/work spaces. Wherever practical, ground floor street-facing commercial spaces should be reserved for commerical uses. (See also, zoning amendment recommendations for residential uses in Part 6.)
- Conversion of ground floor retail spaces to residential uses has resulted in heavy window coverings in storefronts, long-term parking in higher demand on-street spaces, and residents loitering outside commercial buildings. Any modifications to these spaces should accommodate the short-term needs of owners and tenants, while allowing for commercial uses in the future as market demand increases.
- Complementary materials and colors should be encouraged. Awnings can make buildings more attractive, and improve their function by providing protection from inclement weather. Existing buildings could benefit from a comprehensive facade (building exteriors) improvement program with separate approaches for commerical, industrial and residential development. The program could include low interest loans, grants, design assistance and other incentives.

5. TRANSPORTATION PLAN

This chapter summarizes the transportation improvements planned for the RWDP area, as illustrated in **Figure 6** (page 17). The project numbers below relate to the numbers in Figure 6 and the cost estimates in **Table 4**, on page 39.

Because the RWDP provides for new land uses and increases the city's development capacity—approximately 237 multi-family housing units, 100,100 square feet of retail commercial uses, 111,728 square feet of industrial uses, a 100-room hotel, and visitor-destination uses—the city was required to prepare a traffic impact analysis. The analysis contained in **Appendix B** conforms to Oregon Department of Transportation (ODOT) requirements.

STATE HIGHWAY IMPROVEMENTS

While ODOT staff was involved in developing and reviewing the report, the agency requires the following disclaimer regarding the RWDP:

Any planning concept that potentially reduces vehicle-carrying capacity on a State facility will require further evaluation at time of implementation to ensure compliance with ORS 366.215. The City of Reedsport supports the projects recommended, but not does adopt any project on a State Facility. (Only ODOT can adopt a project on a State Facility.) Similarly, the Oregon Department of Transportation adopts only projects on State Facilities as part of this plan.[2]

The following recommendations are based on a traffic analysis, which forecasts total traffic within the plan and evaluates how the transportation system will operate through years 2025 and 2033. The analysis includes traffic from existing development and new development. In short, each of the plan area intersections is forecast to operate acceptably in the future, with the exception of the OR 38/Winchester Avenue intersection, as described below.

OR 38/Winchester Avenue Intersection

With additional development allowed through the zone changes contained in the RWDP, the intersection of OR 38/Winchester Avenue is forecast to operate at an unacceptable level-of service (above capacity) by the year 2025. Improvements such as construction of a traffic signal or similar intersection capacity improvement **(Project #3)** would be sufficient to restore traffic operations to meet ODOT and City of Reedsport standards at this intersection. Other improvements such as adding turn lanes would be less effective. The estimated cost of a traffic signal is $300,000.

ODOT Region 3 will need to be complete additional study at least three years prior to the anticipated improvement need.

[2] Letter from ODOT Region 3 to City of Reedsport, dated September 28, 2012.

OR 38/US 101

By the year 2033, a new traffic signal controller will be needed at the intersection of OR 38/US 101. The signal controller, which would be installed by a developer as mitigation for traffic impacts to the intersection **(Project #14)**, would result in improved efficiency at the intersection.

ACCESS MANAGEMENT

There are three existing locations where ODOT access spacing requirements are not met or where access is proposed to change, as follows:

Fir Avenue and 6th Street at OR 38

The Fir Avenue and 6th Street connections to OR 38 are within 40 feet of each other, about 300-400 feet east of East Railroad Avenue. Both Fir Avenue and 6th Street carry very low traffic volumes and the safety analysis did not reveal a pattern or magnitude of accidents indicating a problem. Where Fir Avenue and 6th Street access OR 38, the City uses Fir Avenue as a staging street for parades; and 6th Street completes the street grid and provides access to several properties.

Given that there is not currently a safety problem, and given the benefit of both streets accessing OR 38 for public purposes, no action is recommended. As traffic grows on OR 38, it may be desirable to re-channelize the Fir Avenue approach by installing curb extensions, thereby reducing the width of its approach to OR 38 and "sea of pavement" that pedestrians encounter when traversing this intersection.

Sugar Shack Cafe at OR 38

A private driveway to the Sugar Shack Cafe intersects OR 38 from the south side within 10 feet of 3rd Street. The Sugar Shack Cafe has alternative access on 3rd Street, and the private driveway on OR 38 (within 10 feet of 3rd Street) is redundant. In the event that redevelopment is proposed on this property or this section of OR 38 is reconstructed, it is recommended that this driveway be closed. Prior to a land use action or road construction, this driveway should remain unchanged.

Elm Avenue and 2nd Street at OR 38

Note: This project should be evaluated further for potential wetland impacts and property access needs.

Currently, 2nd Street intersects with Winchester Avenue about 50 feet south of OR 38. It is recommended that 2nd Street be disconnected from Winchester Avenue to improve intersection safety. Elm Avenue should be connected to OR 38 at the Gate 6 intersection. This access point, about 750 feet east of the Winchester Avenue intersection, complies

with ODOT's sight distance and access spacing requirements.

In conjunction with the 2nd Street closure at Winchester Avenue, direct driveway access to OR 38 for the County Road Maintenance Yard is recommended. This low-volume driveway would be located midway between Winchester Avenue and Gate 6, thereby minimizing conflicts with other intersections. The driveway would meet ODOT's sight distance and access spacing requirements. It would also accommodate county maintenance trucks without the trucks having to use local streets to access OR 38, thereby improving livability for the adjacent neighborhood.

LOCAL STREET NETWORK

The RWDP contains the following local street connections, extensions, and modifications. The improvements are recommended in order to reduce turning movement conflicts, provide sidewalk connections, and calm vehicle traffic. The project numbers refer to the numbers in **Table 4**.

- Laurel Avenue – US 101 to OR 38 **(Project #1)**: possible traffic calming treatments and parking replacement/mitigation
- River Front Avenue – extend to OR 38 at Gate 6 as right-in/right-out only access **(Project #16)**
- Connect Elm Avenue to OR 38 at Gate 6 **(Project #9)**
- Disconnect 2nd Street from Winchester/2nd/OR 38 intersection – **(Project #8)** *Note: This project should be evaluated further for potential wetland impacts and property access conflicts.*
- Realign Elm Avenue Winchester Avenue intersection **(Project #10)**
- East Railroad Avenue – OR 38 to River Front Way **(Project #4)** – widen to meet City's local street standards, with one sidewalk on the east side.

PARKING

Generally, there is sufficient parking during typical weekday conditions to satisfy demand. The RWDP address two areas of concern related to long-range parking needs, as follows:

Special Events

During the Chainsaw Carving Festival visitors may be required to walk as far as three blocks to Rainbow Plaza. Given that the festival is the highest parking generator in the year, this level of walking is reasonable and expected by visitors. In conclusion, parking supply in the downtown/waterfront area is sufficient to accommodate peak demand conditions.

Boat Launch

The boat launch east of the Umpqua Discovery Center currently has insufficient parking to satisfy peak demands, particularly during fishing season. In 2012, there were approximately 30 total parking stalls—16 for cars-with-trailers and 14 car-only—in an unimproved lot (poorly maintained asphalt and part gravel).

The boat launch parking lot should be expanded as designed in the two alternative plans prepared by the Oregon State Marine Board, with 41-42 car-trailer parking spaces. This should be sufficient for most peak demand times. Any expanded parking area should be setback from the riverfront to provide room for a planned waterfront trail and boardwalk with landscaping (20-30 feet), and for future small-scale, water-oriented commercial and tourist support uses.

MULTI-USE PATH

The RWDP provides for an expanded Levee Loop Trail. This multi-use pathway system is designed to complement the Scholfield River Multi-Use Trail envisioned in the 2006 TSP (amends TSP Figures 5-1 and 6-1).

The Levee Loop Trail provides an all-weather, paved surface on the existing levee trail adjoining Champion Park and the Visitors Center, and connecting to existing on-street facilities, where painted stencils and wayfinding signs will guide trail users. This "bow tie" path system includes an East Levee Loop (E. Railroad Ave. to River Front Way, and 2nd Street to Winchester Avenue west to US 101), and a West Levee Loop (14th Street to Hawthorne to 13th Street and Levee, including Port Dock Road to the Scholfield Slough frontage on Mast Brothers site west of US 101). Key elements required to connect missing links in the trail and provide feeder routes include:

- A Laurel Avenue/Coos Bay Rail Underpass for bicycles, pedestrians and emergency vehicles **(Project #18)**
- OR 38 Bike lanes and sidewalks, from 6th to US 101
- OR 38 and Winchester Curb Extensions, on OR 38 at 3rd, 4th, 5th and 6th and on Winchester at 4th and 5th (with flashing beacon or similar treatment at 3rd)

The Levee Loop Trail does not include the Port of Umpqua Industrial Park, between US 101 and the Coos Bay Rail Line as shown conceptually in the 2006 Transportation System Plan (TSP), due to potential conflicts with heavy marine industrial uses in that area. The Levee Loop Trail shown in the RWDP (Figure 6) is a refinement to that TSP project.

WATERWAY CONNECTIONS

The following waterway connections are part of the RWDP:

Boat Launches

The City Boat Launch dock and parking area should be improved. The boat launch project has been submitted to the Oregon State Marine Board for a grant, which was pending as of the publication of this plan.

Port Dock

The Port Dock located at Fred Wahl Marine will remain in order to serve transient moorage and ship repair needs. No changes are proposed.

Kayak Trail

A kayak trail is proposed from the McIntosh Slough to the Scholfield Slough. A kayak launch area would be located just west of US 101 at the Port Dock Road undercrossing. Currents in the sloughs are considerably slower and more suitable for leisurely kayaking than those of the Umpqua River. The northern launch on the Mast Brothers property could be supported by commercial uses along Port Dock Road, such as a kayak shop or other concessionaire and visitor support services in the vicinity of the Oregon Dunes Visitors Center. The water trail would provide another way to navigate downtown Reedsport, as Scholfield Slough wraps in close proximity to Winchester Avenue. A second kayak launch potentially could be located at the Coho RV Park.

TRANSPORTATION IMPROVEMENT COSTS

Table 4 gives preliminary cost estimates for transportation-related improvement projects, including levee and stormwater improvements needed to support planned land uses and transportation improvements. Please refer to **Appendix B** for detailed project descriptions.

Table 4 Transportation Improvements - Preliminary Costs

RDWP Transportation improvements (Project Numbers Refer to Figure 6)	Prelim Cost Estimate (in $1,000) [1]
1. Laurel Avenue traffic calming	$5
2. Levee Loop Trail: bike/pedestrian path along levee and connecting E Railroad Ave, Water Front Way, 2nd Street, Winchester, 14th Street, Hawthorne Ave, 13th Street, Champion Park/Visitor Center Levee (pave) to Port Dock Road to Scholfield and McIntosh Slough frontages west of US 101	$80
3. OR 38/Winchester Avenue traffic signal or similar capacity improvement	$300
4. Railroad landscape buffer	$60
5. OR 38 from 6th to US 101 – full improvements per ODOT plans	$2,300[2]
6. Gateways (3 landscape features)	$85
7. Bulb-outs (5 standard and one with Rectangular Rapid Flash Beacon (RRFB) or similar device @ OR/38 and 3rd)	$162[3]
8. Disconnect 2nd Street from Winchester	$30
9. New OR 38 eastern access at Knife River/Gate 6 as right in/right out	$80[5]
10. Realign Elm at Winchester for right angle	$100[6]
11. OR 38 way finding and street furniture	$280
12. East Railroad Ave from OR 38 to River Front Ave (full local street with sidewalks)	$1,200[7]
13. Riverfront boardwalk extension: Umpqua Discovery Center west to RR and east to Knife River site	$1,000[8]
14. US 101/OR 38 Intersection improvements	-[9]
15. Realign 2nd Street north into Knife River site	$80[4]
16. Connect Elm to OR 38 at Gate 6	$100
17. Extend River Front Way to Gate 6	-[10]
18. Multi-use path under railroad at Laurel	$65[11]
TOTAL	**$5,927**

Footnotes:
1. Estimated in 2012 US Dollars.
2. ODOT's estimate of the full cost of widening, sidewalks, bike lanes, streetlights, and local intersecting street realignments is $2,300,000. An interim project may be constructed at lower cost of an estimated $436,000.
3. Bulb-outs (one on either side at 4 locations at $10,000 ea.), plus signing striping [$2,000] plus RRFB [$40,000].
4. Construct 100' approach built to City standard 28' curb-to-curb section + 5' sidewalks + 5' buffer [38' wide x $15/sf x 100' long x 1.2 contingency =$68,400 + $10,000 misc. street realignment at intersection].
5. Construct 100' approach built to City standard 28' curb-to-curb section + 5' sidewalks + 5' buffer [38' wide x $15/sf x 100' long x 1.2 contingency =$68,400 + $10,000 misc. street realignment at intersection].
6. Assumes City owns right-of-way, planning-level cost for street reconstruction plus signing striping.
7. Construct 28' street with two 5' sidewalks x $15/sf x 1700' x 1.2 engineering/contingency.
8. Based on a 1,260-foot long 12-foot wide multi-use path with approximately ½ constructed on piers over the Umpqua River (at an average cost of about $55/sf X 1.25 (engineering and contingency).
9. Assumed to be funded within ODOT maintenance budget.
10. Cost assumed to be borne by developer.
11. Construct 12' asphalt multi-use path/emergency drive [350' long x 12' wide x $12/sf x 1.2 contingency = $60,500] plus signing and bollards [$5,000 for signing and bollards].

6. COMPREHENSIVE PLAN AND ZONING AMENDMENTS

This chapter contains amendments to the City of Reedsport Comprehensive Plan and Transportation System Plan, and recommended zoning ordinance amendments, required to implement the RWDP.

PROPOSED COMPREHENSIVE PLAN MAP AMENDMENTS

Comprehensive Plan map changes are proposed as listed in **Table 5** and illustrated in **Figure 18**. The 16.29-acre Knife River site is presently designated Water-Dependent Industrial, and conversion of this site to Commercial requires a Goal 17 Coastal Shorelands analysis to meet state law prior to a plan map amendment. The remaining plan amendments, converting 13 gross acres (10.5 after subtracting streets) from industrial to commercial, are to be adopted with the RWDP.

Conversion of Industrial Land

The 2009 *Reedsport Economic Opportunity Analysis (EOA)* findings recommend the conversion of 10.6-acres of industrial land to other uses, based on an oversupply of industrial land[3]. It also identifies a need for 24.6 acres of commercial land. The Waterfront and Downtown Plan is consistent with both findings, while maintaining industrial designations for the Port of Umpqua Industrial Park and industrial land east of E. Railroad Avenue.

New Mixed-Use Commercial Designation

This plan also proposes allowing enclosed light industrial uses in some areas receiving the commercial designation, such as the areas designated Live-Work/Mixed-Use. The Live/Work area (Commercial Mixed Use zone) would allow both residential and employment uses. This could provide for approximately 70,000 square feet of employment uses assuming 50% of floor space is developed with employment uses.

Key Redevelopment Sites

This plan implements the EOA findings for key redevelopment sites, as follows:

1. Allow single-family cottage cluster developments in addition to multifamily housing in the residential area on the Mast Brothers site (Scholfield Slough).

[3] The 2009 Reedsport EOA concludes that the City has a net additional land need for 24.6 acres of buildable commercial-zoned land, and a net surplus of 10.6 acres of industrial-zoned land. The EOA recommends that the City consider the following options: "1) converting the existing vacant residential land (especially multifamily zoned land) to commercial; 2) using the redevelopment district to acquire existing underutilized commercial properties and/or vacant buildings and making them available for new commercial development; or 3) re-zoning the Water-Dependent Industrial (WDI) zoned land to commercial.

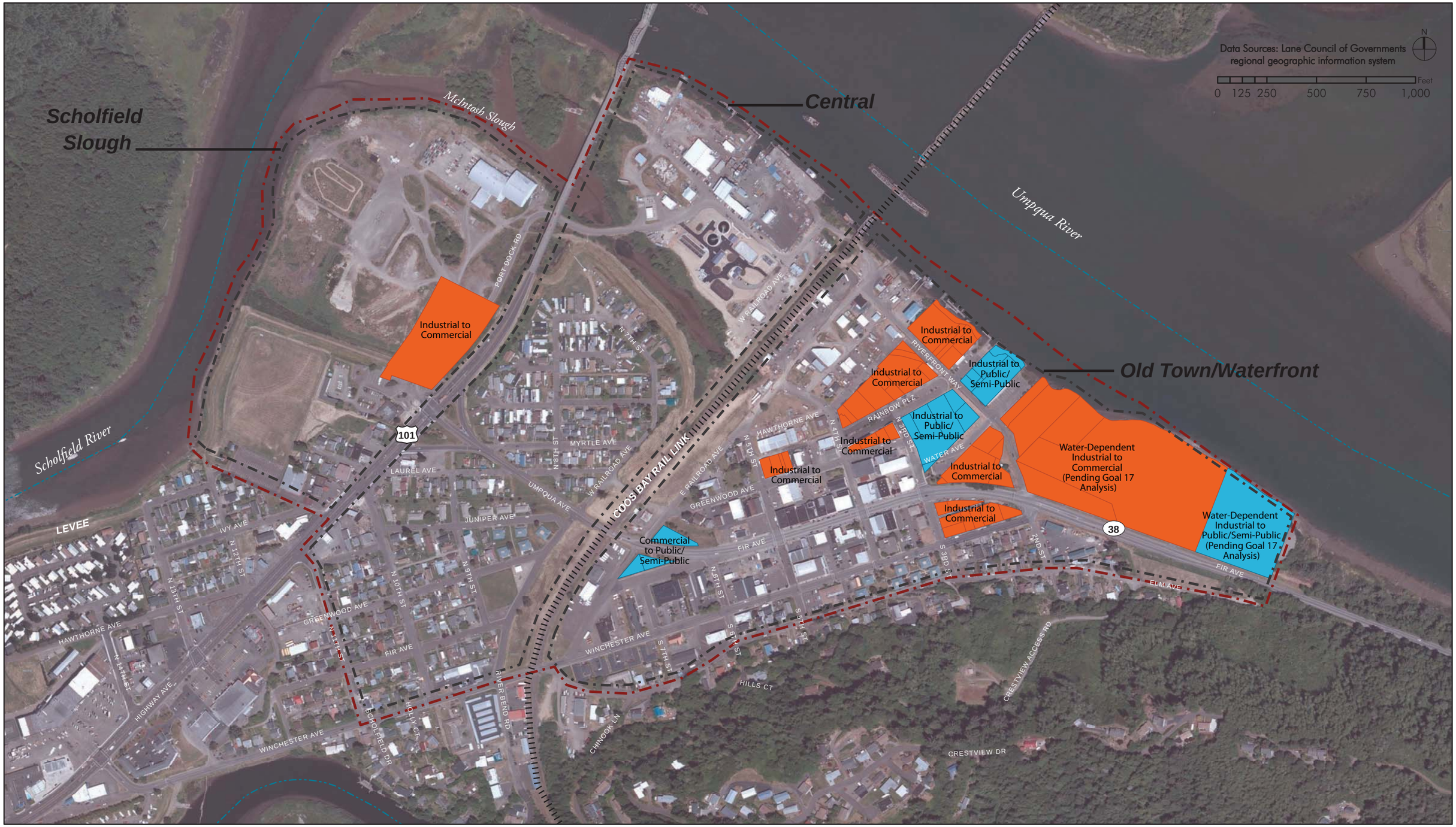
2. Allow redevelopment of the Knife River site, including replacement of the western building for a proposed City Boat Launch expansion, and allow redevelopment of the Rubber Plant site with Waterfront-Commercial uses, including potential visitor services, subject to a future Goal 17 analysis.

Table 5 summarizes the plan amendments, as shown in Figure 18.

Table 5 Proposed Comprehensive Plan Map Amendments

Map Key[4]	Location	Acres	No. of Parcels	Current Plan	Proposed Plan (Acres)	Proposed Plan and zone
1	Knife River West (A) East (B)	16.29	5	Water-Dependent Industrial	Water-related Commercial (11.80) Public/Semi-Public (4.49)	Pending Goal 17 Analysis. Planned Commercial, with C-3 zone
2	City Boat Launch	1.06	5	Industrial	Public/Semi-Public	Public/Semi-Public, with PL zone
3	Umpqua Discovery Center Area	1.38	6	Industrial	Water-related Commercial	Planned Commercial with C-3
4	Live/Work North (A) and West (B and C) of Rainbow Plaza	2.65	19	Industrial	Commercial	Planned Commercial with new CMU Commercial "Live/Work" Mixed Use zone
5	Rainbow Plaza	1.88	7	Industrial	Public/Semi-Public	Planned Public/Semi-Public (PL zone)
6	Commercia l South of Rainbow Plaza	1.44	5	Industrial	Commercial	Planned Commercial with C-2 zone
7	Commercia l South of OR 38 at 3rd and Winchester	1.01	9	Industrial	Commercial	Planned Commercial with C-2 zone
8	*Gateway Plaza At Fir/Or 38/E. Railroad: North (A) South (B)*	0.58	3	Commercial	Public/Semi-Public	Planned Public/Semi-Public (PL zone)
9	Scholfield Slough (Mast Brothers)	3.7	1	Industrial	Commercial (1.3 acres, plus streets & part of Visitor Center site)	Planned Commercial with C-1 zone

[4] For parcel numbers, refer to Comprehensive Plan amendment findings and ordinance.



Study Area
City Limits
Parcels
Coos Bay Rail Link
Planning Zones
Commercial
Public/Semi-Public

Comprehensive Plan Changes (Figure 18)

Waterfront and Downtown Plan, City of Reedsport, Oregon

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COMPREHENSIVE PLAN TEXT AMENDMENTS

The *Reedsport Waterfront and Downtown Plan* is an element of the City of Reedsport Comprehensive Plan, and its implementing policies are to be incorporated into the Comprehensive Plan through the following text changes. New text additions to the Comprehensive Plan are underlined.

Goal 8 (Comprehensive Plan Section IV, Parks and Recreation)

Policy 11. The City supports development of Rainbow Plaza, consistent with *Rainbow Plaza Concept Plan* contained in the *Reedsport Waterfront and Downtown Plan.*

Policy 12. The City supports development of a continuous boardwalk and pathway along Reedsport's Umpqua riverfront from the eastern urban growth boundary to the Coos Bay Rail Link.

Policy 13. The City will work with appropriate agencies and seek funding for Parks and Recreation elements within the *Reedsport Waterfront and Downtown Plan*, including Rainbow Plaza, expansion of the City Boat Launch, new Gateways, and the Levee Loop Trail System.

Policy 14. The City supports development of Old Town gateways and plazas described in the *Reedsport Waterfront and Downtown Plan*. Gateways and plazas may include art, landscape features, parking, and festivals, booths, food carts pursuant to City codes and ordinances.

Policy 15. The City will adopt trail development standards and setback requirements along the Scholfield and McIntosh sloughs for the Levee Loop Trail System.

Goal 9 (Comprehensive Plan Section V, Economy)

Policy 22. The market demand and employment land needs of the *Reedsport Waterfront and Downtown Plan* shall be considered in addressing commercial and industrial land needs for the City.

Policy 23. Improve the safety, aesthetics and market viability of Reedsport's waterfront and downtown by implementing the projects, programs and regulatory amendments recommended by the *Reedsport Waterfront and Downtown Plan.*

Policy 24. The City may require development adjacent to designated trail and pathway system areas to improve said trails and pathways where the impact of development is roughly proportional to the need for such improvements.

Policy 25. The City will adopt landscape buffer standards for parcels designated Mixed Use Commercial abutting the Coos Bay Rail Line, along E. Railroad Avenue north of Greenwood Avenue.

Policy 26. Future rezone and/or code changes from industrial to commercial should support existing businesses.

Goal 10 (Comprehensive Plan Section VI, Housing and Population)

Add to Goal 1: Policy 7. The City supports development of small-lot single family or "cottage housing" in multi-family zones to add housing choices, as recommended in the *Reedsport Waterfront and Downtown Plan.*

Add to Goal 3: Policy 5. The City encourages compatible and attractive mixed-use housing types and will develop design standards for small lot/multifamily housing and live-work housing, as recommended in the *Reedsport Waterfront and Downtown Plan*.

Goal 12 (Comprehensive Plan Section IV, Transportation)

Add to Goal 1: Policy 9. Except where ODOT approval is required for projects on State Facilities, the Reedsport Transportation System Plan is amended to include the transportation improvements and cost estimates within the *Reedsport Waterfront and Downtown Plan*. [See Part 5.]

Add to Goal 3: Policy 9. The City shall work with ODOT to improve OR 38 pedestrian crossing safety by implementing new crossings on 2nd through 6th Street and placing an immediate priority on 3rd Street, as recommended in the *Reedsport Waterfront and Downtown Plan.*

Add to Goal 7: Policy 7. Consider the funding and implementation recommendations of the *Reedsport Waterfront and Downtown Plan* in prioritizing and implementing the City's capital improvement program.

Goal 14 (Comprehensive Plan Section VII, Land Use and Urbanization)

Add a new closing sentence under Comprehensive Plan Map, Industrial: An RV Park use may be allowed as an interim use on the south side of the McIntosh Slough, west of US 101, until the market supports converting that area to higher employment-generating uses.

Add a new closing sentence under Comprehensive Plan Map, Commercial: Where the *Reedsport Waterfront and Downtown* Plan designates land for Live/Work uses, Mixed Use Commercial (CMU) zoning shall allow residential, commercial, and enclosed light industrial uses, pursuant to Commercial Land Use Policy 4, below.

New Land Use Goals and Policies:

Residential: Policy 7. The City will allow "small lot single family" of cottage uses in multifamily residential districts, subject to multifamily design standards.

Commercial: Policy 4. the City will develop a new "CMU" Commercial "Live/Work" Mixed Use zone. The CMU district Mixed Use Commercial (CMU) zoning shall allow residential, commercial, and enclosed light industrial uses. The employment use shall be commercial retail and office use where it abuts commercial or Public Land zoning, and may be enclosed light industrial or office use where it abuts Light Industrial zoning.

Industrial: Policy 5. Enclosed light industrial uses and screened outdoor storage in light industrial zones. Require development to include 30 foot buffers/setbacks from the Scholfield and McIntosh Sloughs, providing for inclusion of a pathway system.

Industrial: Policy 6. An interim RV Park use may be allowed on light industrial land located on the south side of the McIntosh Slough, west of US 101.

TRANSPORTATION SYSTEM PLAN AMENDMENTS

The following changes to the 2006 Reedsport Transportation System Plan (TSP) are recommended to bring the TSP into compliance with the recommendations of this plan. The changes include:

- Transportation Projects
- Roadway Classification Changes
- Access Management Recommendations

Transportation Projects

Table 6 shows the planned transportation infrastructure improvements within the Reedsport Waterfront & Downtown Plan Area. The table shows projects identified in the Reedsport Waterfront & Downtown Plan as well as plan area projects previously identified in the TSP. This table identifies the "action needed" to update the TSP to maintain compliance with the Waterfront & Downtown Plan.

Table 6 Amendments to 2006 Transportation System Plan

Projects Added to TSP	Preliminary Cost Estimate (in $1,000)	Included in 2006 TSP?	Action Required to Implement RWDP
1. Laurel Avenue	$5	No	Include in TSP
2. Levee Loop Trail: bike/pedestrian path along levee and connecting E Railroad Ave, Water Front Way, 2nd Street, Winchester, 14th Street, Hawthorne Ave, 13th Street, Champion Park /Visitor Center Levee (pave) to Port Dock Road to Scholfield and McIntosh Slough frontages west of US 101	$80	Yes	Refines Alignment of Multi-Use Path in TSP
3. OR 38/Winchester Avenue traffic signal or similar capacity improvement *(Requires ODOT adoption)*	$300	No	Tentatively Include in TSP
4. Railroad landscape buffer	$60	No	Include in TSP
5. OR 38 from 6th to US 101 – full improvements per ODOT plans	$2,300	Yes	Retain TSP project #1
6. Gateways (3 landscape features)	$85	No	Include in TSP
7. Bulb-outs (5 standard and one with Rectangular Rapid Flash Beacon (RRFB) or similar device @ OR/38 and 3rd)	$162	Partially	Replace TSP Project #5 with this project (see below)
8. Disconnect 2nd Street from Winchester	$30	No	Include in TSP
9. New OR 38 eastern access at Knife River/Gate 6 as right in/right out	$80	No	Include in TSP
10. Realign Elm at Winchester for right angle	$100	No	Include in TSP
11. OR 38 way finding and street furniture	$280	No	Include in TSP
12. East Railroad Ave from OR 38 to River Front Ave (full local street with sidewalks)	$1,200	No	Include in TSP
13. Riverfront boardwalk extension: Umpqua Discovery Center west to RR and east to Knife River site	$1,000	No	Include in TSP
14. US 101/OR 38 Intersection improvements	(ODOT)	No	Include in TSP
15. Realign 2nd Street north into Knife River site	$80	No	Include in TSP
16. Connect Elm to OR 38 at Gate 6	$100	No	Include in TSP
17. Extend River Front Way to Gate 6	(Developer)	No	Include in TSP
18. Multi-use path under railroad at Laurel	$65	No	Include in TSP

Table 6 (continued) Amendments to 2006 Transportation System Plan

Existing TSP Projects Retained or Modified	Preliminary Cost Estimate (in $1,000)	Included in 2006 TSP?	Action Required to Implement RWDP
1. OR 38: 6th to US 101: complete sidewalks	$536	Yes	Retain this TSP project
2. US 101: Laurel to 13th: complete sidewalks	$137	Yes	Retain this TSP project, part of which is included in Waterfront & Downtown Plan Area
3. OR 38 @ W Railroad Avenue: crosswalk	$10	Yes	Retain this TSP project
4. OR 38 @ Winchester Avenue: crosswalk	$10	Yes	Retain this TSP project
5. Winchester Avenue @ 4th Street: crosswalk	$10	Yes	Replace this TSP project with #7 from RWDP, above

Roadway Classification Changes

The 2006 TSP recommends a reclassification of Port Dock Road to a "Neighborhood Route" to facilitate future development. The Reedsport Waterfront & Downtown Plan reaffirms that classification.

Access Management Recommendations

The 2006 Reedsport TSP identifies the need for an Access Management Plan to be conducted for OR 38 in the City. Accordingly, the Waterfront & Downtown Plan includes recommendations regarding access on OR 38. The recommendations in the Waterfront & Downtown Plan should be incorporated into the 2006 TSP. These include:

- *Fir Avenue and 6th Street approaches of OR 38 are within 40 feet of each other, about 300-400 feet east of East Railroad Avenue*: As traffic grows on OR 38, it may be desirable to re-channelize the Fir Avenue approach by installing curb extensions, thereby reducing the width of its approach to OR 38 and "sea of pavement" that pedestrians encounter when traversing this intersection.
- *A private driveway to the Sugar Shack Café intersects the highway from the south side within 10 feet of 3rd Street*: in the event that redevelopment is proposed on this property or this section of OR 38 is reconstructed, it is recommended that this driveway be closed. Prior to a land use action or road construction, this driveway should remain unchanged.

ZONING AMENDMENTS

The following zoning amendments are recommended to implement the RWDP. The proposed changes are conceptual; they should be reviewed and refined through a public process in drafting specific ordinance language.

Umpqua River Waterfront

1. *Apply the C-3 Marine Commercial Zone to areas designated Waterfront Commercial.* The C-3 zone, which exists within Reedsport's code but it not presently in use, provides areas suitable for water-dependent and water-related/oriented retail commercial uses, including tourist lodging, restaurants and related facilities. Examples of allowed uses include navigational aids, hotels, restaurants, bait and tackle shops, gift and specialty shop, marine services and repairs, retail and wholesale stores, among others. Conditional uses include flood prevention structures, recreational vehicle parks, marine-oriented professional offices, processing of seafood in conjunction with retail sales, storage of products and materials transported via the estuary, such as gravel and logs. The maximum building height is 45' and no minimum lot size is required. Additionally, the C-3 zone, Section 10.76.020, should be amended to provide design standards for building scale and design in order to protect views of the water from key viewing areas, and to require extending the Boardwalk/waterfront trail with future development.

2. *Amend the Public/Semi-Public Lands Zone,* Section 10.72.120 (B) 14, to include specific development standards or design guidelines for designated Gateways, including provisions for landscaping, art, furnishings, information kiosks, and concessions.

Downtown Reedsport

3. *Add a new CMU Commercial Live/Work Mixed Use Zone* as Section 10.72.065, allowing a broad range of neighborhood-serving retail (similar to C-1), enclosed light industrial (similar to LI), and residential uses. The new zone should:

    a. Allow land uses to match those allowed in adjoining zones, and maintain flexibility for employment uses (e.g., bakery, laundry, retail, light industrial). For example, commercial retail and office uses should be allowed adjacent to commercial zones and public zones, and enclosed industrial, assembly, wholesale or related office uses should be allowed adjacent to industrial zones.

    b. Provide design standards to encourage building placement near the street, with minimal or no front yard setback.

    c. Allow housing as a permitted use. Where residential uses are permitted on the ground floor, the CMU code should require access to dwelling units via secondary (e.g., rear, side, or courtyard) entrance.

d. Parking should be provided to the side of, behind, or beneath (e.g., pedestal) buildings.

e. Where outdoor storage is allowed, the CMU zone should require screening of storage areas, particularly adjacent to areas designated for Public/Semi-Public use.

4. Amend the C-2 Commercial District, Section 10.72.070, to permit residential uses above ground floor commercial uses (in upper building floors) on properties abutting OR 38 from 3rd to 5th Streets. Establish design standards with minimal to zero front setbacks, and encourage the use of small, decorative landscape planters/flower baskets, street furniture, sidewalk cafes and sales. Develop and adopt basic design guidelines to maintain the integrity of the downtown core, including guidelines for front building entrances, storefront windows, exterior lighting, and awnings.

5. Amend the M-I Light Industrial District, Section 10.72.090(L) Storage, to require screening of all outdoor storage. The zone presently only requires such screening when adjacent to a residential or commercial zone.

6. Amend Section 4.020 Parking and Loading to waive the off-street parking and loading requirements for changes of use and new development for properties abutting OR 38 between 3rd to 5th Streets.

Scholfield Slough

7. Add a Section to the M-I Light Industrial District, Section 10.72.090(C)(5), allowing an RV Park as an interim use, subject to approval of a Conditional Use Permit, and amend Section 10.72.090(L) to require all outdoor storage be screened.

8. Amend the R-2 Multi-family Residential District, Section 10.72.050(G)(1) regarding minimum lot area to permit small lot single family or cottage housing on a minimum lot size of 3,500 square feet for maximum 2-story homes. Currently, this type of housing is allowed only through a Planned Unit Development, subject to Section 10.72.130. Where cities have adopted cottage-housing ordinances, they typically limit the size of the dwellings (e.g., 1,200 square feet of floor area) and require the units be oriented to a common open space. They also limit lot coverage; the current R-2 lot coverage standard of 50% would be appropriate.

9. Amend the C-1 zone, Section 10.76.060, to permit housing in upper floors.

All Areas

10. Allow credit for shared parking elsewhere when shared use parking agreements are established.

11. Require screening of unenclosed storage.

7. IMPLEMENTATION

MARKET TIMING

The RWDP is expected to generate significant levels of local and regional economic benefits during and after their construction. **Table 8** estimates the timing for build-out of the plan, based on the RWDP market study.

Table 7 Expected Net New Development over 25 Years

	Units	Preferred Alt. (Sq Ft)	Market Timing
Employment Uses*			
Commercial/Waterfront	floor area SF	110,100	Yrs. 5-25
Light Industrial/Flex	floor area SF	111,728	Yrs. 5-25
Other Commercial Uses			
Hotel	hotel units	100	Yrs. 10-20
Residential Uses			
Multi-Family & Cottage Housing	dwellings	235	Yrs. 5-25
RV Park Units	RV sites	60	Yrs. 5-10
Other/Public Attractions & Amenities			
New Visitor Attraction	floor area SF	23,121	Yrs. 5-10
Riverfront boardwalk/trails		n/a	Yrs. 5-20

*An additional 70,000 square feet of Live/Work Mixed-Use Employment may develop beyond the 20 to 25-year planning horizon.

ECONOMIC IMPACT

The overall development program is expected to generate approximately $75M (Preferred Alternative) in local assessed valuation upon build-out, which would help fund construction of urban renewal projects and facilitate the sunset of the Urban Renewal District. Since the City of Reedsport, like many jurisdictions in southern Oregon, is currently in assessed/market value "compression" under Ballot Measure 5, the additional assessed valuation would be a welcome increase for local taxing districts.

A preliminary analysis indicates that upon RWDP build-out, the annual revenues realized by local districts after sunset of the urban renewal district (stated in 2012 dollars) would equate to approximately $425,000 per year for the City of Reedsport, $80,000 per year for Douglas County, and $320,000 per year for the Reedsport School District 105. Also, the Lower Umpqua Hospital District would receive $272,000 per year, and the Lower Umpqua Parks and Recreation District would receive $17,000 per year.

The direct economic impact of implementing the full RWDP (i.e., approximately $11.6M in state and local expenditures on infrastructure projects, and an additional $75M on private building construction) is expected to support approximately 850 construction jobs over the next 25 years; this equates to an average of 34 full-time equivalent construction jobs per year for 25 years.

In addition to increased property values associated with new construction, the permanent benefits from redevelopment in the Waterfront and Downtown planning area include direct and indirect/induced job creation from additional household and visitor spending increases after projects are completed. Overall, at build-out, the redevelopment program would add approximately 354 direct jobs and grow the population by 575 people, as shown in **Table 9.**

Table 8 Expected Net New Direct Permanent Jobs and Pop. at Build-out

	Jobs	Population
Employment Uses		
Commercial/Waterfront	180	
Light Industrial/Flex	110	
Other Commercial Uses		
Hotel	49	
Residential Uses		
Multi-Family & Cottage Housing		530
RV Park Units	6	45
Other/Public Attractions & Amenities		
New Visitor Attraction	9	
Total	***354***	***575***

The plan assumes an increase in both day-trip visitors and overnight visitors that would come with an interim RV Park on the Mast Bros. site west of US 101, and a hotel, commercial retail, and/or other attractions on the Old Town Waterfront. Based on an Oregon Tourism Commission survey of visitor spending (2010 Longwoods Survey), it is estimated that an increase of over 48,000 overnight-visitors per year could be expected at the RV Park alone. That level of visitation combined with visitor spending increases at commercial facilities could generate an annual direct and indirect/induced economic impact of $5.7M for the local economy. Approximately 40% of the overall economic benefit would be in the form of indirect/induced benefits that would accrue to businesses located outside the Waterfront and Downtown planning area in other parts of the city or region. (FCS GROUP)

In comparison to the projected spending on construction and the visitor spending, the benefits from new households and businesses moving into the RWDP area would be even more significant. It is estimated that the annual economic impact, as measured by increases in gross domestic product, would range from **$76 to $86 million per year for the local and regional economy**; this includes direct and indirect/induced spending. This level of spending would not only support the direct job creation mentioned above (354 jobs) but also about 230 indirect/induced jobs in the region annually.

IMPLEMENTATION STRATEGY

Table 8 and the following narrative outline a 20-year implementation strategy for the RWDP. (See Table 6, pages 50-51, for transportation project cost estimates.)

Table 9 Reedsport Waterfront and Downtown Plan Implementation Strategy

Time Frame	Action Item	Description	Lead	Public Role	Private Role	Possible Funding Sources
Years 1-5 (see also "immediate action" list below table)	1	OR 38/3rd St. Pedestrian Crossing; Façade Improvement Program; Wayfinding Signs	City	City to work with merchants and URA and ODOT on design and funding	Owners to match funds through paint, bricks and mortar and equity to improve facades	ODOT; Reedsport Urban Renewal Agency; Old Town Merchants Association; local materials and labor donation; potential design assistance through Oregon Main Street Program
Years 1-5	2	Levee Recertification	City	City to work with US Army Corps of Engineers to fund levee repairs	Support levee improvements to protect property and avoid higher flood insurance costs	State and Federal infrastructure grants and loans
Years 1-5	3	Storm Drainage Improvements	City	City to improve based on Stormwater Master Plan	Support stormwater improvements to protect property from frequent flooding	Oregon Infrastructure Finance Administration; Immediate Opportunity Funds; others.
Years 1-5	4	Rainbow Plaza Improvements	City	City to pursue funding and implement plaza plan	Support plan, seek private donors to match public funds	Oregon Parks and Recreation Development Grant; private funds
Years 1-5	5	Marina Parking Expansion	City	City to tweak design and submit OMB grant	Recognize benefits of enhanced river access; support plan	Oregon Marine Board grant

Time Frame	Action Item	Description	Lead	Public Role	Private Role	Possible Funding Sources
Years 1-5	6	Private RV Park	Private	City to allow RV park as interim use	Owner/local support and private funds are needed	Private investment is need to develop interim RV use; likely tied to a more intense future redevelopment plan
Years 6-10	7	New Visitor Attraction/ Museum	Non-profit/ City	City to seek a 501c-3 non-profit partner to manage project	Private donors are needed to supply materials, labor and capital	Significant private investment is needed under a non-profit lead to create a new visitor attraction (i.e. draw on Umpqua Discovery Center example)
Years 6-10	8	Levee Loop Trail and Waterfront Promenade	City	City to seek funding; including private assistance in design and construction through the development review process	Private support, including easements and boardwalk funding are required	Oregon Parks and Recreation Development Grant; private funds
Years 6-10	9	Waterfront Commercial	Private	City to implement plan	Private investments are required	Private funds; public partnerships including grants and loans as appropriate
Years 6-10	10	Light Industrial	Private	City to implement plan	Private investments are required	Private funds; public partnerships including grants and loans as appropriate
Years 11-20	11	Multifamily & Cottage Housing	Private	City to implement plan	Private investments are required	Private funds; public partnerships including grants and loans as appropriate
Years 11-20	12	Hotel	Private	City to implement plan	Private investments are required	Private funds; public partnerships including grants and loans as appropriate

Time Frame	Action Item	Description	Lead	Public Role	Private Role	Possible Funding Sources
Years 11-20	13	Commercial Infill	Private	City to implement plan	Private investment s are required	Private funds; public partnerships including grants and loans as appropriate

Years 1-5

Redevelopment will require patience and decades of focused effort, and can only occur if the community gathers support for funding critical infrastructure improvements, as market forces gain momentum for new housing and commercial development. Initial efforts should include improved crossing safety for OR 38 at 3rd Street; funding for a façade improvement program; and wayfinding signage to direct visitors to the waterfront. These efforts should initially focus on the immediate area of OR 38 and 3rd Street as a demonstration project, but will be expandable in the downtown core. Other critical and concurrent public investment is needed to recertify the levee ($3.7M) and improve storm drainage ($2M). These improvements will control flooding and keep flood insurance rates reasonable – they are required to help retain existing businesses, homeowners, and assessed valuation levels. Levee recertification and storm drainage improvements could be funded using a mix of the recommended funding sources identified above. Without these critical infrastructure projects, the potential for private investment and other public investments are expected to be minimal.

Immediate Action

The City of Reedsport should immediately (years 1-2) undertake the following significant efforts to kick-off the vision embodied in the Waterfront and Downtown Plan:

1. Initiate a Goal 17 analysis for the Knife River site and prepare a future Comprehensive Plan amendment to re-designate the property from Water-dependent Industrial to Commercial and Public/Semi-Public, including plan policies to direct Waterfront Commercial uses and propose C-3 zoning for the commercial portion of the property. Continue to work closely with Knife River in support of the plan map change and future re-zoning needed for site redevelopment

2. Review and refine zoning concepts presented with the Waterfront and Downtown Plan, and prepare zone changes and zoning code text updates.

3. Work with ODOT on funding design and construction of a new crossing for OR 38 at 3rd Street.

4. Work with the Merchant's Association, the Chamber and organizations such as Oregon Main Street to develop a Downtown Façade Improvement Plan. Focus

on donated labor and materials to initiate a "show me" project with public and private funding to improve facades on a block along OR 38 adjoining the improved 3rd Street crossing.

5. Develop a wayfinding sign program to include design and placement of signs to direct the public to the Reedsport Waterfront. Work with the Downtown Merchants and local suppliers to ensure buy-in and participation.

6. Continue efforts to fund the Levee Recertification and Stormwater Improvement projects.

Years 5-10

Lessons learned from the implementation of the Umpqua Discovery Center indicate that it can take many years to organize and assemble adequate partnerships and funding resources to construct a major museum facility. The momentum already established by the local community for hosting the annual Reedsport Chainsaw Carving Festival has gained state, national and even international attention. A non-profit (501c-3) in partnership with the City could work together to leverage limited local resources to acquire a viable site for a new visitor attraction, which could also function as a workspace and community meeting facility for events, presentations, and workshops on this unique and culturally significant art. This new facility, in combination with the Umpqua Discovery Center, commercial waterfront, and a new RV park and/or hotel, could establish a critical mass of visitation attractions.

A combination of Urban Renewal funding and private and corporate donations and sponsorships would be required to undertake the construction of a visitor attraction; and private equity would be needed to complete the RV Park, along with zoning code amendments. Reedsport's comprehensive plan and zoning regulations will need to be amended in order to allow the development program envisioned in the preferred alternative.

Years 10+

The near-term public, private and non-profit investments that occur during the first 10 years would set the stage for ongoing private development activities during the following 10+ years. The need for additional public investment in streets, streetscapes, parks and other infrastructure would have to be well timed with private development projects. As market conditions improve, the community may also be more inclined to support a special General Obligation bond focusing on specific "large" legacy project elements, such as the Riverfront boardwalk and/or gateway improvements.

Local improvement districts in combination with urban renewal funds may be used to construct streetscape improvements and other public infrastructure in specific locations.

8. FUNDING OPTIONS

This section summarizes the potential funding options that are available to the City of Reedsport for RWDP implementation. The planned infrastructure improvements require significant financial expenditures. Improvements are expected to result in enhanced flood protection, storm drainage, pedestrian, bicycle and vehicular access, and an improved market image for the area that helps attract additional direct private investment. The planned enhancements will also provide a direct benefit to downtown visitors, residents, businesses and workers. A combination of funding techniques is therefore appropriate to help spread out the cost of the improvements to those who benefit.

A summary of *local funding* techniques used in Oregon for downtown and waterfront improvements is provided in Appendix C. The primary funding options include:

- User Fees (e.g., boat launch fees)
- System Development Charges (SDC)
- Parking District Charges
- Urban Renewal Program, Tax Increment Financing
- Local Improvement Districts (LID)
- Zone of Benefit District (ZBD)
- Economic Improvement District (EID)
- Utility Rates and Charges
- General Obligation and General Revenue Bonds
- State and Federal Financing Programs and Grants (e.g., Oregon Marine Board grants, and ODOT/TGM grant and federal funding programs)
- Potential grant funding opportunities are listed below.

EVALUATION OF FUNDING OPTIONS

Public investment in transportation, flood protection, storm drainage and parks/trail facilities is expected to result in direct local and citywide benefits in terms of enhanced safety, access, visitation, and business income. As business income and sales increase, there will be citywide benefits in the form of enhanced downtown employment, private real estate investment and enhanced local assessed value creation and property tax revenue collections. To help evaluate the relative benefits of potential funding options, preliminary evaluation criteria were identified and compared to one another in **Table 10.**

The funding options listed in Table 10 have legal precedence in Oregon. Initial funding evaluation criteria included:

- **Voter Approval** – Might the funding technique require voter approval under Oregon law or per the voter-approved Reedsport City Charter Amendment? (Note: At the time of publication of the RWDP, the charter amendment was pending a court decision.)

- **Funding or Financing Potential** – Will the funding stream result in a stable and reliable source of revenues? Will the revenues be deemed credit worthy by potential lenders, and become a source of near term funding for the planned improvements?
- **Direct Cost Burden on Downtown Development –** Will the funding technique be considered as an extraordinary development cost, and dissuade potential investment in downtown?
- **Equity** – Will those who pay deem the funding technique and its implementation process equitable?

Based on the above criteria, the funding options that received the highest rating for the RWDP are summarized as follows. These measures merit additional analysis and consideration by the City and downtown businesses. Appendix C contains additional background on funding options.

User Fees

The current boat launch fee of $3.00 may be increased slightly to generate additional short-term revenue for ongoing maintenance cost requirements. Annual passes could be provided to local residents at a discounted price. If additional public parks, trails or boat dock facilities are provided over time by private developers and dedicated to the City (as conditions of approval), the City could charge user fees for transient boat dock usage, or use of picnic shelters for private events. Since this revenue source is not likely to be significant in comparison to the others and now would require voter approval, it is not recommended at this time.

Local Improvement District

The City should expect downtown property owners that benefit from the planned transportation facility investments to help pay for a portion of the cost of the improvements though a local improvement district (LID). An engineering study would be needed to create an equitable approach for assessing downtown property owners for specific project elements, such as storm drainage, levee or streetscape improvements. The LID could include zones with varying assessment levels to account for benefits that are perceived to vary by location or land use characteristics (e.g., LIDs may exempt upper-floor redevelopment or single family dwellings from the assessments). An LID derives revenue from selected properties and requires at least 51% property owner approval.

Utility Fees

The City of Reedsport could increase its local storm drainage utility fee or restructure it so that the properties within the RWDP area pay a slightly higher rate in comparison to other parts of the city, which is proportional to the benefit they receive by the additional cost of storm drainage. The City may also explore establishing a new Parks Utility that includes low monthly or bi-monthly charges to residents and non-residential properties (now requires voter approval). The revenue generated by the Parks Utility may be used for operations, maintenance or construction of specific improvements, such as the Waterfront trail network.

Urban Renewal District

While the City of Reedsport's existing Urban Renewal District has little available funding to invest in planned facility improvements at this time, it could eventually become a source of long-term funding to help match non-local loans or grants, especially after additional private investment occurs in the district.

Bonds

The City of Reedsport could pursue a citywide "waterfront accessibility" General Obligation bond measure that generates adequate funding for all or a portion of the planned waterfront trail and related parking or park improvements, including land acquisition. These types of bond measures are more successful when they result in "heritage improvements" that benefit residents with strategic parks and pedestrian safety improvements (such as enhanced access to schools and parks).

Donations or Corporate Sponsorships

The City of Reedsport could work closely with existing local non-profit foundations or a newly established non-profit organization to establish tax deductable programs for specific improvements, such as street trees, street furnishings, lighting, and artwork. This type of investment would be appropriate for Rainbow Plaza and the Visitor Attraction, in a manner similar to that used for building and operating the Umpqua Discovery Center. In some instances, donors may be eligible for federal and/or state income tax credits.

Grants

The City of Reedsport should consider pursuing the following state and federal grants to match local funding sources and leverage private investment:

- U.S. Economic Development Administration, Community Development Block Grants
- U.S. Department of Agriculture Rural Community Enhancement Grants (provided for rural infrastructure and community enhancement projects).
- ODOT Transportation Enhancement program could be targeted to raise upfront capital facilities proceeds for specific improvements.
- ODOT Pedestrian and Bicycle Improvement grant program.
- Oregon Marine Board grants (available for public boat launch and parking facilities). An OMB grant has been awarded for improvements to the City Boat Launch and parking area, but has been placed on hold pending a design and parking need assessment.
- Oregon Community Development Block Grant program (locally administered through Douglas County).
- Oregon Special Public Works Grants or ODOT Immediate Opportunity Funds (grants tied to job creation).

Special state or U.S. Congressional program funding may also be available through specific funding requests. The City of Reedsport should check with its local state legislative representative and congressional representatives for current funding program application deadlines.

APPENDIX A: LAND USE ALTERNATIVES

(Refer to separate Appendix volume.)

APPENDIX B: PREFERRED TRANSPORTATION ALTERNATIVES ANALYSIS

(Refer to separate Appendix volume.)

APPENDIX C: DESCRIPTION OF FUNDING OPTIONS

(Refer to separate Appendix volume.)

Reedsport Waterfront and Downtown Plan

Technical Appendix

Created: November 30, 2012

Adopted: April 1, 2013

INTRODUCTION

This is the technical appendix for the Reedsport Waterfront and Downtown Plan. The appendices provide supplemental materials that support the findings and recommendations in the Plan.

The appendices include:

- Appendix A: Alternatives Analysis
- Appendix B: Preferred Transportation Alternatives Analysis
- Appendix C: Description of Funding Options

APPENDIX A - ALTERNATIVES ANALYSIS

This chapter presents the land use alternatives that were evaluated through the RWDP public process, and documents the reasoning for selecting the preferred land use plan.

The project team initially developed two land use alternative concept plans for Reedsport's Waterfront and Downtown. The alternatives were based on a careful analysis of existing conditions and needs, and state and local requirements. The consultants worked closely with ODOT representatives to ensure the plan options were consistent with ODOT requirements.[1]

The ODOT review found that the transportation improvements presented here are technically viable. Chapter 8 and Appendix A provide additional improvements to comply with ODOT standards for highway operations.

ALTERNATIVE 1

Alternative 1, summarized below, is presented in graphical form **(Figure 6)** on the next page. **Table 2,** on the page that follows, gives the land use and development program for Alternative 1.

Scholfield Slough

In Alternative 1, the Scholfield Slough area is developed with a combination of visitor-oriented retail, housing and employment uses. The land uses south of the levee remain unchanged. North of the levee and west of US 101, three land use districts are proposed: Multi-family Housing (MF), Light Industrial/Interim RV Park (LI/RV) and Commercial (C). The area is accessed through a new road developed perpendicular to Port Dock Road.

Central

There are no recommended land use changes for the Central sub-area which includes housing and the Port of Umpqua Industrial Park.

Old Town/Waterfront

Alternative 1 includes existing commercial uses on the waterfront and proposes to change the designation from industrial to waterfront mixed use between River Front Way and the river, east of the Coos Bay Rail Line. North of Highway 38 land uses are proposed to be a mix of light industrial, multi-family residential, commercial, including waterfront commercial, and public/open space uses. The existing commercial district along Winchester Avenue and the residential district to the south of Highway 38 also do not change under Alternative 1.

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[1] ODOT staff from the following divisions reviewed the preliminary plan alternatives in a meeting held on March 22, 2012: Planning, Environmental, Traffic Analysis, Freight Mobility, Bicycle/Pedestrians, Road Design, Region 3, and District 7.

Alternative 1

Concept Plan - Alternative 1 with Roundabout

Waterfront and Downtown Plan, City of Reedsport, Oregon

May 2012

Table 1 Alternative 1 Land Use and Development Program

Land Use	Square Feet	Acres	Site Coverage	Building Footprint	Average Bldg Stories	Square Feet of Development	Units *	Units/ Acre
Multi-Family Housing (west)	706,594	16.22	20%	141,319	2	282,638	283	17.4
Commercial	71,962	1.65	25%	17,991	1	17,991	na	na
Light Industrial /Interim RV Park	391,994	9.00	15%	58,799	1	58,799	na	na
Light Industrial	288,938	6.63	20%	57,788	1	57,788	na	na
Live/Work Mixed Use	104,861	2.41	25%	26,215	1.5	39,323	20	8.2
Multi-Family Housing (east)	300,928	6.91	20%	60,186	1.5	90,278	90	13.1
Visitor Destination	97,136	2.23	20%	19,427	1	19,427	na	na
Waterfront Commercial**	41,075	0.94	25%	10,269	1	10,269	na	na
Waterfront Mixed Use	183,616	4.22	25%	45,904	1.5	68,856	na	na
Hotel	193,697	4.45	15%	29,055	1.5	43,582	97	na

*Assumes 1,000 SF per dwelling unit and 450 SF per hotel unit.
** Excludes Umpqua Discovery Center, associated parking lot and expanded boat launch and parking.
na = not applicable.

ALTERNATIVE 2

Alternative 2, summarized below, is presented in graphical form **(Figure 7)** on the next page. On the page that follows, **Table 3** gives the land use and development program for Alternative 2.

Scholfield Slough

Alternative 2 is comprised of two areas north of the levee and west of Highway 101, along Scholfield and McIntosh Sloughs, as follows. (The land uses south of the levee are unchanged.)

Central

Predominately residential and industrial in nature, the Central sub-area includes no recommended land use changes.

Old Town/Waterfront

Alternative 2 changes the industrial area between River Front Way and the waterfront from industrial to waterfront mixed use. Similar to Alternative 1, the existing commercial district along Winchester Avenue and the residential district to the south of Highway 38 do not change under Alternative 2.

North of Highway 38, a mix of light industrial, live-work/mixed-use, commercial (including waterfront commercial and mixed use commercial), RV Park (or other recreational facility), and public/open space uses is shown under Alternative 2.

Alternative 2

Concept Plan - Alternative 2

Waterfront and Downtown Plan, City of Reedsport, Oregon

May 2012

Table 2 Alternative 2 Land Use and Development Program

Land Use	Square Feet	Acres	Site Coverage	Building Footprint	Avg. stories	Square Feet Development	Units **	units/ acre
Multi-Family and Cottage Housing	536,617	12.32	20%	107,323	1.5	160,985	161	13.1
Light Industrial/Flex	324,261	7.44	20%	64,852	1	64,852	na	na
Light Industrial	288,938	6.63	20%	57,788	1	57,788	na	na
Live/Work Mixed-Use*	300,928	6.91	25%	75,232	1.5	112,848	56	8.2
Multi-Family Housing	104,861	2.41	20%	20,972	1.5	31,458	31	13.1
Waterfront Mixed Use***	41,075	0.94	25%	10,269	1.5	15,403	na	na
Hotel	97,136	2.23	22%	21,370	2	42,740	95	na
RV Park/Other Rec. Facility /Open Space	500,149	11.48	tbd	n/a	n/a	tbd	tbd	na

*Assumes that half of the development is devoted to housing.
**Assumes 1,000 SF per dwelling unit and 450 SF per hotel unit.
*** Excludes Umpqua Discovery Center, associated parking lot and expanded boat launch and parking.
na = not applicable.
tbd = to be determined in the future after public and property owner input.

ANALYSIS OF ALTERNATIVES

The planning team evaluated the two alternatives based on a simplified scale of one to three points **(Table 4)**, with three points indicating the highest score, and presented them at a public workshop and at a Project Advisory Meeting held in late May 2012 in Reedsport. The alternatives were also evaluated for cost.

The public feedback generally favored the land use plan of Alternative 1 and the proposed buffers on the Scholfield Slough shown in Alternative 2. The PAC concurred with that input and recommended the following refinements:

- Wrap the live-work/mixed-use designation around Rainbow Plaza and extend it north of the downtown core, rather than separating live/work and multifamily housing as shown in the original alternatives.
- Designate a broad waterfront commercial area that could include retail, hotel and visitor attraction uses.

These ideas, along with the proposed land use, transportation, and design concepts that are common to both alternatives, per the main RWDP document, form the Preferred Alternative.

The capital costs of Alternatives 1 and 2 are comparable to the Preferred Alternative; the costs are approximately $5.9 million in transportation improvements and $5.7 million in levee and stormwater-related improvements.

Table 3 Alternatives Evaluation Summary

Category	Criterion	Score	
Transportation		**Alt. 1**	**Alt. 2**
	Emergency Accessibility	3	2
	Direct & Convenient Access	2	2
	Constructi on Costs	2	2
	ADA Access	2	3
	Compli ance with Standards	2	3
	Waterfront Accessibility	3	2
	Lighting and Safety	2	2
	Bicycle Access	3	2
Land Use			
	Gateways	3	2
	Compatibility w/ Adjacent Uses	2	2
	V iews	3	3
Infrastructure			
	Development Costs inside (lower) vs. outside (higher) Levee within Floodplain	1 2	
Market			
	Positive Fiscal Impact	3	2
	Consistency w/ Mkt. Trends	2	3
	Commercial Visibility & Access	3	1
	Residential Inside Levee	3	2
	Commercial/Indus. Inside Levee	2	3
	Positively Impacts City Image	3	1
	Jobs Creation	3	3
Totals		**47**	**42**

(1 = good; 2 = better; 3 = best)

APPENDIX B – PREFERRED TRANSPORTATION ALTERNATIVES ANALYSIS

This chapter presents two memorandums regarding the preferred transportation alternatives analysis:

- July 13, 2012 Memorandum
- August 14, 2012 Memorandum

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PROJECT MEMORANDUM #3
Preferred Transportation Alternative Analysis

Date: July 13, 2012 Project #: 12034

To: Scot Keillor
Columbia Planning Northwest
885 Methodist Road
Hood River, OR 97031

Scot Siegel
Siegel Planning Services, LLC
15450 Boones Ferry Road, 9-145
Lake Oswego, OR 97035

From: Dan Seeman, Chris Brehmer, P.E., and Dave Daly
Project: Reedsport Waterfront & Downtown Plan
Subject: Preferred Transportation Alternatives Analysis

In conjunction with the Reedsport Waterfront & Downtown Plan, Kittelson & Associates, Inc. (KAI) evaluated the preferred transportation alternative in the waterfront and downtown area. This technical memorandum summarizes the evaluation methodology and findings.

INTRODUCTION

This technical memorandum documents an analysis of the preferred future transportation alternative, planned to improve the viability of the Reedsport Waterfront and Downtown area. The preferred land use and transportation alternatives are considered in this analysis and were developed based on information provided by the project team after the May 31, 2012 public meeting.

PREFERRED LAND USE AND TRANSPORTATION ALTERNATIVES

This section discusses the transportation implications of the Preferred Land Use/Transportation Alternative. The estimated trip generation of new land uses for the preferred alternative is presented in the Future Conditions section of this report. The traffic impacts of these additional trips are then presented for both 2025 and 2033 future weekday p.m. peak summertime conditions.

Preferred Alternative Land Use Concept

Figure 3-1 shows the Preferred Alternative Concept Plan, including planned land use and transportation improvements. The Preferred Alternative includes 235 multi-family housing units, about 100,100 square feet of retail commercial uses, 111,730 square feet of industrial, 100-room hotel, and a visitor destination use.

(NO SCALE)

Preferred Concept Plan

Waterfront and Downtown Plan, City of Reedsport, Oregon

June 2012

REEDSPORT MIG

PREFERRED ALTERNATIVE CONCEPT
REEDSPORT, OR

FIGURE 3-1

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H:\profile\12034 - ODOT TGM Reedsport Waterfront Plan\dwgs\figs\12034-fig 2.dwg Jun 25, 2012 - 3:07pm - ddaly Layout Tab: FIG3-1

Two alternative land use/transportation concepts were presented to the Project Advisory Committee (PAC), from which this preferred alternative concept was developed. The preferred alternative includes elements from each of the alternatives for both the land use and transportation systems.

FUTURE TRANSPORTATION CONDITIONS

This section describes the future 2025 and 2033 conditions of the multi-modal transportation system serving the Reedsport Waterfront and Downtown area. The preferred alternative concept plan was evaluated with respect to intersection traffic operations. The assumptions, methods and results of this evaluation are presented in this section.

Trip Generation

Trip generation estimates for the preferred alternative were developed based on information provided in the standard reference manual *Trip Generation, 8th Edition* published by the Institute of Transportation Engineers (ITE-Reference 1). All daily trips have been rounded to the nearest ten and all peak hour trips have been rounded to the nearest five trips.

Table 3-1 shows the estimated summertime weekday p.m. peak hour trip generation associated with new uses included in the preferred alternative. As shown, there are an estimated 1,145 new trips that will be added to the future transportation system in conjunction with development of the preferred alternative concept. Moreover, there are an estimated 12,060 new daily trips to be generated by the plan. Note that the trips associated with the Visitor Destination (eg. chainsaw museum or art museum) may be high, reflecting the lack of available trip data for this use.

Table 3-1 Preferred Alternative - Estimated Trip Generation

Land Use	ITE Code	Size	Daily	Weekday PM Peak Hour		
				Total	In	Out
Multi-Family Housing	220	161 Units	1,070	100	65	35
Commercial	820	14,454 S.F.	1,930	175	85	90
General Industrial (Interim RV Park)	110	53.940 S.F.	375	50	5	45
General Industrial	110	57,788 S.F.	405	60	10	50
Multi-Family Housing	220	74 Units	490	45	30	15
Visitor Destination	435	23,121 S.F	830	85	45	40
Waterfront Commercial	820	85,647S.F.	6,140	570	280	290
Hotel	310	100 Rooms	820	60	30	30
		Total Trips	**12,060**	**1,145**	**550**	**595**

Site Trip Distribution/Trip Assignment

The site-generated trips were distributed onto the study area roadway system according to existing traffic patterns on the area roadways and a qualitative review of major trip origins and destinations in Reedsport. Approximately 65% of study area traffic was assumed to use US 101 as primary access to and from the study area, with another 30% utilizing OR 38. Approximately 5% of the site-generated traffic was assumed to have both origins and destinations within the study area.

Highway Improvement Needs

This section addresses the capacity and safety needs of the highways serving the study area. This analysis considers the traffic impacts of development of each of the concept plans at key intersections in the study area in future years 2025 and 2033.

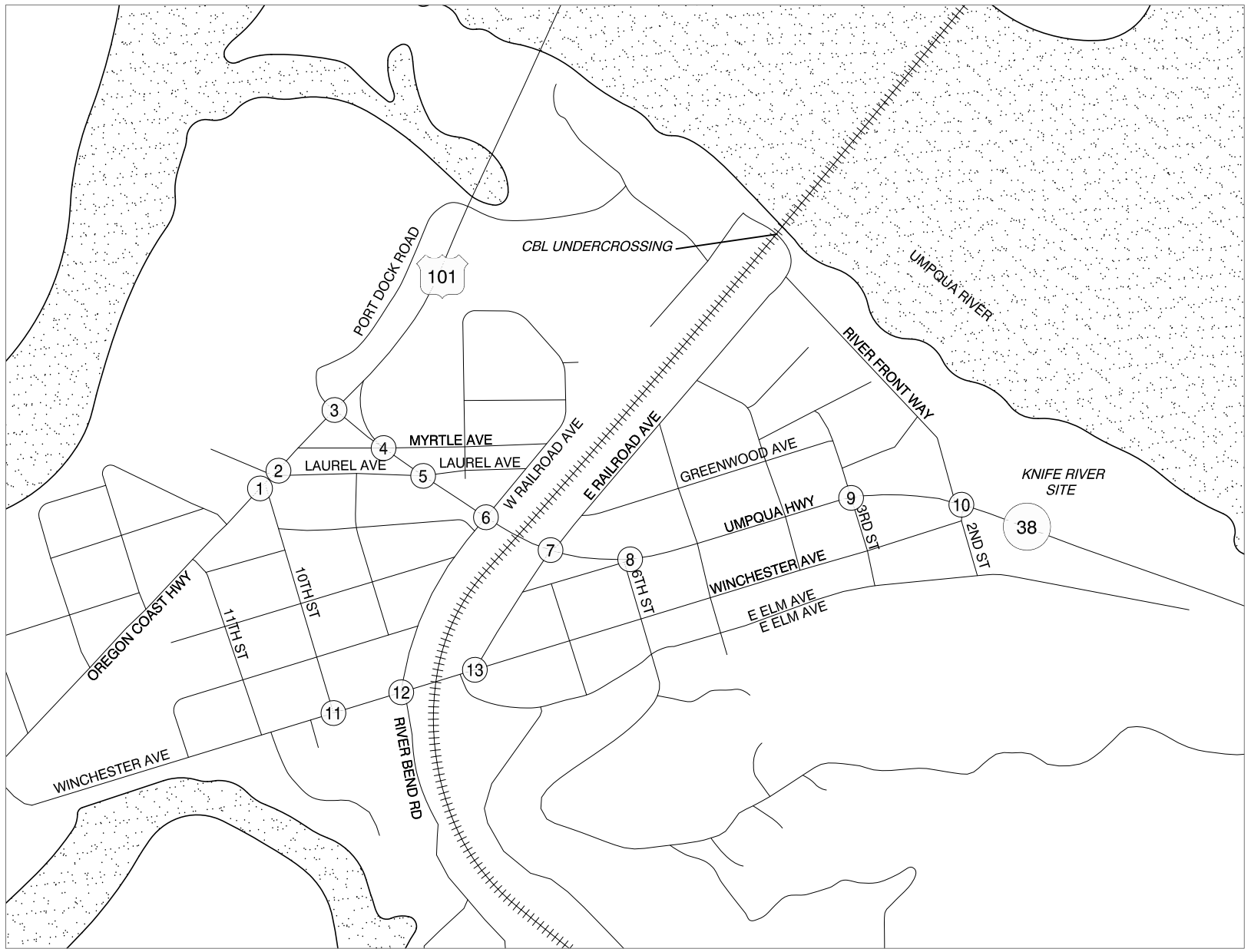
Total Traffic Conditions

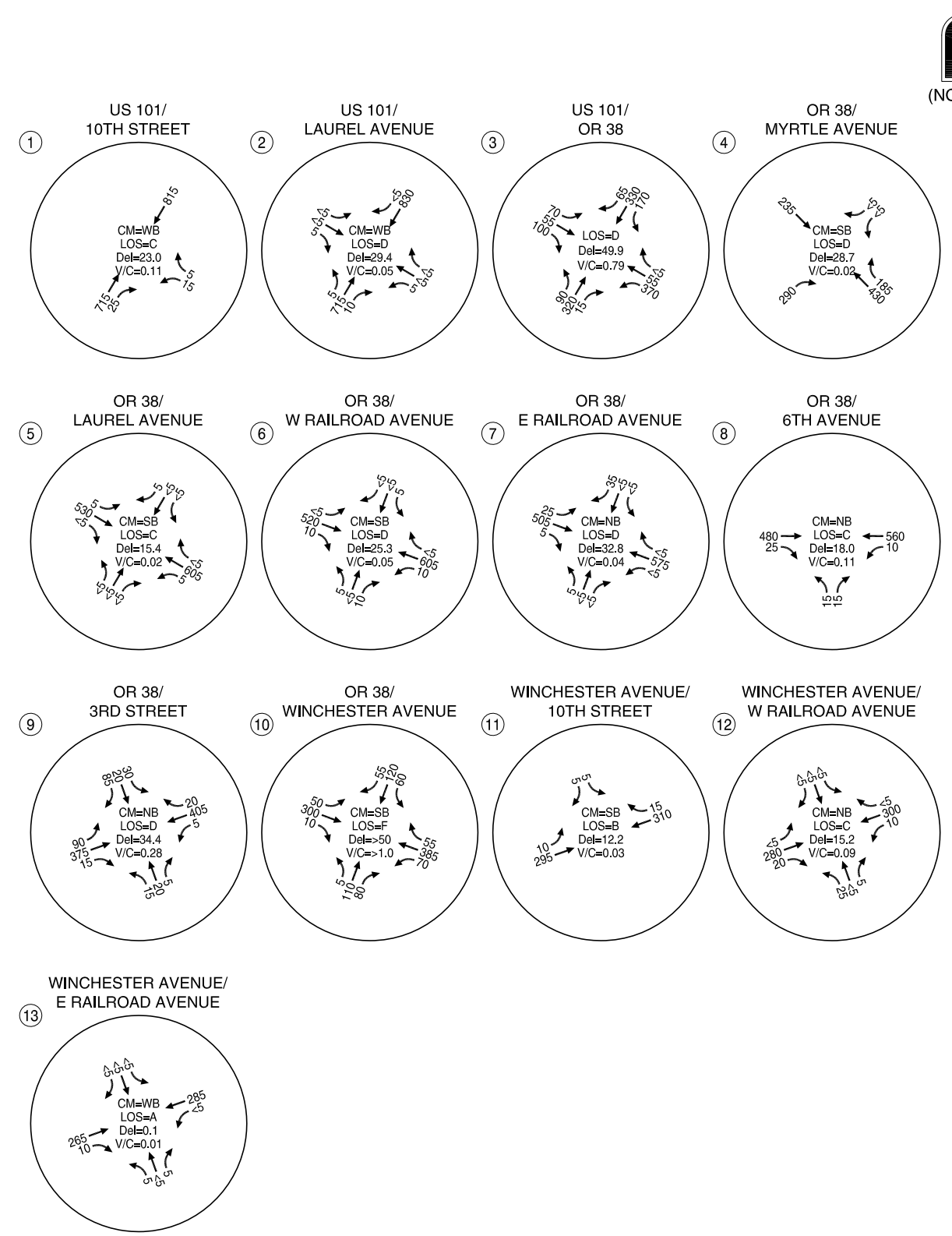
The total traffic conditions analysis forecasts how the study area's transportation system will operate with the traffic generated by the preferred alternative development plan. The year 2025 and year 2033 background traffic volumes (which were increased by a factor of 1½ percent annually from observed 2012 volumes to reflect background growth conditions) for the weekday p.m. were added to the forecast development traffic to arrive at the total traffic volumes that are shown in Figures 3-2 and 3-3, respectively.

As shown in Figures 3-2 and 3-3, each of the study area intersections are forecast to operate acceptably under the year 2025 total traffic conditions with the exception of the OR 38/Winchester Avenue intersection.

OR 38/Winchester Avenue

As shown in Figure 3-2, the OR 38/Winchester Avenue intersection is forecast to operate at level-of service (LOS) F and volume-to-capacity ratio greater than 1.0 during the p.m. peak analysis period under the year 2025 forecast traffic volumes. Delay at the intersection increased under forecast 2033 conditions. Capacity improvements such as construction of a traffic signal or a similar intersection capacity improvement would be sufficient to restore traffic operations to meet ODOT and City mobility standards at this intersection. Other improvements such as adding turn lanes will be less effective in reducing future vehicle delay at this location. Estimated cost of traffic signal improvements at this intersection is $300,000.





2025 PREFERRED ALTERNATIVE TRAFFIC CONDITIONS ANALYSIS
30TH HIGHEST HOUR DESIGN VOLUMES
REEDSPORT, OR

FIGURE **3-2**

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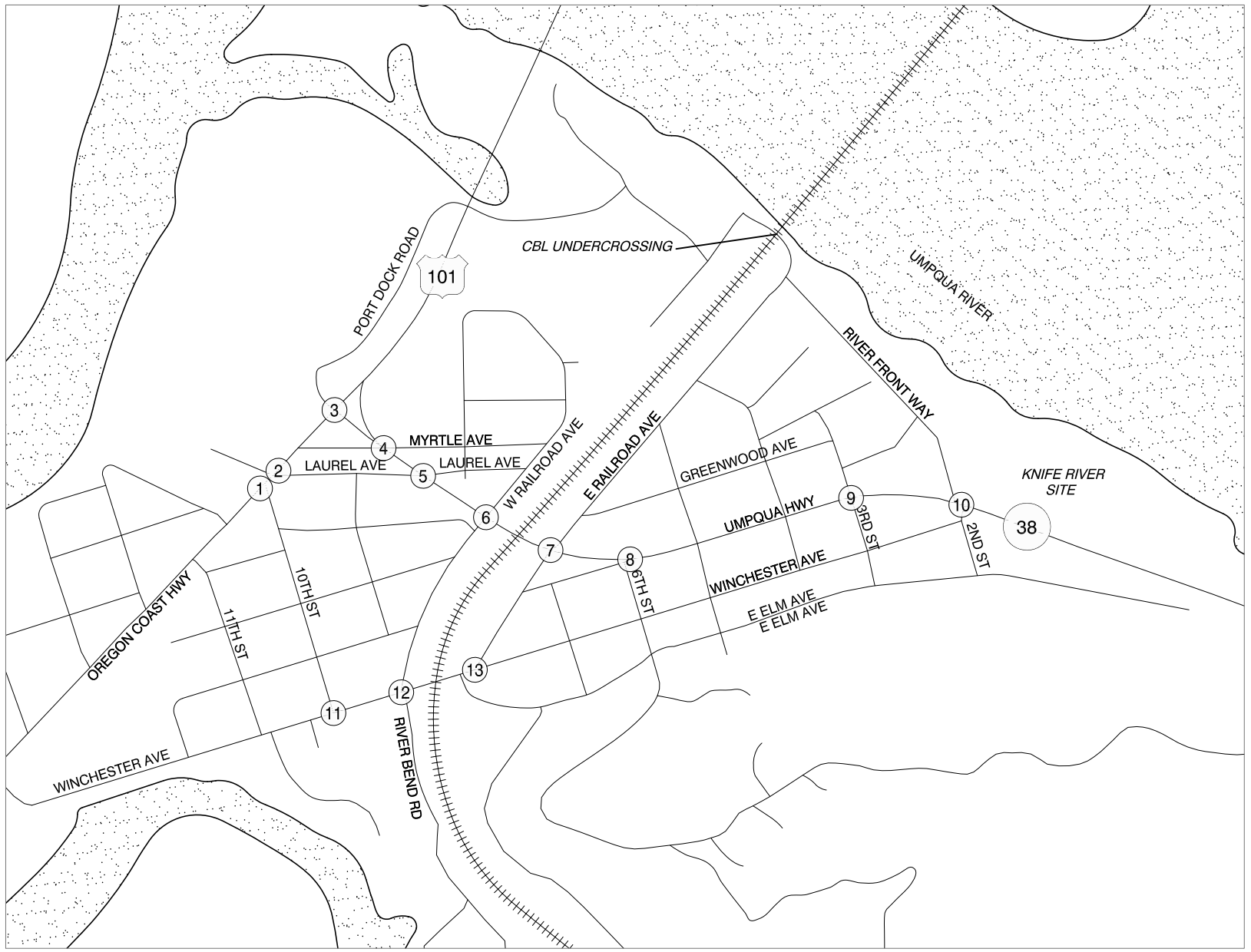
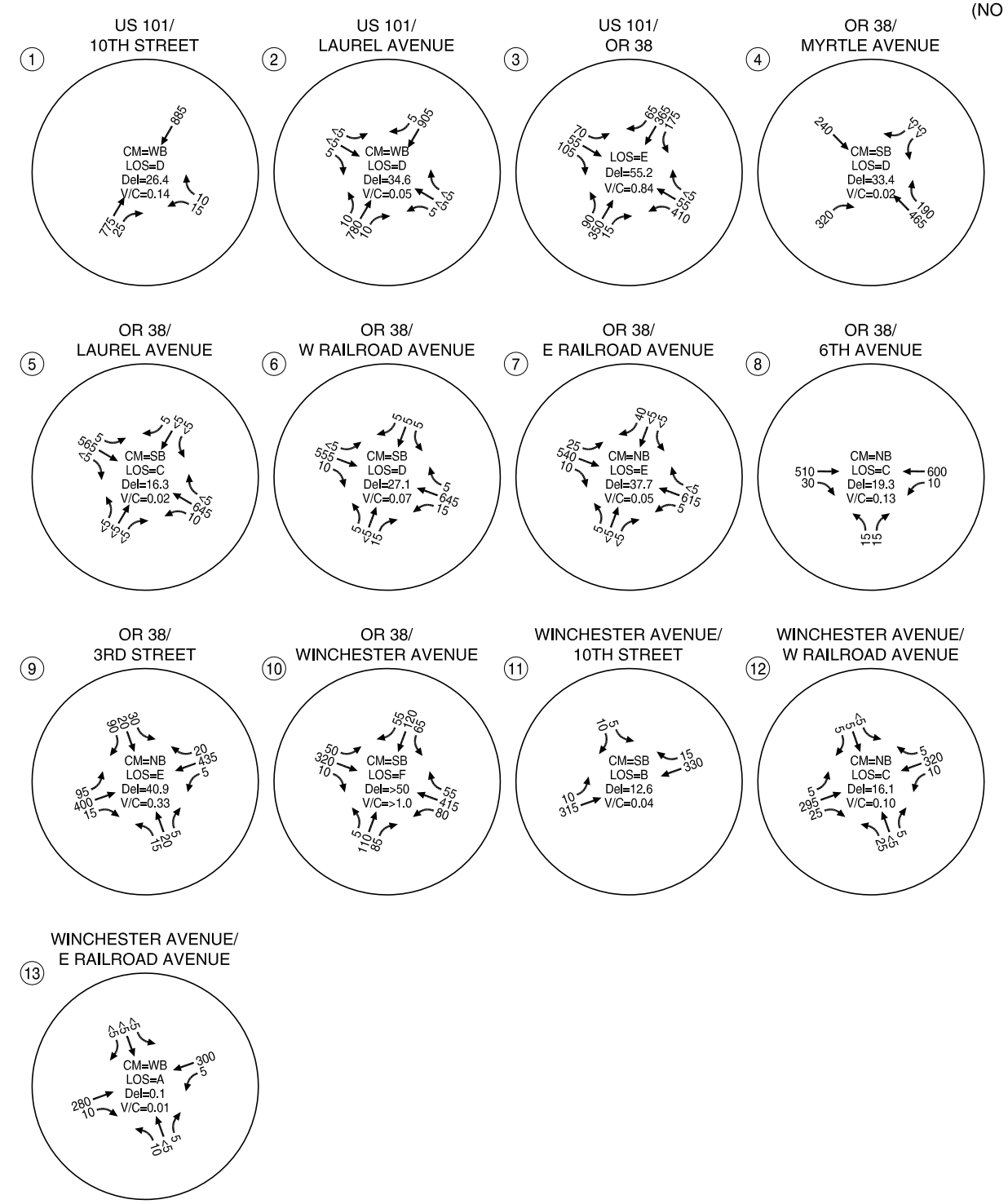
(NO SCALE)





2033 PREFERRED ALTERNATIVE TRAFFIC CONDITIONS ANALYSIS
30TH HIGHEST HOUR DESIGN VOLUMES
REEDSPORT, OR

FIGURE **3-3**

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OR 38/US 101

This signalized intersection is forecast to operate within ODOT mobility standards in the twenty year future (volume-to-capacity of 0.84 in 2033), meeting ODOT mobility standards. Given the planned installation of a new signal controller at this intersection (e.g. Type 2070 controller), it can be expected that vehicle queues at the intersection will not extend beyond available storage lengths. Operations reported in Figure 3-3 assume the installation of the new signal controller.

Summary of Highway Improvements Needed for Preferred Alternative Concept Plan

Table 3-2 summarizes intersection improvements needed to satisfy ODOT mobility standards for the preferred alternative.

Table 3-2 Intersection Capacity Improvements Required for Preferred Alternative

Preferred Alternative		
Intersection	Improvement	Timeframe
US 101/OR 38	New traffic signal controller*	2033
OR 38/Winchester Ave	Traffic Signal	2025

*The new traffic signal controller to be installed by ODOT would likely be a Type 2070 Controller, which would result in improved efficiency at the intersection.

Local Street Improvements

Local street connections, extensions, and modifications that are part of the preferred alternative include:

- Laurel Avenue – US 101 to OR 38 (Project 1): possible traffic calming treatments and parking mitigation
- Riverfront Avenue – extend to OR 38 at Gate 6 as right-in/right-out only access (Project #16)
- Connect Elm Avenue to OR 38 at Gate 6 (Project #9)
- Disconnect 2nd Street from Winchester/2nd/OR 38 intersection (Project #8)
- Realign Elm Avenue at its intersection with Winchester Avenue (Project #10)
- East Railroad Avenue – OR 38 to Riverfront Way (Project #14): widen to City local street standards with one sidewalk on the east side

Each of these projects is discussed below:

Laurel Avenue – US 101 to OR 38: City should monitor speeds on this potential "cut-through" route and, if needed, install traffic calming measures (i.e. visual narrowing through street trees, or speed bumps) to reduce vehicular speeds. The City should also coordinate with US 101 business owners to minimize customer and employee parking overspill onto Laurel Avenue. The estimated cost of traffic calming treatments on Laurel is $5,000.

Riverfront Avenue – extend to OR 38 at Gate 6: As development occurs on the Knife River site, additional circulation streets will be needed. It is assumed that the internal roadway on the Knife River site will be funded by private development, and the cost of providing a new approach to OR 38 at Gate 6 will be borne by the City or ODOT at an estimated cost of $80,000. The additional cost and routing of the internal Riverfront Way extension within the Knife River site was not estimated and is presumed to be borne by the developer.

Connect Elm Avenue – to OR 38 at Gate 6: Additional access is desirable for properties on Elm Avenue east of 2nd Avenue if 2nd Street is disconnected from Winchester Avenue. Thus, a new local street connection from Elm Avenue to OR 38 is recommended directly opposite Gate 6. This connection would help minimize traffic impacts of the 2nd Street disconnection from Winchester on homeowners on Elm Avenue between 2nd and 3rd Streets. This new connection is estimated to cost $100,000, and a portion of this cost may be borne by the developer. This connection will reportedly traverse a wetland; hence, further study should be conducted to determine its feasibility and minimize or mitigate impacts to the wetland.

Disconnect 2nd Street from Winchester: It is recommended that 2nd Street be disconnected from Winchester Avenue, due to the close spacing of intersections. The cost of this disconnection is estimated at $30,000.

Realign Elm Avenue at Winchester: This intersection is poorly aligned and allows motorists headed eastbound on Winchester Avenue to turn right to Elm Avenue at higher than desirable speeds. The cost of realigning this intersection to a right angle is about $100,000. According to City sources, the City owns the land on which the intersection could be realigned. See Figure 3-4 for a concept plan of this improvement.

East Railroad Avenue – OR 38 to Riverfront Way: As property develops adjacent to East Railroad Avenue, the section of this street from OR 38 to Riverfront Way should be reconstructed to City local street standards. This 28-foot curb-to-curb section with a 5-foot sidewalk on the east side will cost an estimated $1.0 million.

Parking Improvements

There is sufficient parking during typical weekday conditions to satisfy demand. During the Chainsaw Festival, visitors may be required to walk as much as three blocks to Rainbow Plaza. Given that this festival is the highest parking generator in the year, this level of walking is reasonable and expected by visitors. Thus, parking supply in the downtown/waterfront area is sufficient to accommodate peak demand conditions.

ELM STREET REALIGNMENT AT WINCHESTER AVENUE REEDSPORT, OR

FIGURE 3-4

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H:\projfile\12034 - ODOT TGM Reedsport Waterfront Plan\dwgs\figs\12034-fig1 Revised.dwg Jun 25, 2012 - 8:17am - ddaly Layout Tab: FIG3-4

The boat launch east of the Discovery Center currently has insufficient parking to satisfy peak demands, particularly during fishing season. There are currently about 30 total parking stalls, 16 for cars-with-trailers and 14 car-only, in an unimproved lot (poorly maintained asphalt and part gravel). The parking lot should be expanded as designed in the two alternative designs prepared by the Oregon State Marine Board with about 41-42 car-trailer parking spaces, which should be sufficient for most peak demand times. As mentioned in a later section, all expanded parking to the east (replacing an old Knife River building) should be set back a nominal distance from the waterfront trail and boardwalk (20-30 feet) for interim landscaping and future small-scale commercial and tourist support uses.

Boat ramp cars-with-trailers parking spaces should be designated and enforced for "CAR-TRAILER ONLY" use to protect them for desired users, particularly during major events in the downtown/waterfront.

There will be occurrences when there will be a demand for greater than supplied parking spaces at the boat ramp; there is sufficient on-street parking space available within reasonable proximity of the boat ramp to accommodate these peak demand periods.

Pedestrian and Bicycle Improvement Needs

- Port Dock Road Multi-use Path from US101 to Riverfront – bicycle and pedestrian path through industrial area
- Laurel Avenue CB Rail Underpass – for bicycles, pedestrians and emergency vehicles
- OR 38 Bike Lanes and Sidewalks – from 6th to US 101
- OR 38 and Winchester Curb Extensions – on OR 38 at 3rd, 4th, 5th and 6th and on Winchester at 4th and 5th (with flashing beacon at 3rd)

Each of these projects is discussed below.

Port Dock Road Multi-use Path – bicycle and pedestrian path through Industrial Area (Project #2): This bicycle/pedestrian connection would improve multi-modal access from US 101 to the Reedsport Waterfront. The routing and design of this connection should be coordinated with the landowner. The estimated cost of signing, striping this multi-use path would be $20,000.

The Port Dock Road Multi-use Path would require improvement of the rail undercrossing immediately south of the Umpqua River. This undercrossing improvement is estimated to cost $60,000, including safety rails on the river side. This project envisions a separated multi-use path immediately north of the road undercrossing (in the space between piers where the "No Trucks" sign is shown in Figure 2-2). Since this undercrossing is on private property, the City should coordinate with the land owner.

Thus, the overall cost of the Port Dock Road Multi-use Path, including signing, striping and undercrossing improvements is estimated at $80,000.

Rail Underpass Project at Laurel – for bicycles, pedestrians and emergency vehicles (Project #3): This project would provide an improved connection for bikers and pedestrians from East Railroad to West Railroad Avenue at about Laurel Avenue. Bollards would be installed at this connection to restrict its use and could be removed by emergency service providers as needed. This route could be used on a limited contingency basis in situations when OR 38 is impeded. The vertical clearance on this undercrossing is limited, and it should be signed accordingly. The estimated cost of this connection is $65,000.

OR 38 Bike lanes and Sidewalks – from 6th to US 101 (Project #5): ODOT has estimated the cost of fully improving OR 38 in this section with bike lanes, sidewalks, and including street realignments of some local streets that currently intersect at acute angles to be $2.3 million, none of which is currently funded. In recognition of limited funding, a lower cost improvement to accommodate bicyclists and pedestrians may be implemented as an interim project. The interim project is described in below. For purposes of showing the full cost of the long-range plan, the ODOT full long-range improvement is shown at $2.3 million in Table 3-3.

The 2006 TSP (Table 5-2, page 5-6) includes a project to construct sidewalks on OR 38 from 6th Street to US 101, at an estimated cost of $536,000. This TSP project assumes that the available paved shoulder width could be restriped to serve as bikelanes (at virtually no cost), and that the costs of the project would be for sidewalks. The TSP estimate also includes $200,000 for upgrading the railroad crossing and traffic control gates, a project that is already funded. Thus, the cost of sidewalks (excluding the railroad crossing improvements) is $336,000. The City has expressed the need to include underground utilities for the eventual installation of streetlights and irrigation. It is estimated that trenching, providing conduit, wiring, junction boxes and irrigation pipe and stub-outs, and installing foundations for streetlights for this 1,600-foot section would cost about $100,000. Thus, an interim project to provide sidewalks, bikelanes (and underground infrastructure to accommodate future streetlights and irrigation) would cost an estimated $436,000 ($336,000 for sidewalks plus $100,000 for infrastructure). The right-of-way in this section of OR 38 is 80 feet, which is sufficient to accommodate travel lanes, bikelanes, separate planter strip, and sidewalks.

OR 38 and Winchester Curb Extensions (Project #7): Curb extensions would improve pedestrian safety, and are planned for the 3rd, 4th, 5th and 6th Street crossings of OR 38, and the 4th and 5th Avenue crossing of Winchester Avenue. The cost of the four pairs of curb extensions (one either side) is $82,000 with signing and striping. The 3rd Street crossing of OR 38 could also be equipped with a rectangular rapid flashing beacon (RRFB) or similar treatment, at an estimated cost of $40,000. Thus, the total cost of this improvement is $162,000.

Riverfront Boardwalk (Project #15): This project would extend the existing boardwalk at the Discovery Center to the railroad (on the west) and to the Knife River site (on the east). The estimated cost of this boardwalk extension is $1.0 million[1].

Waterway Connections Improvement Needs

This section describes the waterway connections planned for the Reedsport Waterfront.

Boat Launches

As mentioned previously, the City Boat Launch is slated for improvements to the dock and parking area under an Oregon State Marine Board grant (pending). This improvement should better accommodate boaters in the future.

Port Dock

The Port Dock located at Fred Wahl Marine will remain in order to serve transient moorage and ship repair needs.

Kayak Trail

The preferred alternative includes a proposed kayak trail from the McIntosh Slough to the Scholfield Slough. A kayak launch area would be provided just west of US 101 at the Port Dock Road undercrossing. Currents in the sloughs are considerably slower for kayaks than those of the Umpqua River. The northern launch on the Mast Bros. property is nearby commercial zoning planned along Port Dock Road to accommodate a kayak shop and/or other concessionaire and visitor support services proximate to the Oregon Dunes Visitors Center. The water trail would connect the NW site area to the SW site area where the Scholfield Slough wraps in close proximity to Winchester Avenue, with a potential second kayak launch at the Coho RV Park.

Access Management Recommendations

This section discusses access management on OR 38 in the study area. There are two existing locations in which ODOT's access spacing policy is not met. These locations are:

- Fir Avenue and 6th Street approaches of OR 38 are within 40 feet of each other, about 300-400 feet east of East Railroad Avenue.

[1] This cost estimate is based on a 1,260-foot long 12-foot wide multi-use path with approximately ½ constructed on piers over the Umpqua River (at an average cost of about $55/sf X 1.25 (engineering and contingency).

- A private driveway to the Sugar Shack Café intersects the highway from the south side within 10 feet of 3rd Street.

Both of these accesses carry very low volumes (especially the private driveway), and the safety analysis did not reveal a pattern or magnitude of accidents indicating a problem. At the Fir Avenue and 6th Street accesses to OR 38, the City reportedly uses Fir Avenue as a staging street for parades. Moreover, 6th Street completes the grid and serves access to local land uses in the area. Currently, the close spacing of these local street accesses to OR 38 does not pose a safety problem, and given the benefit of both streets accessing OR 38 for public purposes, no action is recommended. As traffic grows on OR 38, it may be desirable to re-channelize the Fir Avenue approach by installing curb extensions, thereby reducing the width of its approach to OR 38 and "sea of pavement" that pedestrians encounter when traversing this intersection.

The Sugar Shack Café has alternative access on 3rd Street, and the private driveway on OR 38 (within 10 feet of 3rd Street) is redundant. Hence, in the event that redevelopment is proposed on this property or this section of OR 38 is reconstructed, it is recommended that this driveway be closed. Prior to a land use action or road construction, this driveway should remain unchanged.

New streets are recommended to intersect OR 38 at Gate 6 in conjunction with this plan. Sight distance measurements have been conducted, and this location will meet ODOT standards. Moreover, the spacing of this driveway (750 feet from Winchester Avenue) meets ODOT access management policy requirements.

Currently, 2nd Street intersects with Winchester Avenue about 50 feet south of OR 38. It is recommended that 2nd Street be disconnected from Winchester Avenue to improve intersection safety, thereby prompting the need for alternate access to OR 38. As a result, it is recommended that Elm Avenue be connected to OR 38 at the Gate 6 intersection. Again, this access point is about 750 feet east of the Winchester Avenue intersection, and thus, in compliance with ODOT access spacing policy.

In conjunction with the 2nd Street closure at Winchester Avenue, direct driveway access to OR 38 for the County Road Maintenance Yard is recommended. This low-volume driveway is recommended to be located midway between Winchester Avenue and Gate 6, thereby minimizing conflicts with up and downstream intersections. Moreover, this driveway would have adequate intersection sight distance to meet ODOT safety requirements. The provision of this driveway would facilitate county maintenance trucks not having to use local streets to access OR 38, thereby resulting in an improvement in livability to the adjacent neighborhood.

TRANSPORTATION IMPROVEMENT SUMMARY

Table 3-3 shows the planned transportation infrastructure improvements associated with the preferred alternative. A large number of transportation improvements are associated with alternate modes to the automobile, providing improvements to the pedestrian and bicycle system. Many transportation improvements planned are related to safety issues (i.e. poor intersection alignment) or connectivity needs associated with new development (i.e. new streets to serve development).

Table 3-3 Transportation Improvements and Order-of- Magnitude Preliminary Costs for Preferred Alternative

Preferred Alternative	Preliminary Cost Estimate (in $1,000)[1]
1. Laurel Avenue	$5
2. Bike/ped path through industrial park from US 101 to waterfront (striping and signage -- $20,000) and railroad undercrossing improvements ($60,000)	$80
3. OR 38/Winchester Avenue traffic signal or similar capacity improvement	$300
4. Railroad landscape buffer	$60
5. OR 38 from 6th to US 101 – full improvements per ODOT plans	$2,300[2]
6. Gateways (3 landscape features)	$85
7. Bulb-outs (5 standard and one with Rectangular Rapid Flash Beacon (RRFB) @ OR/38 and 3rd)	$162[3]
8. Disconnect 2nd Street from Winchester	$30
9. New OR 38 eastern access at Knife River/Gate 6 as right in/right out	$80[5]
10. Realign Elm at Winchester for right angle	$100[6]
11. OR 38 wayfinding and street furniture	$280
12. East Railroad Ave from OR 38 to Riverfront Ave (full local street with sidewalks)	$1,200[7]
13. Riverfront boardwalk extension: Discovery Center west to RR and east to Knife River site	$1,000[8]
14. US 101/OR 38 Intersection improvements	-[9]
15. Realign 2nd Street north into Knife River site	$80[4]
16. Connect Elm to OR 38 at Gate 6	$100
17. Extend Riverfront Way to Gate 6	-[10]
18. Multi-use path under railroad at Laurel	$65[11]
TOTAL	**$5,927**

Notes:
1. Estimated in 2012 US dollars
2. ODOT's estimate of the full cost of widening, sidewalks, bikelanes, streetlights, and local intersecting street realignments is $2,300,000. An interim project may be constructed at lower cost of an estimated $436,000.
3. Bulb-outs (one on either side at 4 locations at $10K ea.), plus signing striping [$2K] plus RRFB [$40K]
4. Construct 100' approach built to City standard 28' curb-to-curb section + 5' sidewalks + 5' buffer [38' wide x $15/sf x 100' long x 1.2 contingency =$68.4K + $10K misc. street realignment at intersection].
5. Construct 100' approach built to City standard 28' curb-to-curb section + 5' sidewalks + 5' buffer [38' wide x $15/sf x 100' long x 1.2 contingency =$68.4K + $10K misc. street realignment at intersection].
6. Assumes City owns right-of-way, planning-level cost for street reconstruction plus signing striping.
7. Construct 28' street with two 5' sidewalks x $15/sf x 1700' x 1.2 engin./contingency.
8. Based on a 1,260-foot long 12-foot wide multi-use path with approximately ½ constructed on piers over the Umpqua River (at an average cost of about about $55/sf X 1.25 (engineering and contingency).
9. Assumed to be funded within ODOT maintenance budget.
10. Cost assumed to be borne by developer.
11. Construct 12' asphalt multi-use path/emergency drive [350' long x 12' wide x $12/sf x 1.2 contingency = $60.5] plus signing and bollards [$5 for signing and bollards].

Attachments:

1. 2025 Operations analysis worksheets
2. 2033 Operations analysis worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	49	298	11	72	385	53	4	110	79	62	121	55
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.95	0.90	0.90	0.95	0.85	0.90	0.90	0.90	0.85	0.85	0.85
Hourly flow rate (vph)	58	314	12	80	405	62	4	122	88	73	142	65
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	468			326			1130	1057	314	1174	1038	436
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	468			326			1130	1057	314	1174	1038	436
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			93			93	38	88	0	30	90
cM capacity (veh/h)	1094			1223			65	198	724	70	205	620

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	371	12	80	468	214	280
Volume Left	58	0	80	0	4	73
Volume Right	0	12	0	62	88	65
cSH	1094	1700	1223	1700	266	151
Volume to Capacity	0.05	0.01	0.07	0.28	0.81	1.85
Queue Length 95th (ft)	4	0	5	0	157	527
Control Delay (s)	1.8	0.0	8.2	0.0	57.3	457.2
Lane LOS	A		A		F	F
Approach Delay (s)	1.7		1.2		57.3	457.2
Approach LOS					F	F

Intersection Summary			
Average Delay	99.3		
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	92	373	13	4	405	20	16	19	5	31	20	87
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.95	0.85	0.85	0.95	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	108	393	15	5	426	24	19	22	6	36	24	102
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	450			408			1167	1076	400	1070	1060	426
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	450			408			1167	1076	400	1070	1060	426
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			100			84	89	99	78	88	84
cM capacity (veh/h)	1111			1151			120	197	650	166	201	628

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	516	431	24	47	162
Volume Left	108	5	0	19	36
Volume Right	15	0	24	6	102
cSH	1111	1151	1700	169	325
Volume to Capacity	0.10	0.00	0.01	0.28	0.50
Queue Length 95th (ft)	8	0	0	27	66
Control Delay (s)	2.7	0.1	0.0	34.4	26.6
Lane LOS	A	A		D	D
Approach Delay (s)	2.7	0.1		34.4	26.6
Approach LOS				D	D

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	479	27	8	560	15	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.85	0.85	0.95	0.85	0.85
Hourly flow rate (vph)	504	32	9	589	18	15
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			536		1128	520
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			536		1128	520
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		92	97
cM capacity (veh/h)			1032		224	556

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	536	599	33
Volume Left	0	9	18
Volume Right	32	0	15
cSH	1700	1032	310
Volume to Capacity	0.32	0.01	0.11
Queue Length 95th (ft)	0	1	9
Control Delay (s)	0.0	0.3	18.0
Lane LOS		A	C
Approach Delay (s)	0.0	0.3	18.0
Approach LOS			C

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
Description: Peak Hour: 2:00 to 3:00 p.m.			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	506	7	2	573	1	5	0	0	0	0	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.85	0.85	0.95	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	26	533	8	2	603	1	6	0	0	0	0	44
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	604			541			1241	1198	537	1198	1202	604
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	604			541			1241	1198	537	1198	1202	604
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			96	100	100	100	100	91
cM capacity (veh/h)	973			1028			135	180	544	159	179	498

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	567	607	6	44
Volume Left	26	2	6	0
Volume Right	8	1	0	44
cSH	973	1028	135	498
Volume to Capacity	0.03	0.00	0.04	0.09
Queue Length 95th (ft)	2	0	3	7
Control Delay (s)	0.7	0.1	32.8	12.9
Lane LOS	A	A	D	B
Approach Delay (s)	0.7	0.1	32.8	12.9
Approach LOS			D	B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	522	11	12	604	2	5	1	12	4	2	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.95	0.85	0.85	0.95	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	549	13	14	636	2	6	1	14	5	2	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	638			562			1225	1222	556	1236	1228	637
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	638			562			1225	1222	556	1236	1228	637
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			96	99	97	97	99	100
cM capacity (veh/h)	946			1009			152	177	531	147	176	477

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	562	652	21	9
Volume Left	0	14	6	5
Volume Right	13	2	14	2
cSH	946	1009	294	187
Volume to Capacity	0.00	0.01	0.07	0.05
Queue Length 95th (ft)	0	1	6	4
Control Delay (s)	0.0	0.4	18.2	25.3
Lane LOS		A	C	D
Approach Delay (s)	0.0	0.4	18.2	25.3
Approach LOS			C	D

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	5	5	0	1	7	717	10	0	828	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.85	0.95	0.95	0.85
Hourly flow rate (vph)	0	0	6	6	0	1	7	755	12	0	872	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											398	
pX, platoon unblocked												
vC, conflicting volume	1266	1654	437	1217	1649	383	874			767		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1266	1654	437	1217	1649	383	874			767		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	96	100	100	99			100		
cM capacity (veh/h)	125	96	567	134	97	615	768			843		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	6	7	385	389	581	293
Volume Left	0	6	7	0	0	0
Volume Right	6	1	0	12	0	2
cSH	567	154	768	1700	1700	1700
Volume to Capacity	0.01	0.05	0.01	0.23	0.34	0.17
Queue Length 95th (ft)	1	4	1	0	0	0
Control Delay (s)	11.4	29.4	0.3	0.0	0.0	0.0
Lane LOS	B	D	A			
Approach Delay (s)	11.4	29.4	0.2		0.0	
Approach LOS	B	D				

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	16	7	713	24	6	814
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	17	7	751	25	6	857
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						534
pX, platoon unblocked						
vC, conflicting volume	1204	388			776	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1204	388			776	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	99			99	
cM capacity (veh/h)	175	611			836	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	24	500	275	292	571
Volume Left	17	0	0	6	0
Volume Right	7	0	25	0	0
cSH	224	1700	1700	836	1700
Volume to Capacity	0.11	0.29	0.16	0.01	0.34
Queue Length 95th (ft)	9	0	0	1	0
Control Delay (s)	23.0	0.0	0.0	0.3	0.0
Lane LOS	C			A	
Approach Delay (s)	23.0	0.0		0.1	
Approach LOS	C				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	8	297	312	16	6	7
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.90	0.90	0.85	0.85	0.85
Hourly flow rate (vph)	9	330	347	19	7	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	365				705	356
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	365				705	356
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	99
cM capacity (veh/h)	1193				400	688

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	339	365	15
Volume Left	9	0	7
Volume Right	0	19	8
cSH	1193	1700	516
Volume to Capacity	0.01	0.21	0.03
Queue Length 95th (ft)	1	0	2
Control Delay (s)	0.3	0.0	12.2
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	12.2
Approach LOS			B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	34.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	265	11	2	284	0	7	0	5	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.90	0.85	0.85	0.90	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	294	13	2	316	0	8	0	6	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	316			307			621	621	301	627	628	316
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	316			307			621	621	301	627	628	316
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			98	100	99	100	100	100
cM capacity (veh/h)	1245			1253			399	403	739	392	399	725

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	307	318	0
Volume Left	0	2	0
Volume Right	13	0	0
cSH	1700	1253	1700
Volume to Capacity	0.18	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.1	0.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.1	0.0
Approach LOS			A

Intersection Summary			
Average Delay		Err	
Intersection Capacity Utilization		Err%	ICU Level of Service	H
Analysis Period (min)		15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	278	21	10	301	2	23	1	5	1	2	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.90	0.85	0.85	0.90	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	2	309	25	12	334	2	27	1	6	1	2	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	337			334			689	686	321	692	697	336
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	337			334			689	686	321	692	697	336
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			92	100	99	100	99	100
cM capacity (veh/h)	1222			1226			354	366	720	352	360	706

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	336	349	34	6
Volume Left	2	12	27	1
Volume Right	25	2	6	2
cSH	1222	1226	388	445
Volume to Capacity	0.00	0.01	0.09	0.01
Queue Length 95th (ft)	0	1	7	1
Control Delay (s)	0.1	0.4	15.2	13.2
Lane LOS	A	A	C	B
Approach Delay (s)	0.1	0.4	15.2	13.2
Approach LOS			C	B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	68	53	102	372	53	0	89	321	13	169	330	63
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.94			1.00		1.00	0.99		1.00	0.98	
Flt Protected		0.98			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1586			1435		1630	3040		1630	3008	
Flt Permitted		0.96			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1545			1435		1630	3040		1630	3008	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	72	56	107	392	56	0	94	338	14	178	347	66
RTOR Reduction (vph)	0	23	0	0	0	0	0	2	0	0	11	0
Lane Group Flow (vph)	0	212	0	0	448	0	94	350	0	178	402	0
Heavy Vehicles (%)	2%	2%	2%	19%	2%	2%	2%	9%	2%	2%	9%	2%
Turn Type	Perm	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases		4		8	8		1	6		5	2	
Permitted Phases	4											
Actuated Green, G (s)		19.4			40.2		10.1	20.3		16.3	26.5	
Effective Green, g (s)		19.4			40.2		10.1	20.3		16.3	26.5	
Actuated g/C Ratio		0.17			0.36		0.09	0.18		0.14	0.23	
Clearance Time (s)		4.0			4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)		2.5			2.5		2.5	6.1		2.5	6.1	
Lane Grp Cap (vph)		265			510		145	545		235	704	
v/s Ratio Prot					c0.31		0.06	c0.11		c0.11	0.13	
v/s Ratio Perm		c0.14										
v/c Ratio		0.80			0.88		0.65	0.64		0.76	0.57	
Uniform Delay, d1		45.0			34.2		49.8	43.1		46.6	38.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		14.9			15.6		8.5	4.3		12.5	2.3	
Delay (s)		60.0			49.8		58.3	47.3		59.0	40.6	
Level of Service		E			D		E	D		E	D	
Approach Delay (s)		60.0			49.8			49.7			46.1	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM Average Control Delay	49.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	113.2	Sum of lost time (s)	17.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	531	0	7	604	1	0	0	1	1	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.95	0.85	0.85	0.95	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	5	559	0	8	636	1	0	0	1	1	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	637			559			1227	1222	559	1222	1221	636
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	637			559			1227	1222	559	1222	1221	636
tC, single (s)	4.1			4.1			7.1	6.6	6.2	7.1	6.7	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.1	3.3	3.5	4.2	3.3
p0 queue free %	100			99			100	100	100	99	100	99
cM capacity (veh/h)	947			1012			152	168	529	154	165	478

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	564	645	1	7
Volume Left	5	8	0	1
Volume Right	0	1	1	6
cSH	947	1012	529	354
Volume to Capacity	0.00	0.01	0.00	0.02
Queue Length 95th (ft)	0	1	0	2
Control Delay (s)	0.1	0.2	11.8	15.4
Lane LOS	A	A	B	C
Approach Delay (s)	0.1	0.2	11.8	15.4
Approach LOS			B	C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	235	0	0	613	0	0	0	292	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.95	0.95	0.95	0.95	0.95	0.95	0.85	0.85	0.85
Hourly flow rate (vph)	0	276	0	0	645	0	0	0	307	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	645			276			923	922	276	1229	922	645
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	645			276			923	922	276	1229	922	645
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	60	99	100	100
cM capacity (veh/h)	940			1286			250	270	762	92	270	472

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	276	645	307	2
Volume Left	0	0	0	1
Volume Right	0	0	307	1
cSH	1700	1700	762	154
Volume to Capacity	0.16	0.38	0.40	0.02
Queue Length 95th (ft)	0	0	49	1
Control Delay (s)	0.0	0.0	12.9	28.7
Lane LOS			B	D
Approach Delay (s)	0.0	0.0	12.9	28.7
Approach LOS			B	D

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	319	12	79	415	53	4	110	87	63	122	56
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.95	0.90	0.90	0.95	0.85	0.90	0.90	0.90	0.85	0.85	0.85
Hourly flow rate (vph)	59	336	13	88	437	62	4	122	97	74	144	66
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	499			349			1203	1128	336	1255	1110	468
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	499			349			1203	1128	336	1255	1110	468
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			93			90	31	86	0	22	89
cM capacity (veh/h)	1065			1199			46	178	704	52	183	595

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	395	13	88	499	223	284
Volume Left	59	0	88	0	4	74
Volume Right	0	13	0	62	97	66
cSH	1065	1700	1199	1700	243	123
Volume to Capacity	0.06	0.01	0.07	0.29	0.92	2.31
Queue Length 95th (ft)	4	0	6	0	200	611
Control Delay (s)	1.8	0.0	8.2	0.0	82.2	671.5
Lane LOS	A		A		F	F
Approach Delay (s)	1.7		1.2		82.2	671.5
Approach LOS					F	F

Intersection Summary			
Average Delay	139.9		
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	94	399	15	4	435	20	17	20	5	32	21	90
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.95	0.85	0.85	0.95	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	111	420	18	5	458	24	20	24	6	38	25	106
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	481			438			1236	1141	429	1135	1126	458
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	481			438			1236	1141	429	1135	1126	458
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			100			81	87	99	74	87	82
cM capacity (veh/h)	1081			1122			104	179	626	147	183	603

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	548	463	24	49	168
Volume Left	111	5	0	20	38
Volume Right	18	0	24	6	106
cSH	1081	1122	1700	149	297
Volume to Capacity	0.10	0.00	0.01	0.33	0.57
Queue Length 95th (ft)	9	0	0	34	81
Control Delay (s)	2.7	0.1	0.0	40.9	31.8
Lane LOS	A	A		E	D
Approach Delay (s)	2.7	0.1		40.9	31.8
Approach LOS				E	D

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	509	29	9	598	16	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.85	0.85	0.95	0.85	0.85
Hourly flow rate (vph)	536	34	11	629	19	18
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			570		1203	553
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			570		1203	553
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		91	97
cM capacity (veh/h)			1003		201	533

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	570	640	36
Volume Left	0	11	19
Volume Right	34	0	18
cSH	1700	1003	288
Volume to Capacity	0.34	0.01	0.13
Queue Length 95th (ft)	0	1	11
Control Delay (s)	0.0	0.3	19.3
Lane LOS		A	C
Approach Delay (s)	0.0	0.3	19.3
Approach LOS			C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
Description: Peak Hour: 2:00 to 3:00 p.m.			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	538	8	3	613	1	5	0	0	0	0	40
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.85	0.85	0.95	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	28	566	9	4	645	1	6	0	0	0	0	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	646			576			1328	1281	571	1281	1285	646
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	646			576			1328	1281	571	1281	1285	646
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			95	100	100	100	100	90
cM capacity (veh/h)	939			998			116	160	520	139	159	472

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	604	650	6	47
Volume Left	28	4	6	0
Volume Right	9	1	0	47
cSH	939	998	116	472
Volume to Capacity	0.03	0.00	0.05	0.10
Queue Length 95th (ft)	2	0	4	8
Control Delay (s)	0.8	0.1	37.7	13.5
Lane LOS	A	A	E	B
Approach Delay (s)	0.8	0.1	37.7	13.5
Approach LOS			E	B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	556	12	13	646	3	5	1	13	4	3	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.95	0.85	0.85	0.95	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	585	14	15	680	4	6	1	15	5	4	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	684			599			1310	1306	592	1321	1312	682
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	684			599			1310	1306	592	1321	1312	682
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			96	99	97	96	98	99
cM capacity (veh/h)	910			978			131	157	506	127	156	450

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	599	699	22	12
Volume Left	0	15	6	5
Volume Right	14	4	15	4
cSH	910	978	271	175
Volume to Capacity	0.00	0.02	0.08	0.07
Queue Length 95th (ft)	0	1	7	5
Control Delay (s)	0.0	0.4	19.5	27.1
Lane LOS		A	C	D
Approach Delay (s)	0.0	0.4	19.5	27.1
Approach LOS			C	D

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	5	5	0	1	8	781	11	0	903	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.95	0.95	0.85	0.95	0.95	0.85
Hourly flow rate (vph)	0	0	6	6	0	1	8	822	13	0	951	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											398	
pX, platoon unblocked												
vC, conflicting volume	1381	1804	477	1327	1799	418	954			835		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1381	1804	477	1327	1799	418	954			835		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	95	100	100	99			100		
cM capacity (veh/h)	102	78	534	111	78	584	716			794		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	6	7	419	424	634	320
Volume Left	0	6	8	0	0	0
Volume Right	6	1	0	13	0	4
cSH	534	129	716	1700	1700	1700
Volume to Capacity	0.01	0.05	0.01	0.25	0.37	0.19
Queue Length 95th (ft)	1	4	1	0	0	0
Control Delay (s)	11.8	34.6	0.4	0.0	0.0	0.0
Lane LOS	B	D	A			
Approach Delay (s)	11.8	34.6	0.2		0.0	
Approach LOS	B	D				

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	17	8	777	27	7	887
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	18	8	818	28	7	934
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						534
pX, platoon unblocked						
vC, conflicting volume	1314	423			846	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1314	423			846	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	99			99	
cM capacity (veh/h)	148	579			786	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	26	545	301	319	622
Volume Left	18	0	0	7	0
Volume Right	8	0	28	0	0
cSH	195	1700	1700	786	1700
Volume to Capacity	0.14	0.32	0.18	0.01	0.37
Queue Length 95th (ft)	11	0	0	1	0
Control Delay (s)	26.4	0.0	0.0	0.3	0.0
Lane LOS	D			A	
Approach Delay (s)	26.4	0.0		0.1	
Approach LOS	D				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	9	314	330	17	7	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.90	0.90	0.85	0.85	0.85
Hourly flow rate (vph)	11	349	367	20	8	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	387				747	377
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387				747	377
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	99
cM capacity (veh/h)	1172				377	670

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	359	387	18
Volume Left	11	0	8
Volume Right	0	20	9
cSH	1172	1700	492
Volume to Capacity	0.01	0.23	0.04
Queue Length 95th (ft)	1	0	3
Control Delay (s)	0.3	0.0	12.6
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	12.6
Approach LOS			B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	279	12	3	299	0	8	0	5	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.90	0.85	0.85	0.90	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	310	14	4	332	0	9	0	6	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	332			324			656	656	317	662	663	332
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	332			324			656	656	317	662	663	332
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			98	100	99	100	100	100
cM capacity (veh/h)	1227			1236			378	384	723	371	380	709

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	324	336	0
Volume Left	0	4	0
Volume Right	14	0	0
cSH	1700	1236	1700
Volume to Capacity	0.19	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.1	0.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.1	0.0
Approach LOS			A

Intersection Summary			
Average Delay		Err	
Intersection Capacity Utilization		Err%	ICU Level of Service	H
Analysis Period (min)		15	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	294	23	11	318	3	25	1	5	1	3	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.90	0.85	0.85	0.90	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	4	327	27	13	353	4	29	1	6	1	4	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	357			354			734	730	340	735	742	355
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	357			354			734	730	340	735	742	355
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			91	100	99	100	99	99
cM capacity (veh/h)	1202			1205			328	344	702	328	339	689

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	357	370	36	8
Volume Left	4	13	29	1
Volume Right	27	4	6	4
cSH	1202	1205	360	431
Volume to Capacity	0.00	0.01	0.10	0.02
Queue Length 95th (ft)	0	1	8	1
Control Delay (s)	0.1	0.4	16.1	13.5
Lane LOS	A	A	C	B
Approach Delay (s)	0.1	0.4	16.1	13.5
Approach LOS			C	B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	54	107	408	54	0	92	352	15	174	363	64
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.94			1.00		1.00	0.99		1.00	0.98	
Flt Protected		0.99			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1584			1432		1630	3040		1630	3011	
Flt Permitted		0.96			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1548			1432		1630	3040		1630	3011	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	74	57	113	429	57	0	97	371	16	183	382	67
RTOR Reduction (vph)	0	23	0	0	0	0	0	2	0	0	11	0
Lane Group Flow (vph)	0	221	0	0	486	0	97	385	0	183	438	0
Heavy Vehicles (%)	2%	2%	2%	19%	2%	2%	2%	9%	2%	2%	9%	2%
Turn Type	Perm	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases		4		8	8		1	6		5	2	
Permitted Phases	4											
Actuated Green, G (s)		20.1			43.9		10.2	19.9		16.6	26.3	
Effective Green, g (s)		20.1			43.9		10.2	19.9		16.6	26.3	
Actuated g/C Ratio		0.17			0.37		0.09	0.17		0.14	0.22	
Clearance Time (s)		4.0			4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)		2.5			2.5		2.5	6.1		2.5	6.1	
Lane Grp Cap (vph)		265			535		141	515		230	674	
v/s Ratio Prot					c0.34		0.06	c0.13		c0.11	0.15	
v/s Ratio Perm		c0.14										
v/c Ratio		0.83			0.91		0.69	0.75		0.80	0.65	
Uniform Delay, d1		47.1			34.9		52.1	46.4		48.8	41.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		19.3			19.1		12.0	7.9		16.6	3.6	
Delay (s)		66.4			54.0		64.1	54.3		65.4	45.1	
Level of Service		E			D		E	D		E	D	
Approach Delay (s)		66.4			54.0			56.2			51.0	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM Average Control Delay	55.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	117.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	565	0	8	646	1	0	0	1	1	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.95	0.85	0.85	0.95	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	5	595	0	9	680	1	0	0	1	1	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	681			595			1309	1304	595	1305	1304	681
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	681			595			1309	1304	595	1305	1304	681
tC, single (s)	4.1			4.1			7.1	6.6	6.2	7.1	6.7	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.1	3.3	3.5	4.2	3.3
p0 queue free %	99			99			100	100	100	99	100	99
cM capacity (veh/h)	911			981			133	149	504	135	146	451

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	599	691	1	7
Volume Left	5	9	0	1
Volume Right	0	1	1	6
cSH	911	981	504	325
Volume to Capacity	0.01	0.01	0.00	0.02
Queue Length 95th (ft)	0	1	0	2
Control Delay (s)	0.1	0.3	12.2	16.3
Lane LOS	A	A	B	C
Approach Delay (s)	0.1	0.3	12.2	16.3
Approach LOS			B	C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	242	0	0	655	0	0	0	319	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.95	0.95	0.95	0.95	0.95	0.95	0.85	0.85	0.85
Hourly flow rate (vph)	0	285	0	0	689	0	0	0	336	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	689			285			975	974	285	1310	974	689
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	689			285			975	974	285	1310	974	689
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	55	98	100	100
cM capacity (veh/h)	905			1278			230	252	754	75	252	445

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	285	689	336	2
Volume Left	0	0	0	1
Volume Right	0	0	336	1
cSH	1700	1700	754	129
Volume to Capacity	0.17	0.41	0.45	0.02
Queue Length 95th (ft)	0	0	58	1
Control Delay (s)	0.0	0.0	13.5	33.4
Lane LOS			B	D
Approach Delay (s)	0.0	0.0	13.5	33.4
Approach LOS			B	D

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

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PROJECT MEMORANDUM
Preferred Transportation Alternative Analysis REVISED

Date: August 14, 2012 Project #: 12034

To: Scot Keillor
Columbia Planning Northwest
885 Methodist Road
Hood River, OR 97031

Scot Siegel
Siegel Planning Services, LLC
15450 Boones Ferry Road, 9-145
Lake Oswego, OR 97035

From: Dan Seeman, Chris Brehmer, P.E., and Dave Daly
Project: Reedsport Waterfront & Downtown Plan
Subject: Preferred Transportation Alternatives Analysis

The purpose of this memorandum is to address the revisions that were made to the Preferred Alternative for the Reedsport Waterfront & Downtown Plan. This memorandum summarizes revisions that were made to two areas of the plan: 1) land use, and 2) trails.

Land Use Revisions

The revisions include changing 0.33 acres of Block B from Light Industrial to Live/Work use, and 0.33 acres west of the Discovery Center from Waterfront Commercial to Light Industrial. Thus, there is no change in the total square footage of Light Industrial uses in the study area, and there is a change of about 0.33 acres from Waterfront Commercial uses to Live-Work uses. Based on assumed lot coverage and densities, and that the Live-Work land use category includes multi-family residential and office uses, the net square footage changes are as follows in the study area:

- 5,391 gross square feet ***less*** of Waterfront Commercial uses
- 2,696 gross square feet ***more*** of General Office uses
- 2 ***more*** multi-family dwelling units

Table 3-1 below (from the July 13, 2012 project memorandum prepared by Kittelson & Associates) shows the estimated summertime trip generation for uses included in the Preferred Alternative Transportation Analysis. Trip generation was estimated based on information provided in the standard reference manual *Trip Generation, 8th Edition* published by the Institute of Transportation Engineers (ITE-Reference 1). All daily trips have been rounded to the nearest ten and all peak hour trips have been rounded to the nearest five trips.

Table 3-1 ORIGINAL Preferred Alternative - Estimated Trip Generation

Land Use	ITE Code	Size	Daily	Weekday PM Peak Hour		
				Total	In	Out
Multi-Family Housing	220	161 Units	1,070	100	65	35
Commercial	820	14,454 S.F.	1,930	175	85	90
General Industrial (Interim RV Park)	110	53.940 S.F.	375	50	5	45
General Industrial	110	57,788 S.F.	405	60	10	50
Multi-Family Housing	220	74 Units	490	45	30	15
Visitor Destination	435	23,121 S.F	830	85	45	40
Waterfront Commercial	820	85,647S.F.	6,140	570	280	290
Hotel	310	100 Rooms	820	60	30	30
		Total Trips	**12,060**	**1,145**	**550**	**595**

Table 3-1a shows the ***revised*** estimated summertime weekday p.m. peak hour trip generation associated with revised uses in the preferred alternative. As shown, there will be about three percent fewer trips generated by study area uses as a result of the revised land uses. This amounts to about 35 fewer weekday p.m. peak hour trips generated by study area land uses.

Table 3-1a REVISED Preferred Alternative - Estimated Trip Generation

Land Use	ITE Code	Size	Daily	Weekday PM Peak Hour		
				Total	In	Out
Multi-Family Housing	220	161 Units	1,070	100	65	35
Commercial	820	14,454 S.F.	1,930	175	85	90
General Industrial (Interim RV Park)	110	53.940 S.F.	375	50	5	45
General Industrial	110	57,788 S.F.	405	60	10	50
Multi-Family Housing	220	76 Units (+2 units)	510 (+20)	45 (Neg)	30 (Neg)	15 (Neg)
Visitor Destination	435	23,121 S.F	830	85	45	40
Waterfront Commercial	820	85,647S.F. (-5391 SF)	5,755 (-385)	530 (-40)	260 (-20)	270 (-20)
General Office	710	2,696	30 (+30)	5 (+5)	Neg (Neg)	5 (+5)
Hotel	310	100 Rooms	820	60	30	30
		Total Trips	**11,725** (-335) *-3%*	**1,110** (-35) *-3%*	**530** (-20) *-3%*	**580** (-15) *-3%*

Based on this very marginal change in trip generation, it is reasonable to conclude that the revised land uses do not significantly change the findings, conclusions or recommendations of the transportation analysis for the Reedsport Waterfront & Downtown Plan.

Trail Revisions

This section summarizes the impact of the trail revisions that were made to the plan that was presented at the July 24, 2012 community open house and advisory committee meeting. Accordingly, these revisions were made in response to the inability to connect the waterfront multi-use pathway through the Port of Umpqua Industrial Park along Port Dock Road (from US 101 to the Coos Bay Rail Link) due to potential conflicts with heavy marine industrial uses. The Levee Loop Trail is a multi-use pathway system which is designed to complement the Scholfield River Multi-use trail designated in the 2006 Transportation System Plan. This plan does not alter the recommended trails designated in the TSP; rather this plan augments that system by connecting it to existing on-street facilities. There is an additional connection, to include paving the existing gravel path along the north and east boundaries of Champion Park and the Oregon Dunes NRA Visitor Center. Also, an earthen path will be provided along Scholfield and McIntosh Sloughs from the northwest corner of Champion Park to Port Dock Road immediately west of US 101. The on-street improvements will be implemented using painted stencils on asphalt and signs for wayfinding. This "bow tie" path system connects from the planned OR 38 improvements from 6th Street to US 101, and the proposed Laurel Avenue undercrossing improvement to the east and west via the following streets:

- East Levee Loop: E. Railroad Ave to Riverfront Way,, 2nd Street and Winchester to US 101 at 13th Street
- West Levee Loop: 14th Street to Hawthorne to 13th Street to existing Levee path, to connect with Port Dock Road in the northeast corner of the Oregon Dunes NRA Visitor Center (with an auxiliary earthen path for kayakers along the sloughs)

The Levee Loop Trail, as recommended, will be accomplished through signing and striping, with paving adjacent to Champion Park and visitor center and earthen trail along the sloughs. Its estimated cost is $80,000.

APPENDIX C – DESCRIPTION OF FUNDING OPTIONS

The construction cost of a new streets, parks and storm drainage systems in downtown are well beyond the limitations of the City's general fund resources. The City is consequently dependent on other forms of revenue to finance the types of projects contained in the plan.

User Fees

The City of Reedsport currently charges user fees for public use of boat launch facilities but such fees tend to cover only a small portion of local operations and maintenance activities. Increasing user fees or applying new types of user fees (e.g., fees for utilizing community park/picnic areas or marina slips) could be considered as means to enhance local operating revenues, but would now require voter approval and not likely result in adequate revenues for major land acquisition or facilities expansion. Hence, other types of funding techniques (described below) may be more appropriate for planned boardwalk, trails and natural areas facilities and capital improvements.

System Development Charges

Oregon Revised Statutes (ORS) 223.297 – 223.314 provide "a uniform framework for the imposition of system development charges by governmental units" and establish "that the charges may be used only for capital improvements."

System Development Charge (SDC) ordinances can include: (1) a reimbursement fee, intended to recover an equitable share of the cost of facilities already constructed or under construction; and/or (2) an improvement fee, intended to recover a fair share of future, planned, capital improvements needed to increase the capacity of the system. The statutes (ORS 222.299) define "capital improvements" as facilities or assets used for:

- Water supply, treatment and distribution;
- Waste water collection, transmission, treatment and disposal;
- Drainage and flood control;
- Transportation; or
- Parks and recreation.

System Development Charges cannot be used for operation or routine maintenance.

Reedsport may apply SDC funding to designated downtown capital improvements that enhance capacity as required to address future growth needs. Potentially applicable downtown facilities include streets, public parking, pedestrian facilities, and storm drainage and flood control improvements.

Due to the relatively low levels of new residential, commercial and industrial development anticipated in the City of Reedsport over the planning horizon, SDCs are not expected to be a major source of near-term funding for

downtown improvements. Enactment of SDCs would require voter approval under the revised City Charter Amendment passed by Reedsport voters in May 2012.

Local Improvement District (LID)

Cities in Oregon have the statutory authority to establish local improvement districts and levy special assessments on the benefited property to pay for improvements. These are payable in annual installments for up to 30 years. LIDs are generally used for capital improvement projects that benefit numerous large tenants and/or private property owners. The formation of LID districts could be considered as a potential primary source of funding downtown streetscape improvements because there will be direct benefits to multiple property owners. A legal opinion is needed to determine if a local LID that is not a citywide fee increase would require voter approval.

Zone of Benefit District (ZBD)

Similar to Local Improvement Districts, cities can require future downtown developers, within a designated zone of benefit district (ZBD), to partially reimburse the city for capital improvement that were funded in advance of planned redevelopment efforts. This payment would be made directly to the City, only if the developer/applicant seeks a building permit or development approval within 15 years of formation of the ZBD. A legal opinion is needed to determine if a local ZBD that is not a citywide fee increase would require voter approval.

Urban Renewal District (URD)

At the discretion of the City of Reedsport's Urban Renewal Agency, there may be opportunities to utilize funding from the existing downtown Urban Renewal District (URD) for eligible economic development improvements. In many cases, URD funds are combined with other local funding sources (e.g., LIDs) to leverage non-local grants or loans. Based on discussions with city staff, the existing URD funds are very limited so funding from existing URD revenues would be an ancillary source (not a primary source) of funds for capital facilities. Formation of URDs do not typically require voter approval. However, a legal opinion is needed to determine if a local URD that does not directly result in a citywide tax increase requires voter approval.

Economic Improvement District (EID)

Cities may establish an Economic Improvement District (EID) or business improvement district (BID) to create additional revenue for targeted infrastructure improvements or enhanced operating/advertising services (e.g., public safety or marketing within downtown). EIDs require the formation of a special benefit district area, identification of improvements and services to be funded, along with an assessment mechanism and methodology report that is subject to approval by the majority of property owners within the district. In Oregon, most EIDs are limited to relatively small annual assessments and used to enhance maintenance and marketing

activities. A legal opinion is needed to determine if a local EID that is not a citywide fee increase would require voter approval.

Parking Districts

Several cities in Oregon have established special parking districts in their downtown areas (including Bend, The Dalles, Salem, Ashland, etc.) with revenues derived from parking fees and citations. Parking districts are generally intended to enhance the overall parking efficiency and management within downtown locations. Funds may be combined with other sources of local funding and used for parking system and operational improvements, such as development of new public off-street parking facilities and parking area maintenance activities. A legal opinion is needed to determine if a local parking district that is not a citywide fee increase would require voter approval.

Utility Fees and Connection Charges

Utility rates and connection charges are a common way to raise local revenues to pay for required infrastructure facilities and operations but require approval and adoption by the City Council or utility district and must meet state and local regulations. Utility fees for street lighting, transportation, parks or storm drainage facilities are utilized by several cities in Oregon, including La Grande, Lake Oswego and Medford. An increase in utility fees would now require voter approval per the revised Reedsport City Charter approved in May 2012.

Donations and Corporate Sponsorships

Reedsport has a long history of working with non-profit foundations for civic improvements, such as the Umpqua Discovery Center. Other examples from around the state of Oregon include a $500,000 grant from the Meyer Memorial Trust (for investments in the Pendleton Roundup facilities), and the Ashland Parks Foundation (for various parks and trail projects). These and other foundations along with corporate and individual donations or sponsorships could become a source of funding for unique downtown streetscape and artwork improvement.

ISSUING DEBT

At present, the City of Reedsport is not in a financial position to pay for needed capital improvements with fund reserves or taxes. Absent assisted funding and low-cost loan programs, the City may have to rely on conventional state public works loans or local bond issues to finance the construction of its proposed capital program. There are some benefits to this form of financing. First, as with all debt, it spreads capital costs over the term of the loan. Furthermore, loans and bonds implement a level of equity by dissipating the burden among current and future customers. Finally, loans and bonds allow flexibility that the aforementioned assisted programs do not through repayment options.

Revenue Bonds

Revenue Bonds are, by definition, backed by the revenue of a utility or enterprise fund. Because the payment stream is less secured than tax backed bonds, revenue bonds carry higher interest rates than G.O. bonds. This differential, however, may be minimal.

Revenue bonds are perhaps the most common source of funding for construction of major public facility or utility projects. To issue revenue bonds, the City will be required to commit to certain security conditions related to repayment, specifically reserve and coverage requirements for annual rate revenues. These conditions are included in the bond resolution to be adopted by the City and essentially impose certain conservative financial practices on the City as a way of making the bonds more secure. A revenue bond that is based on a new tax or fee increase would require voter approval per the Reedsport City Charter Amendment approved by voters in May 2012.

General Obligation Bonds

General Obligation Bonds offer attractive conditions relative to revenue bonds. G.O. bonds are issued against the City's general fund and taxing authority. G.O. bonds offer slightly lower interest rates than revenue bonds, being backed by the City's tax base. From the investor's perspective, tax backed debt is more secure. These bonds also carry no additional coverage requirement, allowing the City to collect revenues necessary to meet annual debt service with no additional financial consequences. G.O. bonds can be politically unpalatable if the municipality's constituency doesn't support the project purpose.

Other dedicated revenues may repay general obligation bonds issued against the taxing authority of the City. This arrangement takes advantage of the more favorable terms, while still requiring system users to repay the debt. The General Fund would ultimately remain responsible for debt repayment should rate revenues prove insufficient. GO bonds that are based on a property tax increase would require voter approval.

FEDERAL AND STATE LOANS AND GRANTS

Federal and state grant programs, once readily available for financial assistance, were mostly eliminated or replaced by low-cost loan programs. Remaining grant programs are generally limited in application, lightly funded and heavily subscribed. Nonetheless, the economic benefit of grants and low-interest loans can make the effort of applying worthwhile.

Common special programs identified as potential funding sources are summarized below:

Bank Loans

The City of Reedsport may utilize private bank loans or state loans to make strategic capital facility upgrades. Given the City's limited operating revenues, bank loans would only be viable for smaller budget improvements that promise rapid return on the investment. State loan

funds available from Business Oregon currently include the Special Public Works Fund, and the Oregon Bond Bank. Special Public Works funds are available on a competitive basis to public agencies and can fund projects of up to $3.0 million, but require well-secured loan guarantees from the applicants. Oregon Bond Bank funds are available if other funding alternatives are not available.

Grants

Federal and state grants could potentially fund some of the capital improvement projects and initiatives recommended in this plan. The City of Reedsport can leverage local dollars as a match for non-local grant funding.