DATE: February 9, 2010

TO: Oregon Transportation Commission

FROM: Matthew L. Garrett
Director

SUBJECT: **Consent – I-84 Chenoweth Interchange Area Management Plan**

Requested Action
Approve a request to adopt the I-84 Chenoweth Interchange Area Management Plan (IAMP) and amend the 1999 Oregon Highway Plan.

Background
The I-84 Chenoweth IAMP was prepared in coordination with: City of The Dalles, Wasco County, ODOT District 9 and Region 4, and Department of Land Conservation and Development. Led by a consultant, a team of representatives from each agency worked to develop the IAMP with following goals in mind:

- protect the function and operation of the interchange,
- protect the interchange as an investment,
- develop a supporting street network,
- identify needed improvements and funding sources, and
- identify an equitable process for future land use decisions in IAMP area.

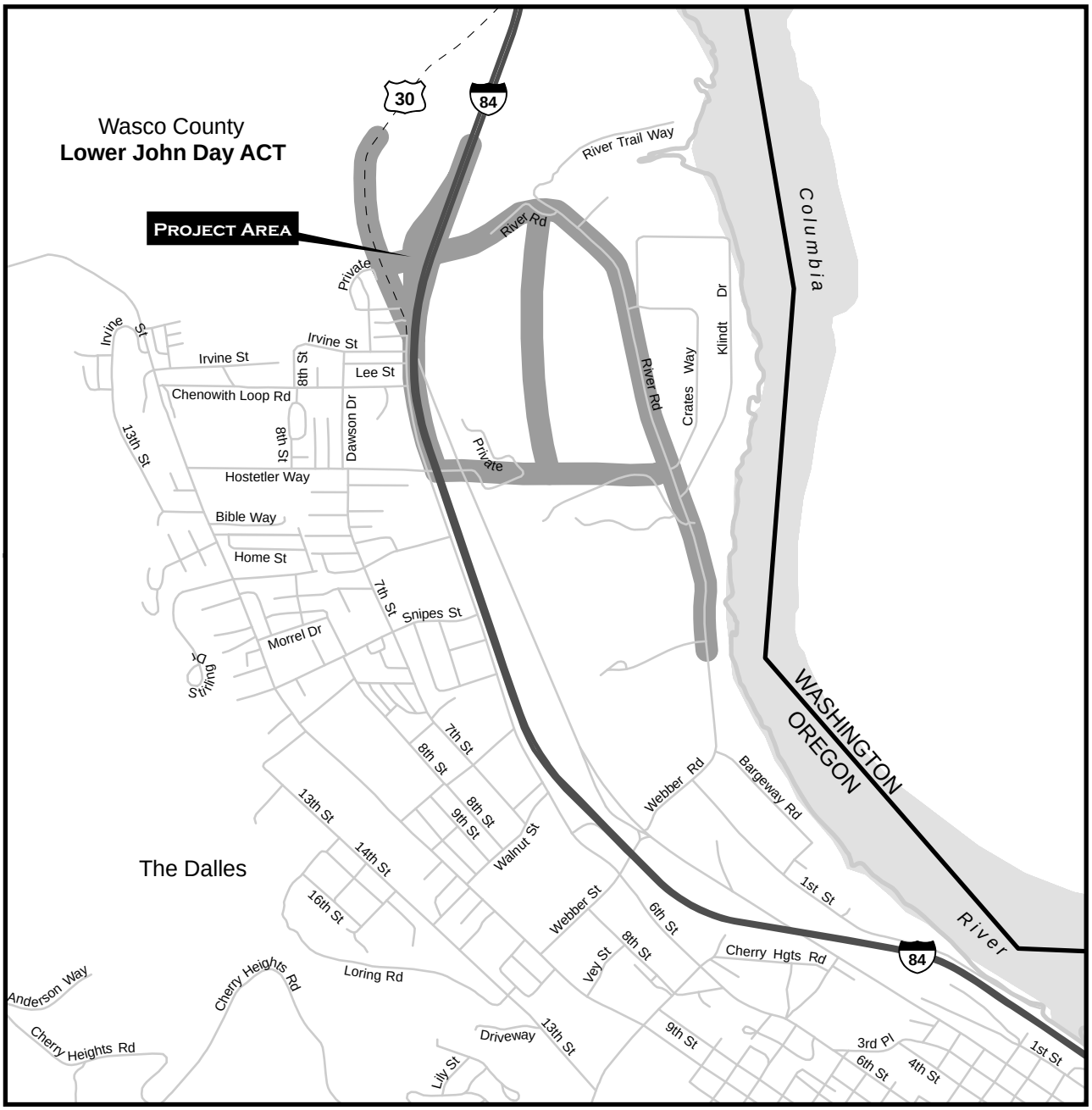
The IAMP has been adopted by The Dalles City Council on November 9th, 2009 and by Wasco County Court on November 25th, 2009.

Attachments:

- Project vicinity and location maps
- Staff Report including study area map
- Findings of Compliance
- Interchange Area Management Plan: Chapters 7 – 8 (printed)
- Interchange Area Management Plan: All Chapters (on CD)

Copies (w/attachments) to:

PROJECT LOCATION



LEGEND

PROJECT AREA

STATE HIGHWAY CLASSIFICATION

INTERSTATE

STATEWIDE

REGIONAL / DISTRICT

REGIONAL BOUNDARY

COUNTY BOUNDARY

ACT BOUNDARY

I-84 CHENOWETH IAMP

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0 0.25 Miles

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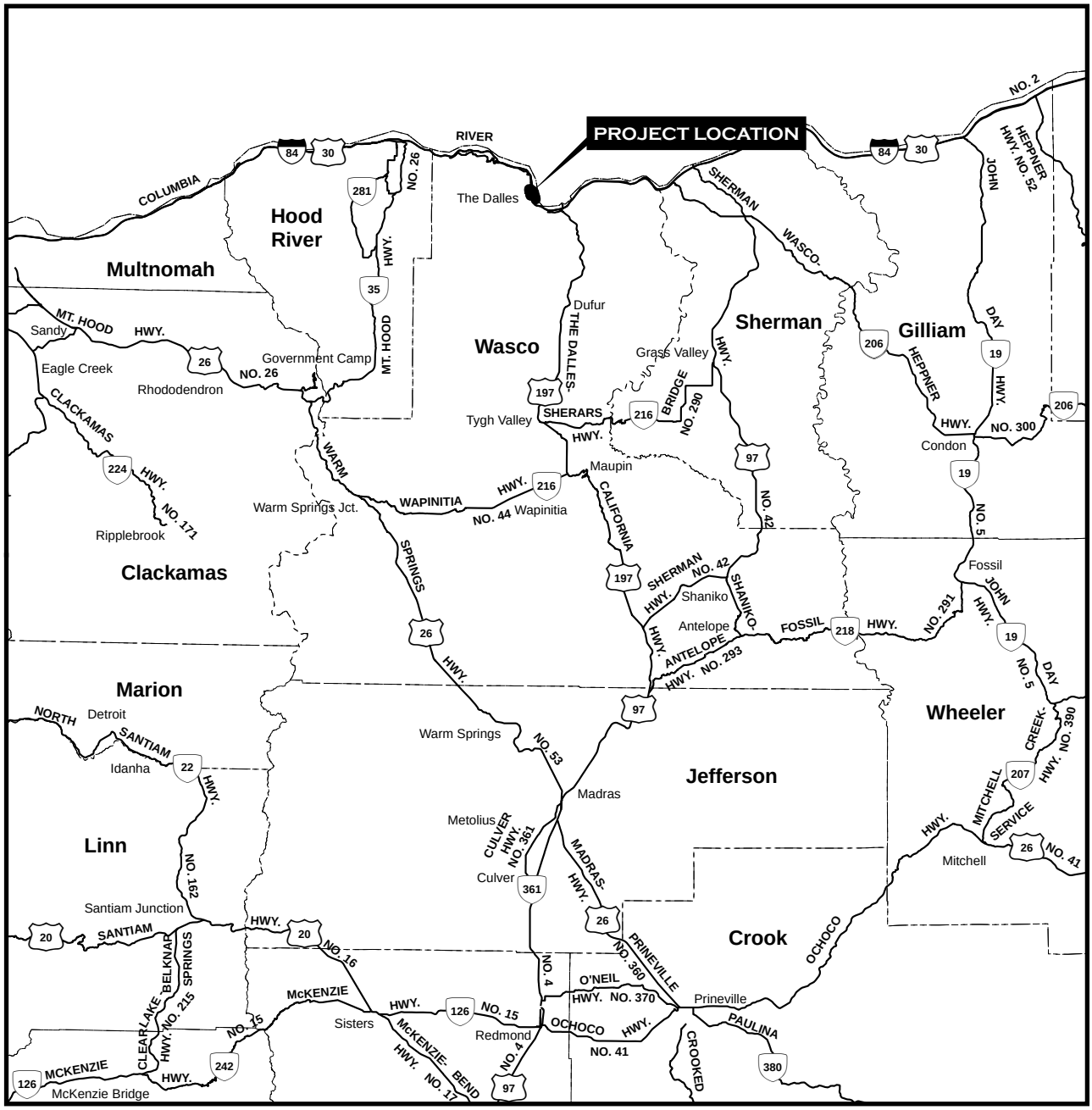
PROJECT VICINITY

ODOT REGION 4



I-84 CHENOWETH IAMP

LEGEND

- PROJECT LOCATION
- STATE HIGHWAY
- COUNTY BOUNDARY
- STATE BOUNDARY

"This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information."

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GIS No. 23-52

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DATE: February 17, 2010

Staff Report: I-84 Chenoweth Interchange Area Management Plan (IAMP)

REQUESTED ACTION

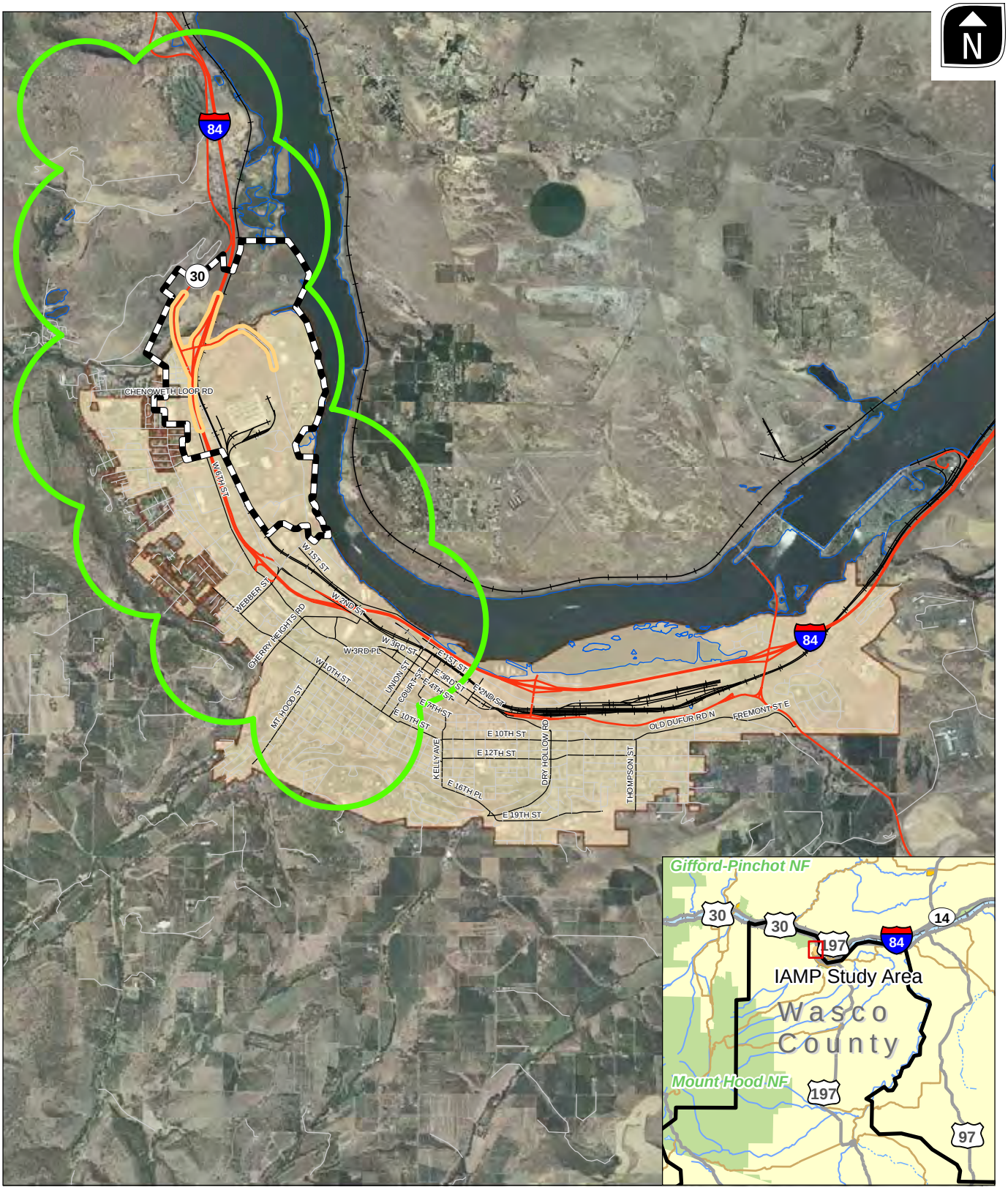
ODOT Region 4 requests that OTC adopt the I-84 Chenoweth Interchange Area Management Plan (IAMP). The I-84 Chenoweth IAMP was formally adopted as a part of The Dalles Transportation System Plan on November 9th, 2009. As part of adoption, The Dalles City Council suggested four amendments to the IAMP. Adoption of these amendments is expected in April or May 2010. The I-84 Chenoweth IAMP was formally adopted by Wasco County Court on November 25th, 2009. ODOT staff has developed findings documenting the IAMP's consistency with Federal, State, and Local plans.

BACKGROUND

An Interchange Area Management Plan (IAMP) was prepared for the I-84 Chenoweth Interchange in The Dalles, Oregon. The interchange is located on the western edge of The Dalles (see Figure 4-1 below). At this location, the Columbia River Historic Highway (US30) is included within the interchange service area. Background information can be found on the project website:
http://www.oregon.gov/ODOT/HWY/REGION4/I84_Chenoweth_IAMP/I84_Chenoweth_IAMP.shtml.

Purpose and Intent

The IAMP is intended to protect the function of the I-84 Chenoweth Interchange and ensure that it will continue to provide safe and efficient connections between I-84 and all roadways within the vicinity of the interchange. The IAMP identifies land use management strategies, near-term, mid-term, long-term, and long-term vision transportation improvements, an access management plan, and strategies to fund identified improvements.



LEGEND

- Interchange Service Area
- IAMP Operation/Access Study Area
- Land Use Study Area
- The Dalles Town Boundary

0 2,650 5,300 10,600 Feet

STUDY AREA VICINITY MAP
THE DALLES, OREGON

FIGURE **4-1**

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The IAMP planning efforts resulted in policies, ordinances, supplemental system development charges, and other provisions that will be adopted into the City of The Dalles and Wasco County Transportation System Plans (TSP), Comprehensive Plans, and development review ordinances to support and implement the IAMP. The IAMP must also be adopted by the Oregon Transportation Commission (OTC) as an amendment to the Oregon Highway Plan.

Problem Statement

In 1997 the State of Oregon invested $12 million into construction of the I-84 Chenoweth Interchange. The improvements serve to meet Oregon Department of Transportation (ODOT) priorities to provide access from I-84 to the west side of the City of the Dalles ("City"), the Port of the Dalles ("Port"), and the Columbia Gorge Discovery Center (Discovery Center). In 2006, WM3, Inc. ("WM3") proposed a zone change from industrial to commercial use for an approximately 67 acre parcel adjacent to the Chenoweth Interchange. The zone change was adopted by the City and subsequently appealed by ODOT. An Intergovernmental Agreement (IGA) between ODOT, the City, and WM3 was drafted in which WM3 was approved to develop 25 acres with commercial land uses and agreed not to develop any 'non-industrial' uses on the remaining 42 acres until an IAMP is adopted by ODOT and the City.

The City and ODOT initiated the IAMP process to ensure that the original priorities for the interchange continue to be met, and to identify what changes to the interchange and surrounding street network may be needed for the current land uses, and future development. The IAMP identifies transportation improvements and potential funding strategies that satisfy requirements of the IGA and Oregon Administration Rule (OAR) 734-051. The IGA is provided as an attachment to Technical Memorandum #2 in the Volume 2 Technical Appendix. The IAMP was developed according to the ODOT IAMP Guidelines.

Interchange Function

The I-84 Chenoweth Interchange is an urban interchange located near the City's northwestern boundary that connects I-84 with Highway 30 on the west side of the interchange and River Road on the east side. Highway 30 is a District Highway that runs parallel to I-84 and ends just south of River Road at Division Street. Highway 30 then turns into West 6th Street which runs through much of the City and has several interchanges connecting it to I-84. River Road is a Wasco County facility from the Chenoweth Interchange to Bargeway Road at which point it becomes Webber Street, a City of The Dalles facility. These roadways provide a loop connection through the city's industrial area, much of which is owned by the Port, from the Chenoweth Interchange to the Webber Street Interchange. The land uses served by the Chenoweth Interchange are

primarily industrial although some commercial land is located on the east side of the interchange and a mix of commercial and residential is located on the west side of the interchange.

When it was originally designed in 1996, the I-84 Chenoweth Interchange was intended to function as a service-level interchange that would safely and efficiently accommodate the traffic demands associated with the Port, industrial property in the vicinity of the I-84, and the Discovery Center. Visitor traffic to the Discovery Center has been lower than originally projected and the function of the interchange today is principally to provide safe and efficient access to the Port and industrial land in the western part of The Dalles (the area located east of the interchange). In addition to its primary function, the Chenoweth Interchange remains an important facility for accessing the Discovery Center and existing commercial lands in the vicinity of the City's industrial center. The interchange also serves local residential and commercial traffic circulating from I-84 to Highway 30 and West 6th Street.

The City of The Dalles is currently considering designating land northwest of the I-84 Chenoweth Interchange for residential development to meet the City's 20-year projected population needs. This requires amending the Columbia River Gorge National Scenic Area boundary in order to expand the City Urban Growth Boundary (UGB). If both of these changes happen, then the I-84 Chenoweth Interchange would provide a link from new residential development northwest of the interchange to I-84 and to the employment area southeast of the interchange. No decision has been made regarding future UGB expansion in this area; therefore, the interchange function for the I-84 Chenoweth IAMP does not assume it is intended to serve future growth outside of the current UGB.

Interchange Management Study Area

To provide a comprehensive study and to achieve effective results, the Interchange Management Study Area (IMSA) includes developable and re-developable properties and major roadways that could significantly affect the interchange function over the next 20 years. At a minimum, the IMSA includes properties within ½-mile from the existing I-84 Chenoweth Interchange as defined by ODOT's IAMP Guidelines. The study area also takes into account facilities and properties that will impact the operations of the interchange and any natural (e.g., Columbia River) or cultural resources in the vicinity of the interchange.

The IMSA map is shown in ◎, which identifies key features and boundaries of the area included in the IAMP. As shown on the IMSA map, two study boundaries are identified: the IAMP Operations and Access Study Area and the Land Use Study Area. Each of these study areas are described below.

Operations and Access Study Area

The Operations and Access Study Area includes all access points and intersections within approximately ½-mile from the existing I-84 Chenoweth Interchange and encompasses key intersections that have potential to affect traffic operations in the interchange area over the planning period. This study boundary identifies the area for which operational analysis was completed and the area that was considered for the Access Management Plan. Interchange crossroad access spacing requirements are ¼ mile, as identified in ◎. The study intersections include:

- I-84 Eastbound Ramps/River Road
- I-84 Westbound Ramps/River Road
- Historic Columbia River Hwy (US 30)/River Road
- Historic Columbia River Hwy (US 30)/Division Street
- Historic Columbia River Hwy (US 30)/Chenoweth Loop
- Historic Columbia River Hwy (US 30)/Hostetler Street
- River Road/Columbia Road
- River Road/Crates Way
- River Road/River Way Trail
- Interchange Management Study Area

Land Use Study Area

The Land Use Study Area includes all properties that lie within a ½-mile of the interchange. The Land Use Study Area extends beyond a ½ mile in places to incorporate developable and re-developable properties that are expected to significantly affect the interchange function over the next 20 years. Properties identified with potential to affect the interchange include those that are expected to utilize the interchange as the primary connection to I-84 or those that may be impacted by actions needed to improve local circulation. Developments to the east of I-84 were included if their primary access to the interchange is provided via River Road, including those located on Klindt Drive, Crates Way, and Steelhead Way. To the west of I-84, properties included in the Land Use Study Area primarily include those properties with potential access needs within the interchange crossroad access spacing standard distance of ¼-mile. The boundary of the Land Use Study Area extends south of the interchange to encompass the Northwest Aluminum Company parcels and all of the Port of The Dalles property.

Future development located within the Land Use Study Area will be required to comply with the City of The Dalles Development Code, which incorporates code amendments proposed in this IAMP.

LEGEND

- Minimum 1,320-foot IAMP Limits
- IAMP Operation/Access Study Area
- Land Use Study Area
- The Dalles Town Boundary
- Tax Lots
- The Dalles UGB
- Lakes and Rivers
- Railroads
- Right of Way (ROW)
- General Commercial (CG)
- Commercial/Light Industrial (CLI)
- Recreational Commercial (CR)
- Industrial (I)
- Mobile Home Residential (RMH)
- Large-Scale Agriculture (LSA)

0 650 1,300 2,600 Feet

INTERCHANGE MANAGEMENT STUDY AREA
THE DALLES, OREGON

FIGURE **1-1**

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Goals and Objectives

The goal of the IAMP is to protect the function of the interchange for the next 20 years while accounting for changes in land use and traffic patterns. Potential capacity for development of existing industrial land within the Port and redevelopment of land adjacent to the interchange will impact the traffic patterns over this period. As stated in Policy 3C of the 1999 Oregon Highway Plan, "it is the policy of the State of Oregon to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways." From this definition, the objectives of the I-84 Chenoweth IAMP are to:

- Protect the function and operation of the Chenoweth Interchange as a local service facility and Interstate-84 as a facility of statewide significance.
- Protect the function and operation of the existing local street network within the IAMP study area.
- Ensure changes to the planned land use are consistent with protecting the long-term function of the interchange and the local street system.
- Ensure that the interchange will function to support future local economic development over the next 20 years by managing the allowed land uses within the vicinity of the interchange.
- Identify the existing and potential land use designations, intensities, conditions, and actions that could have a favorable effect on the facility, or an adverse effect on the facility.
- Identify and prioritize transportation improvements and apply access management techniques needed to maintain acceptable traffic operations at the interchange while providing safe access to adjacent land uses.
- Provide certainty to the public, property and businesses owners, The City of The Dalles, Wasco County, and ODOT regarding transportation and land use actions within the vicinity of the interchange.
- Collaborate throughout the planning process with design professionals, jurisdictional representatives, developers, and local property and business owners.
- Comply with the intent of Statewide Planning Goal 1: Public Involvement, 2: Land Use Planning, 5: Natural Resources, 6: Air, Water and Land Resources Quality, 7: Areas Subject to Natural hazards, 8: Recreation Needs, 9: Economic Development, 12: Transportation, and 14: Urbanization.
- Develop implementation policies and monitoring tools to be adopted into the City and County comprehensive plans, transportation system plans, interchange access standards, and zoning ordinances, as appropriate.

PUBLIC INVOLVEMENT

As part of the I-84 Chenoweth Interchange Area Management Plan (IAMP), interagency and public involvement occurred through:

1. Stakeholder interviews conducted with business and property owners at the beginning of the IAMP process;
2. Technical Advisory Committee (TAC) and a Steering Committee (SC) that had regular meetings;
3. Two public Open Houses involving local citizens, property owners, and business owners;
4. Public comments posted on the project website:

   http://www.oregon.gov/ODOT/HWY/REGION4/I84_Chenoweth_IAMP/I84_Chenoweth_IAMP.shtml;
5. Joint work sessions with the City of The Dalles Planning Commission and the City Council that was open to the public; and,
6. Public adoption hearings at The City of The Dalles, Wasco County, and the Oregon Transportation Commission.

An overview of the TAC and SC meetings and open houses is summarized below.

Technical Advisory and Steering Committees

The TAC and SC guided the planning work and were responsible for reviewing all work products, providing input on all planning recommendations such as the project study area, goals and objectives, level of public involvement, technical analysis, and the proposed alternatives. Ultimately the TAC and SC helped select the preferred local circulation/access, land use management, and coordination elements of the IAMP. A Project Management Team (PMT) performed a coordination function, planning and executing project management tasks related to project schedule and meeting logistics. The PMT included representation from ODOT, the City of The Dalles, and the consultant team and were all members of the TAC.

Membership on the TAC and SC was established through input from City, County, and ODOT representatives. A proposed TAC and SC membership roster was presented and finalized at a project kick-off meeting of the Project Management Team (PMT) held September 15th, 2008. A list of TAC and SC members is included below:

TECHNICAL ADVISORY AND STEERING COMMITTEES

Agency	Name	Position/Title	Role
ODOT Region 4	Ana Jovanovic	ODOT Region 4 Planner	ODOT Project Manager PMT and TAC
	Mark DeVoney	ODOT Region 4 Planning Manager	TAC
	David Boyd	ODOT Region 4 Access Management Engineer	TAC
	Rod Cathcart	ODOT Region 4 Traffic Analyst	TAC
ODOT District 9	Brad DeHart	ODOT District 9 Area Manager	TAC
	Sam Wilkins	ODOT District 9 Manager	SC
ODOT Statewide Office	Peter Schuytema	ODOT Transportation Planning Analysis Unit	TAC
	Tracy White	ODOT Access Management Planner	TAC
Wasco County	Marty Matherly	Wasco County Roadmaster	TAC
	Todd Cornett	Wasco County Planning Director	SC
	Gary Nychyk	Wasco County Senior Planner	TAC
City of The Dalles	Richard Gassman	City of The Dalles Senior Planner	City Project Manager PMT and TAC
	Dan Durow	City of The Dalles Planning Director	SC
	Dale McCabe	City of The Dalles Engineer	TAC
Wasco County	Marty Matherly	Wasco County Roadmaster	TAC
	Todd Cornett	Wasco County Planning Director	SC
	Gary Nychyk	Wasco County Senior Planner	TAC
DLCD	Mark Radabaugh	DLCD Field Representative	TAC

The TAC and SC members were selected in order to provide representation from both the planning and public works departments for each agency involved. An outline of all of the TAC and SC meetings is included in the next section.

Public Involvement Plan

To ensure that adequate project coordination and public participation occurred throughout the development of the Chenoweth IAMP, a series of joint TAC and SC meetings, public workshops, and public joint work sessions were held over the course of the project. The City of The Dalles and Wasco County also conducted public hearings to adopt the plan. A summary of all of the meetings associated with the project, as well as the meeting objectives, are summarized below:

MEETING DATES, LOCATIONS, AND SUMMARIES

Meeting Event	Date/Location	Meeting Purpose/Objectives
PMT Kick-off Meeting	September 15th, 2008 The Dalles – ODOT District 9 Office	- Review TAC and SC Membership - Review Project Schedule
TAC/SC Meeting #1	December 3rd, 2008 The Dalles – City Hall	- Review Project Schedule - Presentation: IAMP 101 - Review Tech Memorandums #1 and #2 (IAMP Definition and Background and Plans and Policy Review) The purpose of the Meeting #1 was to introduce the I-84 Chenoweth Interchange project and the consultant team; review the project schedule; review the project goals, objectives, and evaluation criteria; confirm the study area; confirm the project schedule; and review the project's policy framework.
TAC/SC Meeting #2	February 11th, 2009 The Dalles - City Hall	- Review Tech Memorandums #3/4 and #5/6 (Existing and Future Conditions) - Review Stakeholder Interview Summary - Presentation: Interchange 101 and Local Circulation 101 - Brainstorm Design Alternatives The purpose of Meeting #2 was to provide an overview of the IAMP process and principals of local circulation; review the existing and future land use and traffic operations; review a summary of stakeholder interviews that were conducted; and involve the TAC and SC in a brainstorming exercise to develop roadway, local circulation, and access management alternatives for the existing roadway system.
Public Workshop #1	March 5th, 2009 The Dalles – Civic Auditorium	- Project Overview - Summary of Existing and Future Conditions - Review, Comment, Brainstorm Alternatives The purpose of the first public workshop was to present the project goals and objectives and findings to date; educate the public and stakeholders on the IAMP process and access management practices; and engage the participants to help develop potential local circulation and access management alternatives.
TAC/SC Meeting #3	April 8th, 2009 The Dalles – City Hall	- Review Tech Memorandums #7 (Alternatives Analysis) - Screen Alternatives - Presentation: Access Management 101 - Brainstorm Access Management Plan The purpose of Meeting #3 was to review the Alternatives Analysis and reduce the number of alternatives for refined analysis.

Meeting Event	Date/Location	Meeting Purpose/Objectives
TAC/SC Meeting #3B (extra meeting)	April 30th, 2009 The Dalles – ODOT District 9 Office	- Review Updated Tech Memorandums #7 (Alternatives Analysis) - Presentation: System Development Charges 101 The purpose of Meeting #3B was to review the Updated Technical Memorandum #7, review the qualitative evaluations of the refined alternatives, brainstorm land use management alternatives and funding options, and select a preferred alterative to carry forward for the Draft IAMP document.
TAC/SC Meeting #4	May 27th, 2009 The Dalles – City Hall	- Review Interchange Design Plans - Review Access Management Recommendations - Review Land Use and Implementation Recommendations The purpose of Meeting #4 was to review design plans for the Draft Preferred Alternative selected in Meeting #3B and select a preferred access management alterative to carry forward for the Draft IAMP document.
Public Workshop #2	June 11th, 2009 The Dalles – Civic Auditorium	- Summary of Alternatives Analysis and Draft Plan (Interchange Design, Draft Access Management Plan and Land Use and Implementation Recommendations) The purpose of the second public workshop was to present the qualitative evaluations of the local access and circulation alternatives for the Interchange Area developed during Public Workshop #1 and collect input on the Draft Preferred Alternative for the Draft IAMP.
Joint Work Session #1	June 18th, 2009 The Dalles – Civic Auditorium	- Summary of Alternatives Analysis and Draft Plan (Interchange Design, Draft Access Management Plan and Land Use and Implementation Recommendations) - Confirm direction for Draft IAMP The purpose of the joint work session of the City Council and Planning Commission was to present the qualitative evaluations of the local access and circulation alternatives for the Interchange Area developed during Public Workshop #2 and collect input on the Draft Preferred Alternative for the Draft IAMP.
TAC/SC Meeting #5	July 22nd, 2009 The Dalles – City Hall	- Draft IAMP - Draft Ordinance Amendments The purpose of the PPMT Meeting #5 was to review the complete Draft IAMP document and recommendations, draft SDC methodology, and draft ordinances and code amendments.
City Council Work Session #2	July 27th, 2009 The Dalles – City Hall	- Crossing Alternatives Technical Memorandum - At-Grade Rail Analysis Memorandum The purpose of the Work Session #3 was for the City Council to review the supplemental information prepared to compare the UP railroad crossing alternatives, West 6th Street intersection treatment alternatives, and operational impacts associated with an at-grade crossing at Hostetler (as opposed to a grade-separated option).

Meeting Event	Date/Location	Meeting Purpose/Objectives
TAC/SC Meeting #6	August 5th, 2009 The Dalles – City Hall	- Updated Draft IAMP - Updated Draft Ordinance Amendments The purpose of Meeting #6 was to review the Updated Draft IAMP document and recommendations, SDC methodology, and ordinances and code amendments.
Joint Work Session #2	September 3rd, 2009 The Dalles – Civic Auditorium	- Summary of Draft IAMP - Summary of Draft Ordinance Amendments The purpose of the joint work session of the City Council and Planning Commission was to provide supplemental education and summary of the IAMP process. The following elements of the Draft IAMP were summarized: 6th Street cross-section, at-grade vs. grade-separated railroad crossing, and preferred east-west crossing location.
City Planning Commission Hearing	September 17th, 2009 The Dalles – City Hall	The Draft IAMP was presented to the Planning Commission for adoption. The public hearing was continued until the Planning Commission could have questions answered by the city attorney.
City Planning Commission Hearing	October 1st, 2009 The Dalles – City Hall	The Draft IAMP was approved and forwarded with a recommendation for approval with modifications to the City Council.
County Planning Commission Hearing	October 6th, 2009 The Dalles - Discovery Center	The Draft IAMP was approved and forwarded with a recommendation for approval to the County Court.
City Council Hearing	October 26th, 2009 The Dalles – City Hall	The Draft IAMP was presented to the City Council for adoption. The public hearing was closed but the vote was postponed to allow additional review time for the Councilors.
County Court Hearing	November 4th, 2009	A public hearing was held on the Draft IAMP however a decision was deferred until action was taken by The City of The Dalles City Council.
City Council Hearing	November 9th, 2009 The Dalles – City Hall	The Draft IAMP was approved with modifications.
County Court Hearing	November 25th, 2009	The Draft IAMP was approved.
Oregon Transportation Commission Hearing	March 10, 2010	

KEY ISSUES

Future Improvements - Interchange Area Management Plan

The IAMP provides a look at future local circulation and access (shown in Figure 7-1 and table below), street standards, and improvement phasing for implementing the plan in the short-term, mid-term, and long-term horizon. As described in Section 6, the long-term plan can only accommodate up to 85 percent of the maximum density development; therefore, the IAMP also includes land use management strategies to ensure that the maximum development threshold for the long-term improvement plan is not exceeded without the IAMP and funding mechanisms being updated. The IAMP also includes an Access Management Plan that:

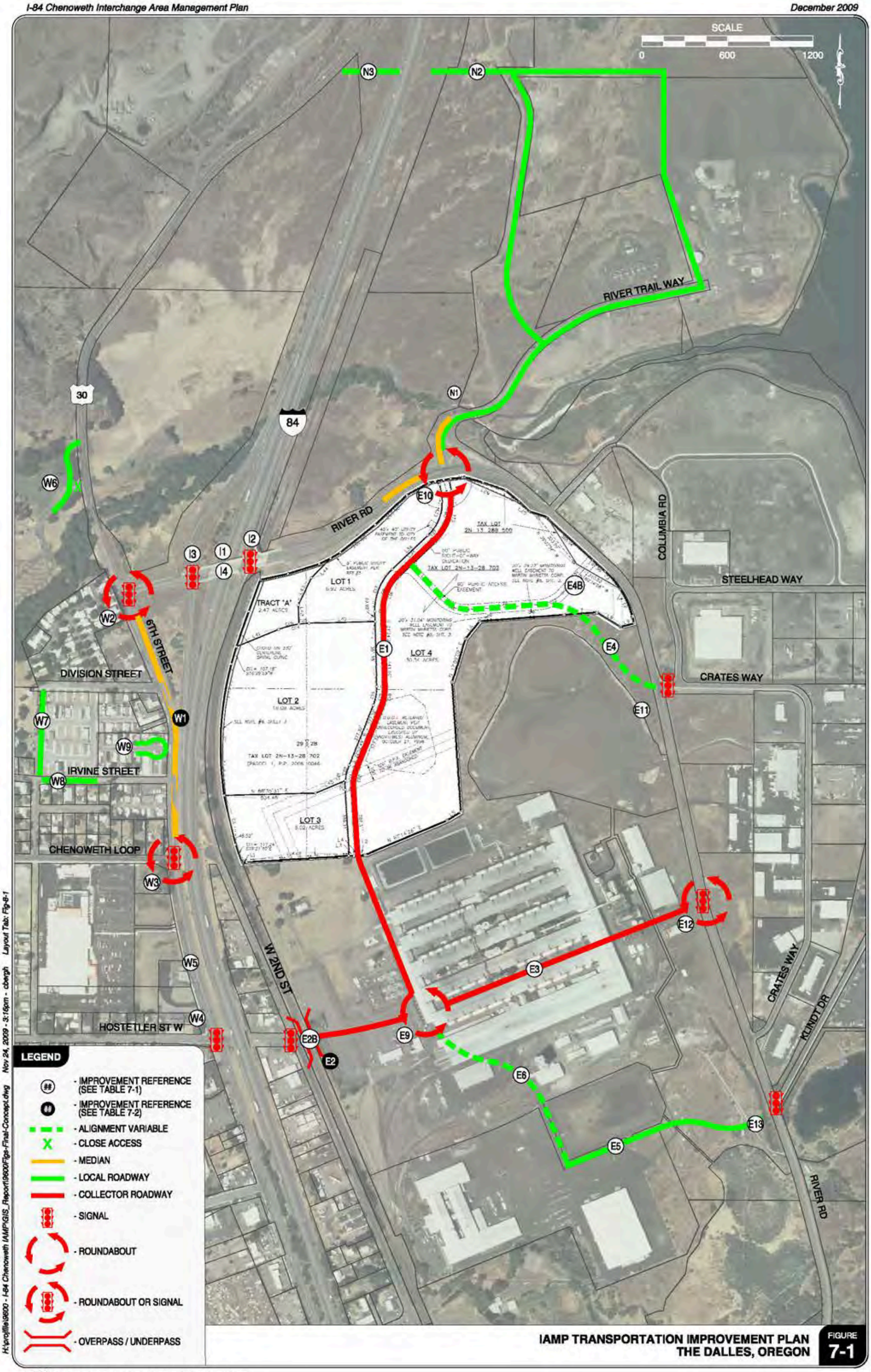
- identifies future access locations for undeveloped properties in the IMSA
- identifies goals and policies that will guide evaluation of existing access for properties in the IMSA that might redevelop, and
- documents the justification for the necessary deviations to ODOT's access management standards.

Through adoption by the City of The Dalles, Wasco County, and ODOT, future development located within the IMSA will be required to make circulation and access improvements, and right-of-way dedications, and pay STSDC fees, as identified in this plan. Implementation of the IAMP is expected to preserve the functional integrity of the interchange over time and ensure viable access to existing and future land uses. Finally, the action items contained within the implementation plan (Section 8) will ensure proper coordination between the various stakeholders and that the IAMP remains a dynamic long-term planning tool.

Local Circulation and Access Overview

A comprehensive Local Circulation and Access Plan within the IMSA was developed based on the alternative screening and evaluations. Figure 7-1 illustrates local circulation and access including proposed alignments of new roadways and intersections, and locations where existing intersection control will be modified. Each transportation improvement identified in Figure 7-1 is described in the two tables below.

As shown in Figure 7-1, roundabouts or signals are identified for potential intersection control at the intersections of River Road/Hostetler Street, West 6th Street/Chenoweth Loop, and West 6th Street/River Road. Roundabouts are recommended on River Road at River Trail Way and on Hostetler Street at the proposed intersection with River Trail Way in order to provide consistency in the network and to reduce the number of approach lanes necessary when compared to signal alternatives.



IAMP TRANSPORTATION IMPROVEMENT PLAN
THE DALLES, OREGON

FIGURE 7-1

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KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

IAMP TRANSPORTATION IMPROVEMENTS

Reference	Improvement Type	Description
E1	New Collector Roadway	Extend River Trail Way from River Road to the Hostetler Street Extension
E2B	UP Railroad At-Grade Crossing and Signal (Short-term)	Provides Hostetler Street connection to River Road and intersection control to accommodate traffic at Hostetler Street and 2nd Street (requires approval by ODOT Rail and UPRR)
E3	New Collector Roadway	Extends Hostetler Street from West 2nd Street to River Road
E4	New Local Roadway (Long-term)	Provides local business access
E4B	New Local Roadway (Short-term)	Provides temporary local business access until environmental concerns can be mitigated and project E4 can be constructed.
E5	New Local Roadway	Provides local business access
E6	New Local Roadway	Provides local business access. Alignment is variable depending on parcel access and circulation.
E9	Intersection Improvement (Roundabout)	Intersection control to accommodate future traffic at Hostetler Street/River Trail Way Extension
E10	Intersection Improvement (Roundabout)	Intersection control to accommodate future traffic at reconstructed River Trail Way/River Road
E11	Intersection Improvement (Signals)	Intersection control to accommodate future traffic at River Road/Crates Way (North)/Columbia Road
E12	Intersection Improvement (Roundabout or Signal)	Intersection control to accommodate traffic at future connection of River Road and Hostetler Street
E13	Intersection Improvement (Signal)	Intersection control to accommodate future traffic at River Road/Klindt Drive
I1	Restripe Bridge Lanes (Short-term)	Restripe lanes on bridge to accommodate four lanes (two in each direction, including side-by-side left-turn lanes)
I2	Signalize Intersection	Accommodate weekday a.m. and p.m. peak hour travel demand at Westbound I-84 Ramp Terminal
I3	Signalize Intersection	Accommodate weekday a.m. and p.m. peak hour travel demand at Eastbound I-84 Ramp Terminal
I4	Widen Bridge to 6 Lanes (Long-term)	Accommodate weekday peak hour travel demand beyond the 85-percent development threshold (NOT PART OF 20-YEAR PLAN)
N1	New Local Roadways	Provide a network of local streets
N2	ROW Preservation	Preserve ROW for a potential future overpass of I-84
N3	ROW Preservation	Preserve ROW for a potential future overpass of I-84
W2	Intersection Improvement (Roundabout or Signal)	Intersection control at West 6th Street (US 30)/River Road to accommodate future traffic and provide for u-turns created by the median
W3	Intersection Improvement (Roundabout or Signal)	Intersection control at West 6th Street/Chenoweth Loop to accommodate future traffic and provide for u-turns created by the median
W4	Intersection Improvement (Signal)	Intersection control at West 6th Street/Hostetler Street to accommodate future traffic
W5	Widen West 6th Street to 5 Lanes	Widen West 6th Street from River Road to south of Hostetler Street to accommodate weekday a.m. and p.m. peak hour travel demand

W6	Relocate Driveway/ New Local Roadway	Relocate driveway further from interchange and River Road/West 6th Street intersection to meet access spacing standards
W7	New Local Roadway	Provides local connection between Division Street and Irvine Street
W8	New Local Roadway	Provides paved local connection between 6th Street and 7th Street
W9	Cul-de-sac	Supports consolidation of accesses on West 6th Street.

The proposed intersection configurations and roadway cross-sections in this IAMP were developed to serve a maximum amount of new development without requiring a greater cross-section on River Road over I-84 (at the Chenoweth Interchange) or on Hostetler Street under I-84 (at the preferred east-west crossing).

Although still a part of the IAMP, several projects were identified for special consideration at the time that the first IAMP review is triggered. These projects are listed in the table below. Each of these projects are long-term needs and although each project provides benefits to the study area as a whole, they have the potential to negatively impact adjacent property and business owners and therefore, should be reconsidered based on updated forecasts during the first IAMP review.

IAMP TRANSPORTATION IMPROVEMENT PROJECTS TO BE REVIEWED AT FIRST IAMP REVIEW TRIGGER

Reference	Improvement Type	Description
E2	UP Railroad Under-Crossing and Signal (Long-term)	Provides grade-separated Hostetler Street connection to River Road under the UPRR and intersection control to accommodate future traffic at Hostetler Street and 2nd Street
W1	Install median	Install median on 6th Street from River Road to Hostetler Street that limits all turning movements, except northbound left turns to Division Street and Irvine Street.

As shown in table above, two projects were selected to be reconsidered for implementation within the IAMP study area. These projects may be implemented if operational or safety conditions warrant further measures.

Phasing Plan

Four roadway improvement phases (near-term, mid-term, long-term, and vision beyond planning horizon) were developed in order to estimate the amount of new development that could occur within the IMSA before implementation of various components of the local access and circulation plan are required. These phases were developed as planning milestones, since improvements will likely be needed incrementally as development occurs. The phases are intended to show the increments of development that can occur

before major improvements (e.g., new east-west crossing, Chenoweth Interchange Bridge widening, intersection control treatments, etc.) are needed.

The major components of each improvement phase are summarized below:

Phase 1 – Near-term Improvements

1. Traffic signal installed at West 6th Street/Hostetler Street intersection (Project #W4)
2. Restriping of River Road overpass of I-84 to provide 4-lane cross-section (Project #I1)

Phase 2 – Mid-term Improvements and Actions

1. Roundabout constructed at River Road/River Trail Way (Project #E10)
2. Traffic signal installed at River Road/I-84 Westbound Ramp Terminal, westbound and off-ramp approach widening (Project #I2)
3. Traffic signal installed at River Road/I-84 Eastbound Ramp Terminal and eastbound approach widening (Project #I3)
4. Roundabout or signal constructed at River Road/West 6th Street (US 30) (Project #W2)
5. Roundabout or signal installed at West 6th Street/Chenoweth Loop (Project #W3)
6. At the first triggered IAMP review, reevaluate improvement projects shown in 'IAMP Transportation Improvement Projects to be Reviewed at first IAMP review Trigger' table (W-1: 6th Street Median and E-2: Grade-Separated Crossing of the UP Railroad at Hostetler) based on updated forecasts.
7. During a Webber Street IAMP, reevaluate the need for 6th Street widening (Project W-5).

Phase 3 – Long-term Improvements (Figure 7-9 below)

1. Construct new east-west connection at Hostetler Street, either as an at-grade crossing (pending approval by ODOT Rail and UPRR) or a railroad undercrossing of Hostetler Street (Projects #E2, E2B, E3)
2. Construct new collector roadway that extends River Trail Way from River Road to the Hostetler Street Extension (Project #E1)
3. Provide dual westbound left-turns at River Road/West 6th Street (US 30) roundabout or signal (Project #W2)
4. Construct raised median and provide 5-lane section on West 6th Street from River Road to Chenoweth Loop (Project #W1)
5. Provide 5-lane section on West 6th Street from Chenoweth Loop south through the Hostetler Street intersection (Project # W5)

6. Provide dual westbound left-turns at West 6th Street/Hostetler Street intersection (Project #W4)
7. Traffic signal installed at 2nd Street/Hostetler Street (Project #E2)
8. Traffic signal installed at River Road/Crates Way (north) and construct exclusive left-turn lanes on River Road approaches (Project #E11)
9. Roundabout constructed at River Trail Way/Hostetler Street Extension (Project #E9)
10. Roundabout or signal constructed at River Road/Hostetler Street Extension (Project #E12)

Phase 4 – Long-term Vision (Figure 7-10 below)

1. Widen Chenoweth bridge structure to accommodate 6-lane cross-section, including side-by-side left-turn lanes(Project #I4)

Ongoing Phase – Improvements implemented in any phase

Additional improvements are identified that will be implemented in conjunction with adjacent development, including:

1. New local roadways to provide access to individual parcels and to provide connectivity to higher-order facilities (Project # E1, E4, E4B, E5, E6, N1, W7, W8, W9)
2. Construct exclusive left-turn lanes on northbound, eastbound, and southbound approaches and an exclusive right-turn lane on the northbound approach to the West 6th Street/Hostetler Street intersection (Project# ???)
3. ROW preservation for potential long-term crossing of I-84 north of River Road (Project #N2, N3)
4. Relocating driveway access on US 30 within 1,320 feet of the interchange ramp terminals to satisfy ODOT access management standard (Project #W6)
5. Traffic signal installation at River Road/Klindt Drive (Project #E13)

Table bellow summarizes the percent of development that is expected to be accommodated under each improvement phase. When all improvements identified in each improvement phase are in place, the development potential listed is expected to be attainable while maintaining adequate operational conditions. For example, if all improvements identified in Phase 2 are in operation, between 11 and 55 percent of full build-out under Land Use Scenario #1 could occur before queuing and intersection operations exceed capacity.

TRANSPORTATION IMPROVEMENT THRESHOLDS

Improvement Phase	Development Threshold (Percent of Full Build-Out)
0 - No-Build	-
1 - Near-term Improvements	<10%
2 - Mid-term Improvements	11-55%
3 - Long-term Improvements	56-75%
4 - Long-term Vision Improvements	76-85%

As shown in table above, development potential of up to 75 percent is anticipated in the long-term time period. Up to 85-percent development potential may or may not be realized, as identified in the vision phase.

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IAMP LONG-TERM CONCEPTUAL DESIGN
THE DALLES, OREGON

FIGURE 7-9

IAMP VISION CONCEPTUAL DESIGN
THE DALLES, OREGON

FIGURE 7-10

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Access Management

As part of the I-84 Chenoweth Road IAMP, future access locations and public street connections were evaluated for properties and streets located in the IAMP Access Study Area. Access locations were evaluated based on ODOT's Division 51 Access Management standards, the City of The Dalles access spacing standards, and an assessment of traffic operations and safety as described in Action 3C.3 of the 1999 Oregon Highway Plan. The Access Management Plan was developed to minimize impacts and preserve the operational integrity and safety of primary facilities (i.e., River Road, West 6th Street) serving the interchange area, while maintaining viable access to all parcels in the IMSA.

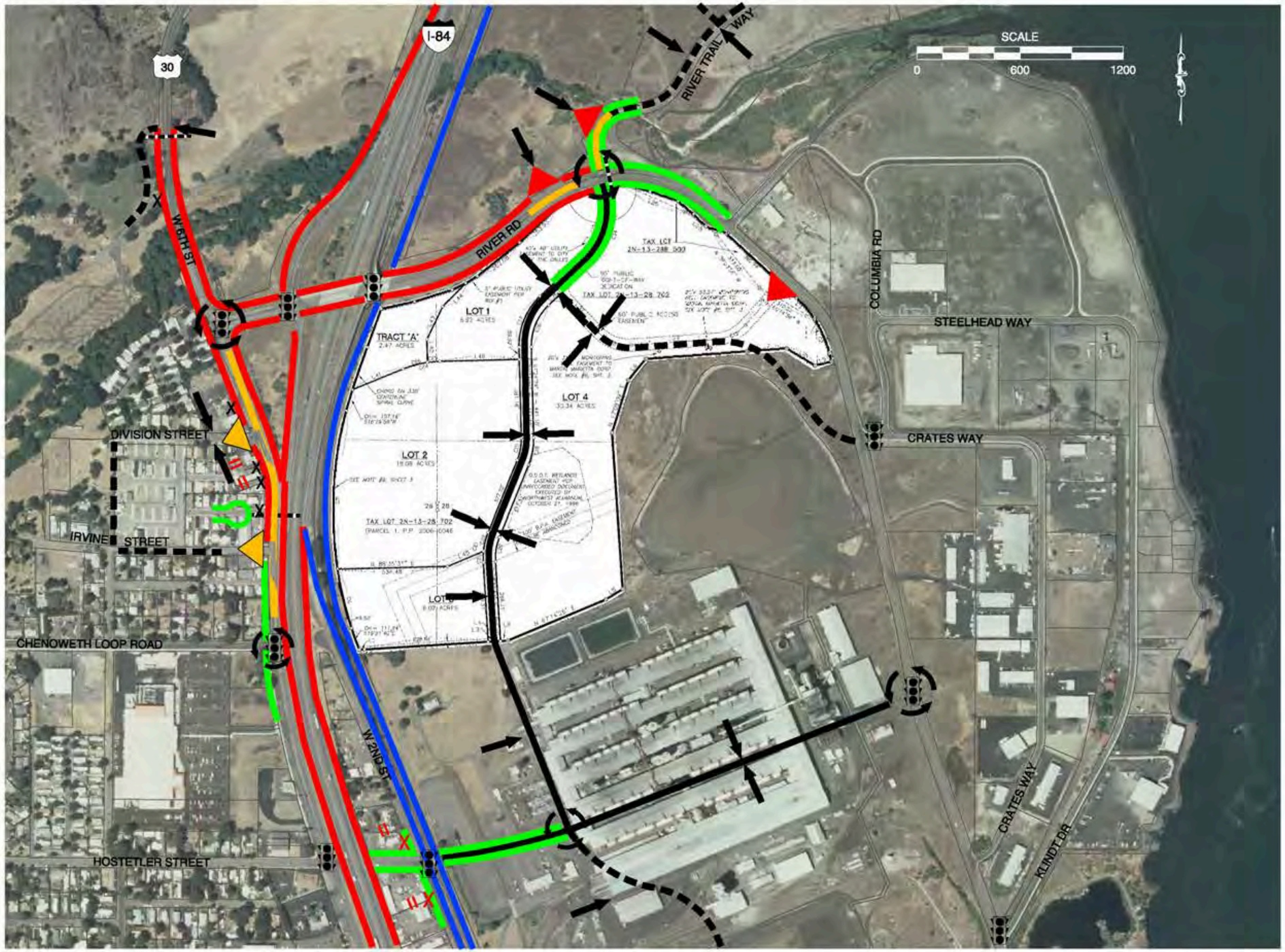
The intent of the Access Management Plan is to identify goals that will guide evaluation of the location of site-access driveways and internal circulation routes for properties located within the IMSA that are likely to develop or redevelop at some point in the future. I-84 Chenoweth IAMP Access Management Plan:

- identifies future access locations for undeveloped properties in the IMSA
- identifies goals and policies that will guide evaluation of existing access for properties in the IMSA that might redevelop, and
- documents the justification for the necessary deviations to ODOT's access management standards.

The plan, as illustrated in Figure 7-11 and described in the following paragraphs, will be implemented as part of future land use changes, or ODOT's project development and delivery processes, involving the properties located within the IMSA and Interchange Overlay District.

Near- and Mid-Term Access Management Implementation

Under ODOT's current access management policy, the 1999 Oregon Highway Plan stipulates that the desired distance between an interchange ramp terminal and the first major approach (public or private) on the crossroad should be 1,320 feet (¼ mile). Currently there are four private accesses and three public street connections within 1,320 feet of the interchange ramp terminals. Public street connections are located on River Road at River Trail Way, River Road at West 6th Street, and West 6th Street at Division Street. Existing private accesses are located on West 6th Street and US 30. Future private access is proposed on River Road.



LEGEND

- MINIMUM 1320-FOOT IAMP LIMITS
- MEDIAN
- LOCAL ROADWAY
- COLLECTOR ROADWAY
- ODOT ACCESS CONTROL
- ODOT RAIL ACCESS CONTROL
- LOCAL AGENCY ACCESS CONTROL
- LEFT-IN/RIGHT-IN/RIGHT-OUT ONLY
- RIGHT-IN/RIGHT-OUT ONLY
- X - ACCESS CLOSED
- = - CROSSOVER EASEMENT
- CUL-DE-SAC
- ROUNDABOUT
- TRAFFIC SIGNAL
- = - REMOVE BARRIER
- GENERAL ACCESS LOCATION

H:\profile\9600 - I-84 Chenoweth IAMP\GIS_Report\9600Fig-Access-Jurisdictions.dwg Nov 24, 2009 - 4:14pm - cbergh Layout Tab: Fig7-11

IAMP ACCESS MANAGEMENT PLAN
THE DALLES, OREGON

FIGURE **7-11**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

In the near- and mid-term no access modifications will be made to the four existing private access approaches located on the west side of West 6th Street unless land use changes occur involving the properties served by these accesses or if increases in traffic volumes on West 6th Street warrant a modification for operation and safety reasons. ODOT guarantees Access Permit protection, as allowed within ORS374.305 & 310, to all existing private accesses. Each will remain a valid access as long as the existing uses remain on property/site (per OAR734.051.0045) and there is no capital improvement project that would trigger review of the access (per OAR734.051.0285). An access evaluation will be required, but is not limited to, when any of the following land use actions occur within 1,320 feet of the I-84 ramp terminal intersections:

- Modifications to existing land use or zoning,
- Changes to plan amendment designations;
- Construction of new buildings;
- Increases in floor space of existing buildings;
- Division or consolidation of property boundaries;
- Changes in the character of traffic using the driveway/approach;
- Changes to internal site circulation design or inter-parcel circulation;
- Reestablishment of a property's use (after discontinuance for two years or more that trigger a Traffic Impact Assessment as defined below) that occurs on the parcels served by the approaches; or,
- Capital improvement projects.

Long-Term Access Management Implementation

As traffic volumes increase with new development, access management can help maintain the operational integrity and safety of the primary roadways. In general, the types of improvements identified include:

1. Modifying, mitigating or removing existing approaches pursuant to an access management strategy as part of the highway project development and delivery process (OAR 734-051). This may include restricting left-turning egress movements along West 6th Street by constructing a raised median;
2. Improving traffic safety and operations by improving the local street network to provide alternate access, better local street connections to the highway, and reducing conflict points. This may include consolidating access on West 6th Street from private approaches and minor public streets where traffic can be rerouted to a major public approach; and,
3. Restricting highway access but improving arterial access by introducing shared access, cross-over easements, consolidated access when separate parcels are assembled for redevelopment, and access via collector or local streets. This may

include providing crossover easements between adjacent parcels along West 6th Street and near Hostetler/2nd Street intersection.

The time period over which the measures outlined will be implemented will depend on the rate of development within the IMSA. As each parcel redevelops, or upon capital improvement, their access will be evaluated to determine how access will be modified to move in the direction of meeting the access spacing standards and long-term vision of driveway consolidation while still providing access as defined in OAR 734-051.

ULTIMATE ACCESS MANAGEMENT PLAN SUMMARY

Deviation Required?	Access #	Access Control	Type/Location	Long-Term Access Management Implementation Plan
	1	City	Public (Hostetler Street) – Signalized intersection	Full-access allowing for all movements to/from West 6th Street.
	2		Private – Existing access 275 feet north of Hostetler Street.	Egress (left/right-out) only access to West 6th Street (based on one-way on-site circulation).
	3		Private – Existing access 470 feet north of Hostetler Street.	Ingress (right/left-in)_only access from West 6th Street (based on one-way on-site circulation).
	4		Private – Existing access 400 feet south of Chenoweth Loop.	Left-in/Right-in/Right-out access only to/from West 6th Street.
	5		Public (Chenoweth Loop) – Proposed roundabout location	Full-access allowing for all movements to/from West 6th Street.
	6		Private – Existing access 150 feet north of Chenoweth Loop.	Consolidate access to West 6th Street, relocate access to Chenoweth Loop.
	7		Private – Existing access 300 feet north of Chenoweth Loop.	Consolidate access and improve Lee Street to provide connection to 7th Street and construct cul-de-sac to close access to West 6th Street.
	8		Public (Irvine Street) – Existing access 465 feet north of Chenoweth Loop.	Complete Irvine Street connection from 7th Street to West 6th Street and restrict access at West 6th Street to Left-in/Right-in/Right-out.

	9, 10, 11, 13	ODOT	Private – Existing access within Interchange Access Study Area (1,320ft boundary from the I-84 ramp terminal)	Consolidate access on West 6th Street and provide access to Division Street, Irving Street, and Chenoweth Loop. Follow IAMP Access Management goals by modifying and mitigating access and establishing crossover easements to adjacent parcels. Access modification will be considered at time of redevelopment or capital improvement project.
Yes	12		Public (Division Street) – Existing access 465 feet north of Chenoweth Loop.	Left-in/Right-in/Right-out access only to/from West 6th Street.
Yes	14		Public (River Road/West 6th Street and US Highway 30) – Existing full access intersection 350 feet from the I-84 eastbound off-ramp terminal.	Full-access allowing for all movements to/from River Road, West 6th Street, and US Highway 30.
	15		Private – Existing access 525 feet north of River Road.	Relocate access north, outside of the 1,320 foot boundary from the I-84 eastbound ramp terminal.
Yes	16		Private – Future access at least 750 feet from the westbound I-84 ramp terminal and 550 feet from River Trail Way.	Right-in, right-out access only to/from River Road.
Yes	17		Public (River Trail Way) – Existing access 1,300 feet east of I-84 westbound off-ramp terminal.	Full-access allowing for all movements to/from River Road.
	18		Public (Columbia Road) – Existing access 650 feet east of River Trail Way.	Full-access allowing for all movements to/from River Road.
	19		Public (Crates Way) – Existing access 1250 feet east of Columbia Road.	Full-access allowing for all movements to/from River Road.

V/C standard

V/C standard on I-84 Chenoweth Interchange ramps was lowered as part of WM3 development review and agreement. As part of this IAMP adoption, V/C will remain unchanged at this time. Staff will reconsider this issue as ODOT and City enter into a new IGA to implement the IAMP.

Implementation Plan

This section describes the IAMP implementation strategy, which includes an I-84 Chenoweth Interchange Function and Policy Definition, Overlay District, Trip Allocation Budget, and Supplemental Transportation System Development Charge. The Implementation Plan also includes adoption and monitoring procedures that will ensure

transportation improvements are constructed and funded as development occurs and that the improvement plan, trip budget, and financing mechanisms are updated as needed over time.

To ensure that the IAMP remains dynamic and responsive to changes to the adopted land use and transportation plans, the City of The Dalles, Wasco County, and ODOT should, at a minimum:

1. Amend their respective Transportation System Plans and Comprehensive Plans;
2. Codify and map an Interchange Area Overlay District that defines the area wherein regulations and requirements associated with the protecting the interchange for its accepted function apply;
3. Adopt a Supplemental Transportation System Development Charge (City only);
4. Coordinate planning activities per the Transportation Planning Rule (OAR 660-012);
5. Review the IAMP and mobility standards for the interchange prior to adopting local plan amendments;
6. Regularly revisit transportation funding strategy (see system development charge methodology, Volume 2 Technical Appendix "I".)

Interchange Area Management Plan Area Overlay District

To ensure the continued operational and safety integrity of the interchange, the City of The Dalles should adopt an Interchange Area Management Plan Overlay District1. Future development and land use actions within the Overlay District will be monitored to ensure that within the Interchange Area Management Plan Overlay District volume-to-capacity ratios do not exceed the adopted Oregon Highway Plan mobility standards at the interchange ramp terminals. This can be accomplished through the Trip Allocation Budget and STSDC, IAMP Monitoring, and Development Review Guidelines for the Overlay District included within the proposed amendments to the City's Land Use and Development Ordinances and described in the following sections (see Appendix "J" of the IAMP Technical Appendix).

Trip Allocation Budget

As described in Section 7, the Long-Term Improvement Plan can accommodate a development threshold of up to 75 percent of the maximum development potential of the Interchange Management Study Area (IMSA). A Trip Allocation Budget was developed, provided in Appendix "I" of the IAMP Technical Appendix, that identifies the number of net new weekday p.m. peak hour trips allocated to each developable

[1] The Interchange Area Management Overlay District coincides and is consistent with the Land Use Study Area, which is a part of the Interchange Management Study Area in the IAMP.

parcel in the interchange area based on a 75-percent threshold of maximum density. The City shall monitor the Trip Budget to ensure that over time the trips from new development in the IMSA are not exceeding the budget. Individual parcels may exceed their trip allocations; however, they would pay a higher STSDC per trip for each trip exceeding their allocation to help pay for the Vision Plan Improvements. The Vision Plan Improvements are described in detail in IAMP Section 7 and include reconstructing the I-84 Chenoweth Interchange overpass and ramps to accommodate six traffic lanes. The Trip Budget will be reviewed, at a minimum, during each development review that triggers a STSDC (monitored as described in the sections below).

Supplemental Transportation System Development Charge (STSDC)

Short-, mid-, and long-term transportation improvement plans were developed in order to estimate the amount of new development that could occur within the I-84 Chenoweth IMSA before various improvements are needed. A fourth phase, the "Long-term Vision" or Vision Plan, includes the widening of the Chenoweth bridge structure to accommodate 6-lane cross-section, including side-by-side left-turn lanes. This fourth phase is anticipated to be outside of the 20-year planning horizon.

To provide the necessary funding to develop and construct the first three phases of the IAMP, the City of The Dalles should modify the existing system development charge ordinance to include a STSDC. The charge is assessed on trips generated by new development or redevelopment on property within the IAMP Overlay District, as shown on the amended Comprehensive Plan Map and Zoning Map and defined through a new Development Code Overlay District chapter.

Adoption Elements

Implementation of the I-84 Chenoweth IAMP will occur at several levels of government. As required by OAR 734-051, both the City of The Dalles and Wasco County will be required to amend their Transportation System Plans and Comprehensive Plans to incorporate elements of the I-84 Chenoweth IAMP. In addition, new ordinances or amendments to existing ordinances, resolutions, and Inter-Governmental Agreements (IGA) will be required to insure that the access management, land use management, and coordination elements of the IAMP are achieved. This adoption process will include Planning Commission/City Council hearings at the city level and Planning Commission/County Court hearings at the county level. Following successful adoption at the city and county levels, the I-84 Chenoweth IAMP will be presented to the Oregon Transportation Commission (OTC) for its review and adoption. This should occur prior to transportation improvements as described in this IAMP are constructed and before the covenant described in the ODOT/City of The Dalles/WM3, Inc. IGA (Misc. Contracts & Agreements No. 23886) prohibiting "non-industrial" development on 42-acres of WM3, Inc. property within the Overlay District is lifted.

To implement the I-84 Chenoweth IAMP, the following actions shall occur:

1. The City of The Dalles shall adopt the I-84 Chenoweth IAMP as part of the City of The Dalles Transportation System Plan and Comprehensive Plan. The IAMP shall serve as the long range comprehensive management plan for providing the transportation facilities that are specifically addressed in this plan, as well as the Access Management Plan and the planned local street network for the area.
2. The Wasco County Court shall amend its Transportation System Plan to incorporate the interchange function policy statement and transportation improvements associated with the Preferred Plan.
3. The City of The Dalles shall amend its Comprehensive Plan Map and Zoning Map to include the Interchange Area Management Plan Overlay District boundary. In addition, the City shall amend the Land Use and Development Ordinance to include an Interchange Area Management Plan Overlay District chapter that contains development and land use application requirements pertaining to transportation impact analysis, access management, and agency coordination (see Appendix "J").
4. Subsequent to the local adoption of the IAMP, the City of The Dalles shall adopt a Supplemental Transportation System Development Charge (STSDC) that will finance transportation improvements in the vicinity of the I-84 Chenoweth Interchange (see proposed methodology in Appendix "I").
5. ODOT Regional Access Management Engineer will review access deviation proposed in the IAMP.
6. The Oregon Transportation Commission shall amend the Oregon Highway Plan to include the I-84 Chenoweth IAMP.
7. The City of The Dalles, Wasco County, and ODOT shall enter into an IGA to assign funding responsibility to the respective transportation improvement plan and to establish agreements on how the IAMP and its triggers will be monitored.
8. ODOT and the City shall work together to identify and pursue funding for the Webber Street IAMP which shall also include consideration of I-84 Exit 83 (entrance and exit). The Webber Street IAMP will provide coordinated land use management and financing for both interchange areas upon final adoption.

TSP and Comprehensive Plan Amendments

The following outline discusses the major Transportation System Plan amendments that will need to occur at the city, county, and state levels to support adoption of the I-84 Chenoweth IAMP.

City of The Dalles

The City shall adopt the Chenoweth Interchange Area Management Plan by reference as an element of the City's Transportation System Plan.

The following interchange policy statement shall be included in the City of The Dalles Transportation System Plan: The transportation function of the I-84 Chenoweth Interchange is principally to provide safe and efficient access to the Port and industrial land in the western part of The Dalles (the area located east of the interchange). In addition to its primary function, the Chenoweth Interchange remains an important facility for accessing the Discovery Center and existing commercial lands in the vicinity of the city's industrial center. The interchange also serves local residential and commercial traffic circulating from I-84 to Highway 30 and West 6th Street.

The IAMP Transportation Improvement Plan, as illustrated in Figure 7-1 and listed in associated table, shall be included in the recommended transportation improvements project list of the Transportation System Plan.

Wasco County

The County shall include the I-84 Chenoweth IAMP in its transportation system plan. The IAMP may be adopted by reference into the TSP.

For areas within the Interchange Management Study Area (IMSA) that are located outside of the City of The Dalles UGB, Wasco County is the land use regulatory authority. Upon the County's adoption of the IAMP, parcels within the IMSA and outside the UGB will be subject to the IAMP's Access Management Plan.

The following interchange policy statement should be included in the Wasco County Transportation System Plan: The transportation function of the I-84 Chenoweth Interchange is principally to provide safe and efficient access to the Port and industrial land in the western part of The Dalles (the area located east of the interchange). In addition to its primary function, the Chenoweth Interchange remains an important facility for accessing the Discovery Center and existing commercial lands in the vicinity of the city's industrial center. The interchange also serves local residential and commercial traffic circulating from I-84 to Highway 30 and West 6th Street.

The IAMP transportation improvement plan elements located on County facilities, as illustrated in Figure 7-1 and listed in associated table, shall be included in the recommended transportation improvements project list of the Wasco County Transportation System Plan.

Oregon Transportation Commission

The I-84 Chenoweth IAMP shall be adopted by the Oregon Transportation Commission as part of the Oregon Highway Plan.

Other City Amendments

The following outlines other major amendments that will need to occur at the city level to support adoption of the I-84 Chenoweth IAMP.

The City shall adopt an Interchange Area Management Plan Overlay District that includes the submittal requirements, review standards, and administration fees for IAMP monitoring and updates for land use amendment and design review applications within the district.

The City will adopt a Supplemental Transportation System Development Charge (STSDC) that will finance transportation improvements in the vicinity of the I-84 Chenoweth Interchange (see proposed methodology in Appendix "I"). This new STSDC will be administered through the City's existing System Development Charge (SDC) program but will have its own methodology for assessing fees (See Appendix "I"). Because the STSDC involves a new fee, state law and City regulation requires that it be adopted through a formal amendment process that includes a public review and comment period and approval of the new methodology by ordinance [ORD 3-8.4(B)]. Pursuant to the existing City ordinance, the procedure to enact an STSDC improvement fee includes adopting a plan that contains the list of projects needed to serve growth in the fee area (in this case, adoption of the IAMP) and providing written notice at least 30 days prior to adoption of the proposed fee to those who have requested notice [ORD 3-8.8].

Trip Budget and STSDC Monitoring

The City shall account for projected weekday p.m. peak hour trips generated by all new development and redevelopment within the I-84 Chenoweth Interchange Area Management Plan Overlay District and track how the projected trips compare with the trip budget included in the STSDC Methodology Memorandum (see Appendix "I" of the IAMP Technical Appendix).

The City shall document all STSDCs received and credits provided and provide current accounting of all funds.

The City shall provide an Annual IAMP Report to ODOT documenting the status of the Overlay District Trip Budget and STSDC funds. This could include collecting actual trip generation to compare to projected trip generation from new development.

If the report indicates that the Trip Budget is being exceeded and/or there are not enough funds being collected by the STSDC to construct the necessary transportation improvements, the following remedies should be considered:

1. Increase the "threshold" and/or "surcharge" STSDC trip rate;
2. Implement more aggressive TDM measures within the Overlay District; and,

3. Adopt the Vision Plan improvements into the IAMP and incorporate them into the STSDC.

ODOT Coordination

The City shall not deem the land use application complete unless it includes a Traffic Assessment Report or, if required, a Transportation Impact Study prepared in accordance with the requirements as described above.

The City shall provide written notification to ODOT when the application is deemed complete. This notice shall include an invitation to ODOT to participate in the City's site team review meeting (Pursuant to the city's Pre-Application Requirements).

ODOT shall have at least 20 days, measured from the date completion notice was mailed, to provide written comments to the City. If ODOT does not provide written comments during this 20-day period, the City staff report will be issued without consideration of ODOT comments.

SUMMARY OF DRAFT FINDINGS

ODOT's State Agency Coordination Agreement requires that the OTC adopt findings of fact when adopting facility plans (OAR 731-015-0065). Pursuant to these requirements, ODOT has developed findings to support the OTC adoption of the I-84 Chenoweth IAMP. For all applicable policies, the IAMP has been found to be compatible with adopted state and local policies.

SUGGESTED MOTION LANGUAGE

I move to adopt the I-84 Chenoweth Interchange Area Management Plan as an element of the Oregon Highway Plan and adopt the findings in support of this action.

Final Report

I-84 Chenoweth Interchange Area Management Plan

The Dalles, Oregon

December 2009 (With Amendments)
ADOPTED July 12, 2010

GENERAL ORDINANCE NO. 10-1306

COPY

AN ORDINANCE ADOPTING THE I-84 CHENOWETH INTERCHANGE AREA MANAGEMENT PLAN, DATED DECEMBER, 2009

WHEREAS, the City Council of the City of The Dalles adopted General Ordinance No. 06-1268 on July 10, 2006, adopting a Transportation System Plan for the City which had been updated as of June, 2006; and

WHEREAS, on July 12, 2006, the City Council adopted General Ordinance No. 06-1269, approving a request submitted by WM3, Inc., to change the zoning designation and comprehensive plan designation for a parcel measuring approximately 67.2 acres; and

WHEREAS, the Oregon Department of Transportation (ODOT) appealed the City's decision to approve the changes for the zoning designation and comprehensive plan designation to the Land Use Board of Appeals, which was assigned LUBA Case No. 2006-136; and

WHEREAS, the City, ODOT, and WM3 Inc., negotiated the terms of an Intergovernmental Agreement which was intended to resolve the appeal filed by ODOT in LUBA Case No. 2006-136; and

WHEREAS, pursuant to the Intergovernmental Agreement, the City and ODOT agreed to develop an Interchange Area Management Plan (IAMP) for the Study Area around the I-84 Chenoweth Interchange. The purpose of the plan was to identify land use management strategies, short term and long term transportation improvements, access management, and funding strategies to pay for any identified improvements; and

WHEREAS, it was the intent of the parties to the Intergovernmental Agreement that the IAMP planning efforts would result in policies, ordinances, and other provisions that would be adopted into the City's Transportation System Plan and Comprehensive Plan; and

WHEREAS, the proposed I-84 Chenoweth Interchange Area Management Plan, dated December 2009, has been the subject to several public workshops, and public hearings before the City Planning Commission and the City Council; and

WHEREAS, the City Council finds that the proposed I-84 Chenoweth Interchange Area Management Plan, dated December 2009, identifies transportation improvements and potential funding strategies which satisfy the requirements of the Intergovernmental Agreement and Oregon Administrative Rule 734-051, and that adoption of the proposed IAMP is in the best interest of the health, safety, and welfare of the community.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF THE DALLES ORDAINS AS FOLLOWS:

Section 1. The I-84 Chenoweth Interchange Area Management Plan, dated December 2009, a copy of which is attached as Exhibit "A", is hereby adopted by reference and incorporated herein as part of The Dalles Transportation System Plan. Due to the large size of Exhibit "A", an original version of this Exhibit will be kept on file in the Community Development Department. Inclusion of the IAMP dated December 2009, as part of the City's Transportation System Plan, reflects the City's intent that the IAMP be incorporated as part of the City's adopted Comprehensive Plan, as the Transportation System Plan was incorporated as part of the City's adopted Comprehensive Plan by adoption of General Ordinance No. 06-1268.

Section 2. The following interchange policy statement shall be included in the City's Transportation System Plan, updated June 2006:

> "The transportation function of the I-84 Chenoweth Interchange is principally to provide safe and efficient access to the Port and industrial land in the western part of The Dalles (the area located east of the interchange). In addition to its primary function, the Chenoweth Interchange remains an important facility for accessing the Discovery Center and existing commercial lands in the vicinity of the City's industrial center. The interchange also serves local residential and commercial traffic circulating from I-84 to Highway 30 and West 6th Street".

Section 3. The IAMP Transportation Improvement Plan, as illustrated in Figure 7-1 and listed in Table 7-1, of Exhibit "A", shall be included in the recommended transportation improvements project list of the City's Transportation System Plan.

PASSED AND ADOPTED THIS 12TH DAY OF JULY, 2010.

Voting Yes, Councilor: Spatz, Wood, Ahier, Dick, McGlothlin
Voting No, Councilor: None
Absent, Councilor: None
Abstaining, Councilor: None

AND APPROVED BY THE MAYOR THIS 12TH DAY OF JULY, 2010.

James L. Wilcox, Mayor

Attest:

Julie Krueger, MMC, City Clerk

ADOPTED on the 25th day of November, 2009.

WASCO COUNTY COURT

Dan Ericksen, County Judge

Sherry Holliday, County Commissioner

Bill Lennox, County Commissioner

OREGON TRANSPORTATION COMMISSION

Minutes of the Regular Monthly Meeting
March 11, 2010
Salem

On Thursday, March 11, 2010, at 8:00 a.m., the Oregon Transportation Commission (OTC) and Oregon Department of Transportation (ODOT) staff held a briefing session and reviewed the agenda in Room 135 of the Transportation Building, 335 Capitol Street N.E., Salem, Oregon. The regular monthly meeting began at 9:00 a.m. in room 122.

Notice of these meetings was made by press release of local and statewide media circulation throughout the state. Those attending part or all of the meetings included:

Chair Gail Achterman
Vice Chair Michael Nelson
Commissioner Mary Olson
Director Matthew Garrett
Chief of Staff Joan Plank
Deputy Director for Highways Doug Tindall
Communications Division Admin. Patrick Cooney
Region 4 Manager Bob Bryant
Rail Division Administrator Kelly Taylor
Trans. Development Administrator Jerri Bohard
Public Transit Administrator Michael Ward
Government Relations Manager Robin Freeman
Commission Assistant Amy Merckling

● ● ●

Chair Achterman called the meeting to order at 9:08 a.m.

● ● ●

Director's Report:

--The U.S. Senate passed a 30-day extension of the Federal Surface Transportation Program last week, ending a two-day shutdown of the Highway Trust Fund. The 30-day extension will probably be superseded soon when Congress finishes work on a "jobs" bill that would extend the Surface Transportation Program through the end of the year. The House passed this bill last week, and the Senate is expected to pass it this week. This bill will extend federal highway, transit, and safety programs through the end of the calendar year, offering much greater certainty on levels of funding as we go into the construction season. The legislation will also provide an infusion of $19 billion into the Highway Trust Fund, which will ensure that funding is whole for the programs. However, it won't provide any additional funding to the states. At this point, it is extremely unlikely that Congress will provide states with additional resources for transportation, as it did under the Recovery Act.

--Last week, Director Garrett, Chief Financial Officer Les Brodie, Debt and Investment Manager Anthony Buckley, Deputy Director for Central Services Clyde Saiki, and State Debt Management Director Laura Lockwood-McCall met with bond rating agencies in San Francisco, in preparation of the final bond issue for the OTIA projects. They met

with Moody's, Standard & Poors, and Fitch, and talked about ODOT's mission, successful investment initiatives, historical and projected revenue, ODOT's bonding program, and the debt service coverage maintained. They spoke about the 2010 bond issue and ODOT's credit strength. The houses will give their bond rating for ODOT on March 15.

--The 2010 Special Legislative Session adjourned Thursday, February 25th. There were 215 bills, memorials, and resolutions introduced, and 115 of these were passed. ODOT tracked 57 bills, memorials, and resolutions, and 28 of these passed. ODOT submitted 28 pieces of testimony/presentations and 53 fiscals on bills and bill amendments. A handful of transportation bills passed during the 2010 session, and some had a significant impact on the department:

- Senate Bill 1019 – the Senate transportation omnibus bill was amended and passed.
- House Bill 3696 – the Program Change Bill transfers the duties, functions, and powers of the Oregon Interoperability Communication Plan, and the State Interoperability Executive Council (the Oregon Wireless Inoperability Network - OWIN) to ODOT from the Oregon State Police. *The Commission asked for a briefing on OWIN in the near future.*
- Senate Bills 5563 and 5564 approved the $64.7 million for the Transportation Headquarters building renovation. *The Commission asked for a briefing on all of the agency's leased space.*
- Senate Bill 1024 will change highway access permit requirements to allow businesses greater increase in traffic volumes without obtaining a new permit.
- Senate Bill 1031 will require destination resort applicants to include economic and traffic impact analyses for each proposed development.
- Senate Bill 1059 reflects the work of the MPO Greenhouse Gas Emission Task Force.
- Senate Joint Resolution 41 allows the legislature to meet annually for 160 days during odd-numbered years, and 35 days during even-numbered years.

● ● ●

Public Comments:

--Paul Smith from the City of Portland's Bureau of Transportation suggests ODOT establish a performance based program to allocate federal flex funds, and that the funds be allocated to performance based investments though an open and transparent, performance based competition. He also suggested creation of a statewide, public/private, multi-modal advisory board.

--Lane County Public Works Vegetation Management Coordinator Orin Schumacher proposed a partnership between Lane County and the Oregon Department of Transportation for a "reduced use herbicide" pilot project.

● ● ●

The Commission considered approval of a request to designate the Beltline Highway in Eugene in honor of Randall C. Papé. *(Background materials in General Files, Salem)*

The City of Eugene passed a motion to rename the Beltline Highway as the Randy Papé Beltway. Governor Kulongoski sent Chair Achterman a letter in January requesting the Commission designate the Beltline Highway in honor of Randall C. Papé. Today, Director Garrett made the recommendation that the Beltline Highway be designated as the Randy Papé Beltway, from its intersection with OR 126, to its eastern terminus just east of I-5 at Gateway Street. He said it goes without saying that Randy left a legacy in many areas, certainly in transportation. The health of the transportation infrastructure is better, is safer, because of Randy's efforts. Director Garrett said he could think of no other honor better suited, to this man who gave so much, as for us to give this designation.

Former OTC Chair Stuart Foster gave public comments in support of the designation, and spoke on the merits of Randy Papé. Among his comments, he said, "One of the things that struck me as I was thinking about it, is how much money, millions of dollars, Randy Papé saved the state of Oregon. He was a great advocate of efficiencies within the department. He was directly involved in the negotiations with the potential private sector managers for the OTIA bridge program. As a result of his expertise and his skill, the department saved millions of dollars in eventually putting together the agreement with the Oregon Bridge Delivery Project. In addition, I have never seen anyone with the energy, passion, and tenacity of Randy Papé. I am absolutely certain that, but for Randy Papé, we would not have secured a transportation funding package in 2009." *(Verbatim comments in General Files, Salem)*

Chair Achterman thanked Stuart Foster for taking the time to come to the meeting, and for his eloquent comments on Randy Papé's service to the state, and the example he set. She said it's a privilege to make this designation in his honor.

Vice-Chair Nelson noted his thanks to Chair Achterman and Director Garrett for keeping this issue a number-one priority. He moved to approve the request to change the designation of the Beltline Highway to the Randy Papé Beltway. Commission members unanimously approved the motion.

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The Commission considered approval of a request to adopt the Chenoweth Interchange Area Management Plan (IAMP) in The Dalles. This IAMP is consistent with the requirements of the Department's Access Management Rule (OAR 731-015-0165). Adoption of the IAMP will constitute an amendment to the 1999 Oregon Highway Plan. *(Background materials and PowerPoint presentation in General Files, Salem)*

Region 4 Manager Bob Bryant said the Chenoweth IAMP is an example of a successful collaboration with local government. This started as an effort to resolve a conflict. The Oregon Department of Transportation filed a land use appeal to a decision by the City of The Dalles to re-zone a significant portion of the industrial land north of the Chenoweth Interchange. ODOT positioned itself to be able to support the local jurisdiction's desire to re-zone that land, based on some conditions the Commission requested. One of those conditions was an Interchange Area Management Plan.

Land Use Planner Ana Jovanovic gave a PowerPoint presentation on the details of the Chenoweth IAMP. Highlights of the presentation:

- Background and context
- IAMP Goals
- The preferred IAMP alternative
- System Development Charges
- Next steps

Chair Achterman said The Dalles is experiencing a lot of development activity, and there have been many conversations about providing resiliency and more reliability for north/south freight movement by exploring upgrades to Highway 97. One portion of that route is the bridge over the Columbia River in The Dalles. She asked the condition of the bridge. How many lanes exist? What are the opportunities to expand the crossing on Highway 197, working with the community of The Dalles and Wasco County?

Bob Bryant said the two-lane, steel structure is limited in capacity and has had significant maintenance issues. The bridge has reached its functional longevity, and structural investments have been needed to accommodate the increasing amount of traffic on Highway 197 across the river. Another consideration is the interchange of Highway 197 at Interstate 84. This location does not meet today's functional needs for the types of truck movement accommodated there. Currently, there is no funding program, or anticipated funding for the improvements needed on Highway 197.

Chair Achterman convened a hearing on the Chenoweth Area Management Plan and asked for comments. No testimony was given. The hearing was adjourned.

Vice-Chair Nelson moved to approve the motion to adopt the Chenoweth Interchange Area Management Plan (IAMP). Commission members unanimously approved the motion.

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The Commission considered approval of the 2011 Legislative Concepts for submission to the Department of Administrative Services and the Governor's Office. *(Background materials in General Files, Salem)*

Government Relations Manager Robin Freeman gave an overview of the eleven 2011 Legislative Concepts. In consideration of comments made by the Commission at the

October 2009 OTC meeting, only concepts critical to the next session have been brought forward. The concepts increase efficiencies, bring ODOT into compliance with federal regulations, and address important safety issues.

Commissioner Olson asked if there are any unresolved federal compliance issues. Robin said the commercial driver license concept might need modification if changes to federal law occur.

Commissioner Olson moved to approve the 2011 Legislative Concepts. Commission members unanimously approved the motion.

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Deputy Director for Highways Doug Tindall gave an update on Project Delivery/Practical Design. *(Background materials and PowerPoint presentation in General Files, Salem)*

Annually, the Highway Division provides the Commission a report on projects that have been completed, and on total expenditures versus original OTC authorization. Doug Tindall explained that the OTC has asked for follow-up reporting on areas of improvement identified in previous project delivery presentations. He said ODOT is continuing to complete these items, and today's presentation will focus more on ODOT's progress toward implementing Practical Design, as required by House Bill 2001.

Specific project improvements being worked:

- Refine STIP criteria
- Link Planning Environmental Process (LPEP)
- Develop a standard environmental commitment tracking process and tool
- Annual report to regulatory agencies and FHWA
- Develop and expand mitigation banking programs
- Expand use of environmental performance standards
- Develop new programmatic agreements with regulatory agencies
- 'Batching' projects by similar type
- Digital signatures
- Right of Way Data Management System
- Electronic bid document distribution
- Technical and inspector certification programs
- PM training for ODOT and consultants
- Web-based contract payment system
- Change order database
- Improve liaison agreements with performance measures and increased accountability
- Expand biological assessment certification
- Storm-water process improvements
- Mitigation site maintenance and reporting

Deputy Director Tindall explained that Practical Design is a philosophy to stretch scarce resources as far as possible to meet transportation system need best, while balancing cost and system value with good business practice. ODOT completed a Design-Build (D-B) project this year. A final assessment of that project showed that use of the D-B contract resulted in opening the highways and bridges on the project 18 months sooner than expected under the traditional Design-Bid-Build (D-B-B) method, and saved about $12.6 million over the amount projected in the original procurement exemption. The project was awarded first place for paving quality by the Asphalt Paving Association of Oregon.

Vice-Chair Nelson asked if the economic factor should qualify as a performance measure for liaison agreements. Doug said the economic factor should be factored in as measurement. Chair Achterman said management lessons learned through improvement of ODOT's project delivery process should be applied to workforce development, on the workforce side. She thanked Doug for the excellent report.

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The Commission received an update and PowerPoint presentation on the 2012-2015 Statewide Transportation Improvement Program (STIP) Criteria from Transportation Development Administrator Jerri Bohard and STIP Stakeholder Committee (SSC) Chair Dr. Scott Ashford. *(Background materials and PowerPoint presentation in General Files, Salem)*

A public review draft of the STIP criteria was sent to Area Commissions on Transportation, Metropolitan Planning Organizations, and other stakeholders. One response comment that seemed consistent was around issues that were not really part of the scope of this work, like funding levels, program allocations, and even project specific requests. She noted that 'prioritizing projects', and 'match to available funding level' are the two boxes discussed when talking about this criteria.

Jerri Bohard noted that the presentation was informational only. Approval will be brought to the April or May OTC meeting.

Highlights of the presentation:

- How a project gets into the STIP
- The STIP development process
- Accomplishments of the STIP Stakeholder Committee
- STIP criteria successes
- The STIP criteria – considerations
    - Relieving congestion
    - Safety
    - Operational effectiveness
    - Reducing need for more highway projects
    - Freight concerns
    - Economic health

    - Cost-benefit comparison
    - Livable communities
    - Environmental stewardship
    - Greenhouse gas goals
  - Legislative direction
  - Least cost planning
  - Proposed changes for 2012-2015
  - Documentation expectations
  - New factors

Dr. Scott Ashford said the STIP Stakeholder Committee (SSC) would like direction from the Commission on some specific projects designated by House Bill 2001. The SSC has concern that some of those projects may come in under-funded. If that happens, would those projects have special priority, or would they go through the regular STIP process to get the extra funding? Chair Achterman said that projects designated in HB 2001 were called out with specific costs that were to be funded by specific revenue provided for those projects. Any competition, for the general state and federal funds that are a part of the STIP, should be equal and subject to the same criteria as all the other projects competing for those funds.

The SSC has reached consensus on greenhouse gas emissions and agrees there will be specific greenhouse gas emission criteria in the next STIP.

The SSC sees a better and more efficient use of funds if the safety silo of funds was made more transparent to see what projects might be combined with other projects for a more efficient use of funds.

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The Commission considered approval of the 2010 Oregon Transportation Commission Work Plan. *(Background materials in General Files, Salem)*

Chief of Staff Joan Plank requested approval of the 2010 Oregon Transportation Commission Work Plan.

Commissioner Olson moved to accept the OTC 2010 Work Plan with the following changes:

1) Change the date in the title from "2010" to "2010/2011".
2) Page 4, to the last sentence of the description of Oregon Rail Transportation Reports, add the words "and action strategies".
3) Page 6, delete the last sentence of the description of Practical Design.
4) Page 6, to the last sentence of the description of Policy Analysis of Governance Issues, add the words "and engage in the development of related polices."
5) Page 7, in the first sentence of the description of Greenhouse Gas Emissions Reduction, replace the period after 'ORS 468A.205' with ", for" and delete the words "The focus is to be on".

6) Page 10, add "Audits" to the list of Fiduciary Responsibilities
7) Add "Community and citizen meetings" to the list of Partner and Stakeholder Relationships.

Commission members unanimously approved the motion.

● ● ●

The Commission considered approval of items on the Consent Calendar. *(Background material in General Files, Salem)*

1. Approve the minutes of the February 17, 2010, meeting and the February 24, 2010 Emergency telephone meeting in Salem.
2. Confirm the next commission meeting dates.
   - Tuesday and Wednesday, April 20-21, in Florence.
   - Thursday, May 13, 2010, in Wilsonville
3. Adopt a resolution for authority to acquire real property by purchase, condemnation, agreement or donation.
4. Approve the following rules:
   a. Amendment of 734-074-0008 0020 relating to wide-base single tires for triple trailers.
   b. Amendment of 735-062-0060 relating to vision testing for drivers over 50.
   c. Amendment of 735-063-0000, 0050, 0060, 0070, and 0075 relating to CDL medical program; waiver of physical disqualification.
   d. Adoption of 740-100-0010, 0060, 0065, 0070, 0080, 0085, 0090, 740-110-0010 relating to federal safety and hazardous materials transportation regulations.
5. Approve the proposed proclamation from Governor Theodore Kulongoski designating May 2010 as Transportation Safety Awareness Month.
6. Approve a request to amend the 2008-2011 Statewide Transportation Improvement Program to include the following three Transportation Enhancement projects from the Reserve List: Canyon Journey Trail: Mill City Sections; River Road: 2nd Street – Community Center Pedestrian Facilities in Elkton; and Main Street: Bonanza – Front Street Sidewalk/Streetscape in Echo.
7. Approve a request to amend the 2008-2011 Statewide Transportation Improvement Program to add construction for the Interstate 405: Willamette River (Fremont) Bridge in Region 1. The project will be funded with Bridge Program funds. Total estimated project cost is $10,525,000.

Commissioner Olson moved to approve the Consent Calendar. Commission members unanimously approved the motion.

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Public comments continued. None.

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Chair Achterman adjourned the meeting at 11:44 a.m.

• • •

Gail Achterman, Chairman

Michael Nelson, Vice-Chair

Mary Olson, Member

Not Present
Alan Brown, Member

Not Present
David Lohman, Member

Roxanne Van Hess, Commission Support

Final Report

I-84 Chenoweth Interchange Area Management Plan

The Dalles, Oregon

December 2009 (with Amendments)

ADOPTED JULY 12, 2010

Final Report

I-84 Chenoweth Interchange Area Management Plan

The Dalles, Oregon

Prepared For:
Oregon Department of Transportation
Region 4
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Bend, OR 97701
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Project Manager: Susan Wright, PE
Project Principal: Marc Butorac, PE, PTOE

Project No. 9600.00

December 2009 (with Amendments)

ADOPTED JULY 12, 2010

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Appendix B Technical Memorandum #2: Review of Adopted Plans and Regulations

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Appendix D Technical Memorandum #5/6: Future Conditions

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Appendix F Cost Estimates

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Appendix H Crossing Evaluation Memorandum

Appendix I Supplemental Transportation System Development Charge Memorandum

Appendix J Interchange Area Management Overlay District Code Amendments

Appendix K Hostetler At-Grade Rail Crossing Evaluation Memorandum

Preface

The progress of this plan was guided by the Project Management Team (PMT), Technical Advisory Committee (TAC), and Steering Committee (SC). The PMT, TAC, and SC members are identified below, along with members of the consultant team. The PMT members were all part of the TAC and primarily coordinated between meetings on project management tasks related to project schedule and meeting logistics. The PMT included representation from ODOT, the City of The Dalles, and the consultant team. The TAC and SC members were responsible for reviewing all work products and guiding the planning work. They devoted a substantial amount of time and effort to the development of the I-84 Chenoweth Interchange Area Management Plan (IAMP), and their participation was instrumental in the development of the recommendations that are presented in this report.

Project Management Team (PMT)

Ana Jovanovic
ODOT Region 4 Program and Planning

Dick Gassman
City of The Dalles Planning

Technical Advisory Committee (TAC)

Marty Matherly
Wasco County Engineering

Gary Nychyk
Wasco County Planning

Dale McCabe
City of The Dalles Engineering

David Boyd
ODOT Region 4 Access Management

Mark Devoney
ODOT Region 4 4 Program and Planning

Rod Cathcart
ODOT Region 4 Traffic Analysis

Peter Schuytema
ODOT Transportation Planning Analysis Unit

Tracy White
ODOT Access Management

Steering Committee (SC)

Todd Cornett
Wasco County Planning

Sam Wilkins
ODOT District 9

Dan Durow
City of The Dalles Planning

Brad DeHart
ODOT District 9

Consultant Team

Kittelson & Associates, Inc.
Susan Wright, PE - *Project Manager*
Marc Butorac, PE, PTOE - *Project Principal*
Casey Bergh - *Transportation Analyst*

Angelo Planning Group, Inc.
Darci Rudzinski, AICP
DJ Heffernan

CH2M Hill, Inc.
Darren Hippenstiel, PE

Section 1
Introduction

Introduction

An Interchange Area Management Plan (IAMP) was prepared for the Interstate-84 (I-84) Chenoweth Interchange in The Dalles, Oregon. The following section provides an overview of the purpose and intent of the IAMP and defines: the interchange function, the project goals and objectives, and the study area. These elements were defined through a collaborative effort between the project Technical Advisory Committee (TAC) and the Steering Committee (SC).

PURPOSE AND INTENT

The IAMP is intended to protect the function of the I-84 Chenoweth Interchange and ensure that it will continue to provide safe and efficient connections between I-84 and all roadways within the vicinity of the interchange. The IAMP identifies land use management strategies, near-term, mid-term, , long-term, and long-term vision transportation improvements, an access management plan, and strategies to fund identified improvements.

The IAMP planning efforts resulted in policies, ordinances, and other provisions that will be adopted into the City of The Dalles and Wasco County Transportation System Plans (TSP), Comprehensive Plans, and development review ordinances to support and implement the IAMP. The IAMP will also be adopted by the Oregon Transportation Commission (OTC) as an amendment to the Oregon Highway Plan.

PROBLEM STATEMENT

In 1997 the State of Oregon invested $12 million into construction of the I-84 Chenoweth Interchange. The improvements serve to meet Oregon Department of Transportation (ODOT) priorities to provide access from I-84 to the west side of the City of the Dalles ("City"), the Port of the Dalles ("Port"), and the Columbia Gorge Discovery Center (Discovery Center). In 2006, WM3, Inc. ("WM3") proposed a zone change from industrial to commercial use for an approximately 67 acre parcel adjacent to the Chenoweth Interchange. The zone change was adopted by the City and subsequently appealed by ODOT. An Intergovernmental Agreement (IGA) between ODOT, the City, and WM3 was drafted in which WM3 was approved to develop 25 acres with commercial land uses and agreed not to develop any 'non-industrial' uses on the remaining 42 acres until an IAMP is adopted by ODOT and the City. The City and ODOT initiated the IAMP process to ensure that the original priorities for the interchange continue to be met, and to identify what changes to the interchange and surrounding street network may be needed for the current land uses, and future development. The IAMP identifies transportation improvements and potential funding strategies

that satisfy requirements of the IGA and Oregon Administration Rule (OAR) 734-051. *The IGA is provided as an attachment to Technical Memorandum #2 in the Volume 2 Technical Appendix.* The IAMP was developed according to the ODOT IAMP Guidelines.

INTERCHANGE FUNCTION

The I-84 Chenoweth Interchange is an urban interchange located near the City's northwestern boundary that connects I-84 with Highway 30 on the west side of the interchange and River Road on the east side. Highway 30 is a District Highway that runs parallel to I-84 and ends just south of River Road at Division Street. Highway 30 then turns into West 6th Street which runs through much of the City and has several interchanges connecting it to I-84. River Road is a Wasco County facility from the Chenoweth Interchange to Bargeway Road at which point it becomes Webber Street, a City of The Dalles facility. These roadways provide a loop connection through the city's industrial area, much of which is owned by the Port, from the Chenoweth Interchange to the Webber Street Interchange. The land uses served by the Chenoweth Interchange are primarily industrial although some commercial land is located on the east side of the interchange and a mix of commercial and residential is located on the west side of the interchange.

When it was originally designed in 1996, the I-84 Chenoweth Interchange was intended to function as a service-level interchange that would safely and efficiently accommodate the traffic demands associated with the Port, industrial property in the vicinity of the I-84, and the Discovery Center. Visitor traffic to the Discovery Center has been lower than originally projected and the function of the interchange today is principally to provide safe and efficient access to the Port and industrial land in the western part of The Dalles (the area located east of the interchange). In addition to its primary function, the Chenoweth Interchange remains an important facility for accessing the Discovery Center and existing commercial lands in the vicinity of the City's industrial center. The interchange also serves local residential and commercial traffic circulating from I-84 to Highway 30 and West 6th Street.

The City of The Dalles is currently considering designating land northwest of the I-84 Chenoweth Interchange for residential development to meet the City's 20-year projected population needs. This requires amending the Columbia River Gorge National Scenic Area boundary in order to expand the City Urban Growth Boundary (UGB). If both of these changes happen, then the I-84 Chenoweth Interchange would provide a link from new residential development northwest of the interchange to I-84 and to the employment area southeast of the interchange. No decision has been made regarding future UGB expansion in this area; therefore, the interchange function for the I-84 Chenoweth IAMP does not assume it is intended to serve future growth outside of the current UGB.

INTERCHANGE MANAGEMENT STUDY AREA

To provide a comprehensive study and to achieve effective results, the Interchange Management Study Area (IMSA) includes developable and re-developable properties and major roadways that could significantly affect the interchange function over the next 20 years. At a minimum, the IMSA includes properties within ½-mile from the existing I-84 Chenoweth Interchange as defined by

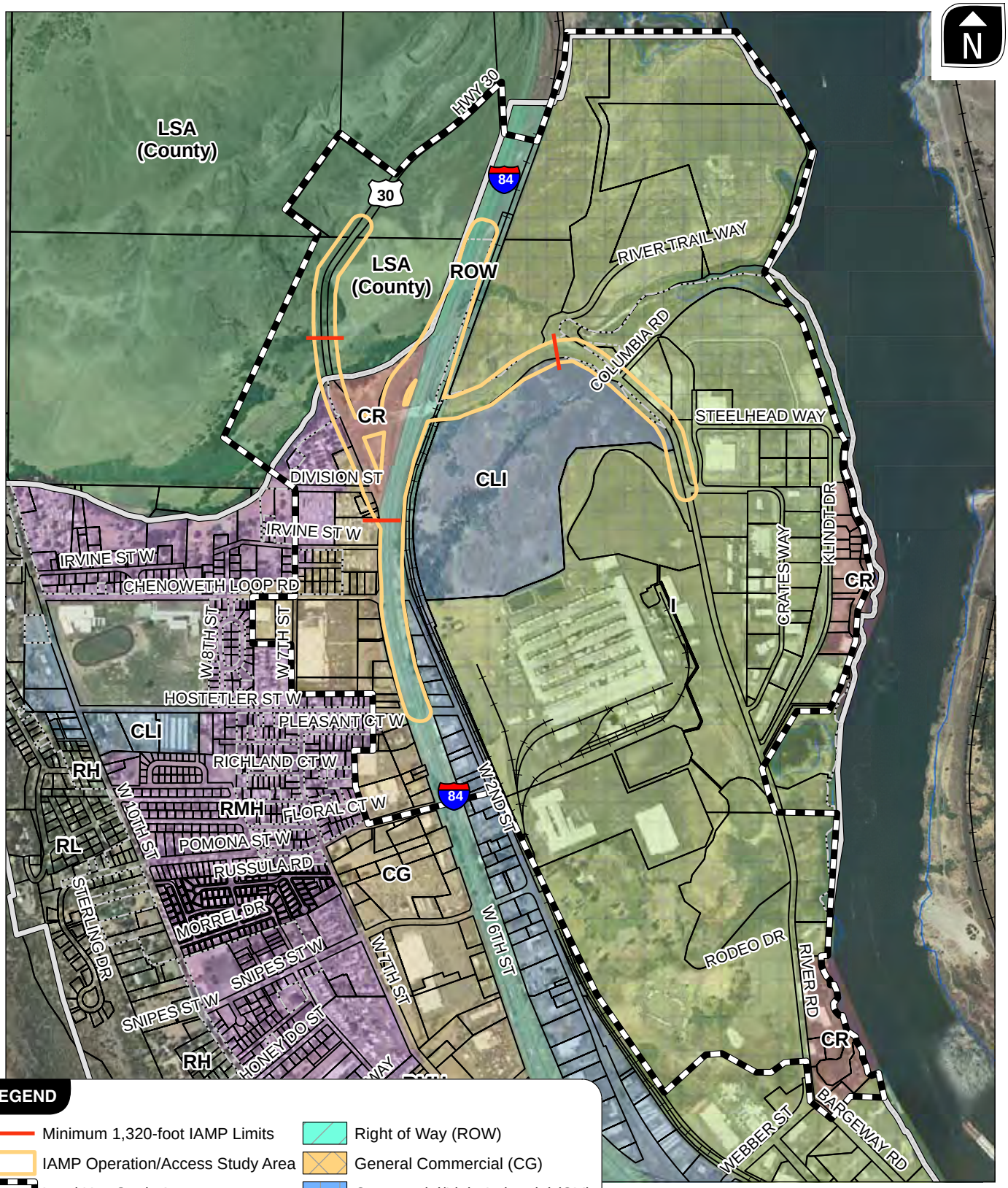
ODOT's IAMP Guidelines. The study area also takes into account facilities and properties that will impact the operations of the interchange and any natural (e.g., Columbia River) or cultural resources in the vicinity of the interchange.

The IMSA map is shown in Figure 1-1, which identifies key features and boundaries of the area included in the IAMP. As shown on the IMSA map, two study boundaries are identified: the IAMP Operations and Access Study Area and the Land Use Study Area. Each of these study areas are described below.

Operations and Access Study Area

The Operations and Access Study Area includes all access points and intersections within approximately ½-mile from the existing I-84 Chenoweth Interchange and encompasses key intersections that have potential to affect traffic operations in the interchange area over the planning period. This study boundary identifies the area for which operational analysis was completed and the area that was considered for the Access Management Plan. Interchange crossroad access spacing requirements are ¼ mile, as identified in Figure 1-1. The study intersections include:

- I-84 Eastbound Ramps/River Road
- I-84 Westbound Ramps/River Road
- Historic Columbia River Hwy (US 30)/River Road
- Historic Columbia River Hwy (US 30)/Division Street
- Historic Columbia River Hwy (US 30)/Chenoweth Loop
- Historic Columbia River Hwy (US 30)/Hostetler Street
- River Road/Columbia Road
- River Road/Crates Way
- River Road/River Way Trail



LEGEND

- Minimum 1,320-foot IAMP Limits
- IAMP Operation/Access Study Area
- Land Use Study Area
- The Dalles Town Boundary
- Tax Lots
- The Dalles UGB
- Lakes and Rivers
- Railroads
- Right of Way (ROW)
- General Commercial (CG)
- Commercial/Light Industrial (CLI)
- Recreational Commercial (CR)
- Industrial (I)
- Mobile Home Residential (RMH)
- Large-Scale Agriculture (LSA)

INTERCHANGE MANAGEMENT STUDY AREA
THE DALLES, OREGON

FIGURE **1-1**

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Land Use Study Area

The Land Use Study Area includes all properties that lie within a ½-mile of the interchange. The Land Use Study Area extends beyond a ½ mile in places to incorporate developable and re-developable properties that are expected to significantly affect the interchange function over the next 20 years. Properties identified with potential to affect the interchange include those that are expected to utilize the interchange as the primary connection to I-84 or those that may be impacted by actions needed to improve local circulation. Developments to the east of I-84 were included if their primary access to the interchange is provided via River Road, including those located on Klindt Drive, Crates Way, and Steelhead Way. To the west of I-84, properties included in the Land Use Study Area primarily include those properties with potential access needs within the interchange crossroad access spacing standard distance of ¼-mile. The boundary of the Land Use Study Area extends south of the interchange to encompass the Northwest Aluminum Company parcels and all of the Port of The Dalles property.

Future development located within the Land Use Study Area will be required to comply with the City of The Dalles Development Code which incorporates code amendments proposed in this IAMP.

GOALS AND OBJECTIVES

The goal of the IAMP is to protect the function of the interchange for the next 20 years while accounting for changes in land use and traffic patterns. Potential capacity for development of existing industrial land within the Port and redevelopment of land adjacent to the interchange will impact the traffic patterns over this period. As stated in Policy 3C of the 1999 Oregon Highway Plan, "it is the policy of the State of Oregon to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways." From this definition, the objectives of the I-84 Chenoweth IAMP are to:

- Protect the function and operation of the Chenoweth Interchange as a local service facility and Interstate-84 as a facility of statewide significance.
- Protect the function and operation of the existing local street network within the IAMP study area.
- Ensure changes to the planned land use are consistent with protecting the long-term function of the interchange and the local street system.
- Ensure that the interchange will function to support future local economic development over the next 20 years by managing the allowed land uses within the vicinity of the interchange.
- Identify the existing and potential land use designations, intensities, conditions, and actions that could have a *favorable* effect on the facility, or an *adverse* effect on the facility.
- Identify and prioritize transportation improvements and apply access management techniques needed to maintain acceptable traffic operations at the interchange while providing safe access to adjacent land uses.

- Provide certainty to the public, property and businesses owners, The City of The Dalles, Wasco County, and ODOT regarding transportation and land use actions within the vicinity of the interchange.
- Collaborate throughout the planning process with design professionals, jurisdictional representatives, developers, and local property and business owners.
- Comply with the intent of Statewide Planning Goal 1: Public Involvement, 2: Land Use Planning, 5: Natural Resources, 6: Air, Water and Land Resources Quality, 7: Areas Subject to Natural hazards, 8: Recreation Needs, 9: Economic Development, 12: Transportation, and 14: UrbanizationUrbanization.
- Develop implementation policies and monitoring tools to be adopted into the City and County comprehensive plans, transportation system plans, interchange access standards, and zoning ordinances, as appropriate.

EVALUATION CRITERIA

Based on the above objectives, the following evaluation criteria were assembled to ensure that each concept would be evaluated for consistency with the overall intent of the community and the project. The six evaluation categories are as outlined below:

- Transportation Operations: This category consists of those criteria that assess the ability for vehicles to travel through and within the study area. Special considerations within this category include safety, local connectivity and mobility, including freight mobility.
- Land Use: This category consists of those criteria that assess right-of-way impacts, consistency with adopted land use and economic development plans, transportation capacity impacts of changes in land use intensity, impacts to utilities, and impacts to existing and proposed developments.
- Economic Development: This category consists of those criteria that assess the potential for near-term growth (1-5 years), mid-term growth (5-15 years), and long-term growth (15+ years)
- Cost: This category consists of those criteria that assess the practicality of a design concept from a construction cost and feasibility perspective.
- Environmental, Social, and Equity: This category consists of those criteria that assess the degree to which an alternative is compatible with the natural and built environment including environmental impacts (i.e., storm water drainage and hazardous waste) and socio-economic impacts (i.e., stakeholders' needs).
- Accessibility: This category consists of those criteria that assess the ability to access properties and businesses within the study area to/from the regional infrastructure network including the balance between local access and roadway function, future access for undeveloped properties, and adherence to the access spacing standards.

DEVELOPMENT OF THE IAMP

The I-84 Chenoweth IAMP was guided by the Technical Advisory Committee (TAC) and a Steering Committee (SC), technical and policy review committees each made up of representatives from the Oregon Department of Transportation (ODOT), the City of The Dalles, and Wasco County. The TAC and SC roster list is provided in the Preface of this document and in Section 2. The TAC and SC convened jointly throughout the course of the project to review and guide the technical analysis prepared by the consultant team. *A summary of the individual TAC and SC meetings is provided in Appendix "A."*

Public Involvement

In addition to the technical review work provided by the TAC and SC, local citizens, property owners, and business owners participated in two public workshops and a joint work session of the City of The Dalles Planning Commission and City Council. The workshops and work session provided members of the public with opportunities to comment on the design alternatives. Property and business owners within the IAMP Land Use area were individually interviewed at the beginning of the IAMP process. Members of the public submitted comments on the project website (http://www.oregon.gov/ODOT/HWY/REGION4/I84_Chenoweth_IAMP/I84_Chenoweth_IAMP) and directly to the project management team. In addition, adoption of the plan included public hearings for The City of The Dalles, Wasco County, and the Oregon Transportation Commission. *Summaries of the public meetings are provided in Appendix "A."*

IAMP ORGANIZATION AND METHODOLOGY

The development of the I-84 Chenoweth IAMP began in September 2008 when the Project Management Team (PMT) first met. Work with the TAC and SC began in December 2008. Since December 2008, these groups have undergone an extensive process that has involved a review of existing and future transportation conditions, future land use analyses, potential Union Pacific railroad crossing alignments and design, local access and circulation alternatives, and financing options.

Sections 1 through 9 comprise Volume 1 of the IAMP and provide the main substance of the plan. These are supplemented by Technical Appendices in Volume 2 which contains the technical memoranda documenting each step in the process. The organization and description of each element of the IAMP are outlined below:

Section 1 describes the IAMP process, purpose, and goals and outlines the remainder of the document;

Section 2 details the interagency and public involvement program;

Section 3 provides the plan and policy review;

Section 4 outlines the existing land use patterns and transportation facilities within the IAMP study area;

Section 5 documents the future land use and transportation conditions and how they were addressed by the planning effort;

Section 6 provides a description of the alternatives analysis and transportation planning efforts involving the selection of a preferred interchange form, supporting local access and circulation network, access management plan, and land use management plan;

Section 7 is the I-84 Chenoweth IAMP, including the local circulation and access elements and the and the transportation improvement projects that are necessary to ensure the continued long-term safety and function of the interchange;

Section 8 provides guidance on IAMP adoption, monitoring, and updates; and **,**

Section 9 documents how the I-84 Chenoweth IAMP complies with the Oregon Administrative Rules for the development of an interchange area management plan as well as the Oregon Highway Plan.

Section 2
Interagency and Public Involvement Program

Interagency and Public Involvement Program

As part of the I-84 Chenoweth Interchange Area Management Plan (IAMP), interagency and public involvement occurred through: stakeholder interviews conducted with business owners at the beginning of the IAMP process; a Technical Advisory Committee (TAC) and a Steering Committee (SC) that had regular meetings; two public Open Houses involving local citizens, property owners, and business owners; public comments posted on the project website; and, a joint work session of the City of The Dalles Planning Commission and City Council that was open to the public; and public adoption hearings at The City of The Dalles, Wasco County, and the Oregon Transportation Commission. An overview of the TAC and SC meetings and open houses is summarized below.

TECHNICAL ADVISORY AND STEERING COMMITTEES

The TAC and SC guided the planning work and were responsible for reviewing all work products, providing input on all planning recommendations such as the project study area, goals and objectives, level of public involvement, technical analysis, and the proposed alternatives. Ultimately the TAC and SC helped select the preferred local circulation/access, land use management, and coordination elements of the IAMP. A Project Management Team (PMT) performed a coordination function, planning and executing project management tasks related to project schedule and meeting logistics. The PMT included representation from ODOT, the City of The Dalles, and the consultant team and were all members of the TAC.

Membership on the TAC and SC was established through input from City, County, and ODOT representatives. A proposed TAC and SC membership roster was presented and finalized at a project kick-off meeting of the Project Management Team (PMT) held September 15th, 2008. A list of TAC and SC members is included in Table 2-1.

TABLE 2-1 TECHNICAL ADVISORY AND STEERING COMMITTEES

Agency	Name	Position/Title	Role
ODOT Region 4	Ana Jovanovic	ODOT Region 4 Planner	ODOT Project Manager PMT and TAC
	Mark Devoney	ODOT Region 4 Planner	TAC
	David Boyd	ODOT Region 4 Access Management Engineer	TAC
	Rod Cathcart	ODOT Region 4 Traffic Analyst	TAC
ODOT District 9	Brad DeHart	ODOT District 9 Area Manager	TAC
	Sam Wilkins	ODOT District 9 Manager	SC
ODOT Statewide Office	Peter Schuytema	ODOT Transportation Planning Analysis Unit	TAC
	Tracy White	ODOT Access Management Planner	TAC
Wasco County	Marty Matherly	Wasco County Roadmaster	TAC
	Todd Cornett	Wasco County Planning Director	SC
	Gary Nychyk	Wasco County Senior Planner	TAC
City of The Dalles	Richard Gassman	City of The Dalles Senior Planner	City Project Manager PMT and TAC
	Dan Durow	City of The Dalles Planning Director	SC
	Dale McCabe	City of The Dalles Engineer	TAC
Wasco County	Marty Matherly	Wasco County Roadmaster	TAC
	Todd Cornett	Wasco County Planning Director	SC
	Gary Nychyk	Wasco County Senior Planner	TAC
DLCD	Mark Radabaugh	DLCD Field Representative	TAC

The TAC and SC members were selected in order to provide representation from both the planning and public works departments for each agency involved. An outline of all of the TAC and SC meetings is included in the next section.

PUBLIC INVOLVEMENT PLAN

To ensure that adequate project coordination and public participation occurred throughout the development of the Chenoweth IAMP, a series of joint TAC and SC meetings, public workshops, and public joint work sessions were held over the course of the project. The City of The Dalles and Wasco County also conducted public hearings to adopt the plan. A summary of all of the meetings associated with the project, as well as the meeting objectives, are summarized in Table 2-2.

TABLE 2-2 MEETING SUMMARY

Meeting Event	Date/Location	Meeting Purpose/Objectives
PMT Kick-off Meeting	September 15th, 2008/ The Dalles – ODOT District 9 Office	- Review TAC and SC Membership - Review Project Schedule
TAC/SC Meeting #1	December 3rd, 2008/ The Dalles – City Hall	- Review Project Schedule - Presentation: IAMP 101 - Review Tech Memorandums #1 and #2 (IAMP Definition and Background and Plans and Policy Review) The purpose of the Meeting #1 was to introduce the I-84 Chenoweth Interchange project and the consultant team; review the project schedule; review the project goals, objectives, and evaluation criteria; confirm the study area; confirm the project schedule; and review the project's policy framework.
TAC/SC Meeting #2	February 11th, 2009/ The Dalles - City Hall	- Review Tech Memorandums #3/4 and #5/6 (Existing and Future Conditions) - Review Stakeholder Interview Summary - Presentation: Interchange 101 and Local Circulation 101 - Brainstorm Design Alternatives The purpose of Meeting #2 was to provide an overview of the IAMP process and principals of local circulation; review the existing and future land use and traffic operations; review a summary of stakeholder interviews that were conducted; and involve the TAC and SC in a brainstorming exercise to develop roadway, local circulation, and access management alternatives for the existing roadway system.
Public Workshop #1	March 5th, 2009 The Dalles – Civic Auditorium	- Project Overview - Summary of Existing and Future Conditions - Review, Comment, Brainstorm Alternatives The purpose of the first public workshop was to present the project goals and objectives and findings to date; educate the public and stakeholders on the IAMP process and access management practices; and engage the participants to help develop potential local circulation and access management alternatives.
TAC/SC Meeting #3	April 8th, 2009/ The Dalles – City Hall	- Review Tech Memorandums #7 (Alternatives Analysis) - Screen Alternatives - Presentation: Access Management 101 - Brainstorm Access Management Plan The purpose of Meeting #3 was to review the Alternatives Analysis and reduce the number of alternatives for refined analysis.
TAC/SC Meeting #3B (extra meeting)	April 30th, 2009/ The Dalles – ODOT District 9 Office	- Review Updated Tech Memorandums #7 (Alternatives Analysis) - Presentation: System Development Charges 101 The purpose of Meeting #3B was to review the Updated Technical Memorandum #7, review the qualitative evaluations of the refined alternatives, brainstorm land use management alternatives and funding options, and select a preferred alterative to carry forward for the Draft IAMP document.
TAC/SC Meeting #4	May 27th, 2009/ The Dalles – City Hall	- Review Interchange Design Plans - Review Access Management Recommendations - Review Land Use and Implementation Recommendations The purpose of Meeting #4 was to review design plans for the Draft Preferred Alternative selected in Meeting #3B and select a preferred access management alterative to carry forward for the Draft IAMP document.

Meeting Event	Date/Location	Meeting Purpose/Objectives
Public Workshop #2	June 11th, 2009/ The Dalles – Civic Auditorium	- Summary of Alternatives Analysis and Draft Plan (Interchange Design, Draft Access Management Plan and Land Use and Implementation Recommendations) The purpose of the second public workshop was to present the qualitative evaluations of the local access and circulation alternatives for the Interchange Area developed during Public Workshop #1 and collect input on the Draft Preferred Alternative for the Draft IAMP.
Joint Work Session #1	June 18th, 2009/ The Dalles – Civic Auditorium	- Summary of Alternatives Analysis and Draft Plan (Interchange Design, Draft Access Management Plan and Land Use and Implementation Recommendations) - Confirm direction for Draft IAMP The purpose of the joint work session of the City Council and Planning Commission was to present the qualitative evaluations of the local access and circulation alternatives for the Interchange Area developed during Public Workshop #2 and collect input on the Draft Preferred Alternative for the Draft IAMP.
TAC/SC Meeting #5	July 22nd, 2009 The Dalles – City Hall	- Draft IAMP - Draft Ordinance Amendments The purpose of the PPMT Meeting #5 was to review the complete Draft IAMP document and recommendations, draft SDC methodology, and draft ordinances and code amendments.
City Council Work Session #2	July 27th, 2009 The Dalles – City Hall	- Crossing Alternatives Technical Memorandum - At-Grade Rail Analysis Memorandum The purpose of the Work Session #3 was for the City Council to review the supplemental information prepared to compare the UP railroad crossing alternatives, West 6th Street intersection treatment alternatives, and operational impacts associated with an at-grade crossing at Hostetler (as opposed to a grade-separated option).
TAC/SC Meeting #6	August 5th, 2009 The Dalles – City Hall	- Updated Draft IAMP - Updated Draft Ordinance Amendments The purpose of Meeting #6 was to review the Updated Draft IAMP document and recommendations, SDC methodology, and ordinances and code amendments.
Joint Work Session #2	September 3rd, 2009 The Dalles – Civic Auditorium	- Summary of Draft IAMP - Summary of Draft Ordinance Amendments The purpose of the joint work session of the City Council and Planning Commission was to provide supplemental education and summary of the IAMP process. The following elements of the Draft IAMP were summarized: 6th Street cross-section, at-grade vs. grade-separated railroad crossing, and preferred east-west crossing location.
City Planning Commission Hearing	September 17th, 2009 The Dalles – City Hall	The Draft IAMP was presented to the Planning Commission for adoption. The public hearing was continued until the Planning Commission could have questions answered by the city attorney.
City Planning Commission Hearing	October 1st, 2009 The Dalles – City Hall	The Draft IAMP was approved and forwarded with a recommendation for approval with modifications to the City Council.
County Planning Commission Hearing	October 6th, 2009 The Dalles - Discovery Center	The Draft IAMP was approved and forwarded with a recommendation for approval to the County Court.

Meeting Event	Date/Location	Meeting Purpose/Objectives
City Council Hearing	October 26th, 2009 The Dalles – City Hall	The Draft IAMP was presented to the City Council for adoption. The public hearing was closed but the vote was postponed to allow additional review time for the Councilors.
County Court Hearing	November 4th, 2009	A public hearing was held on the Draft IAMP however a decision was deferred until action was taken by The City of The Dalles City Council.
City Council Hearing	November 9th, 2009 The Dalles – City Hall	The Draft IAMP was approved with modifications.
County Court Hearing	November 25th, 2009	The Draft IAMP was approved with modifications from November 9th City Council Hearing.
Oregon Transportation Commission Hearing	March 11, 2010	The Draft IAMP was approved.

Section 3
Plan and Policy Review

Plan and Policy Review

One of the project objectives of the IAMP is to ensure that the plan is consistent with local and state transportation policies and standards. To meet this objective, a review and evaluation of existing plans, policies, standards, and laws that are relevant to the IAMP study area was conducted. A summary of the documents reviewed is provided below. Detailed information from this review can be found in the Technical Appendix.

DOCUMENTS REVIEWED

The following transportation and land use plans were reviewed for policies and regulations applicable to the I-84 Chenoweth Interchange.

Federal

- Columbia River Gorge National Scenic Area Management Plan

State/ODOT

- Statewide Planning Goal 1 (Public Involvement), Goal 2 (Land Use Planning), Goal 5 (Natural Resources, Scenic and Historic Areas, and Open Spaces), Goal 6 (Air, Water and Land Resources Quality), Goal 7 (Areas Subject to Natural Hazards), Goal 8 (Recreational Needs), Goal 9 (Economic Development), Goal 12 (Transportation) and Transportation Planning Rule (TPR) Oregon Administrative Rule 660 Division 12, and Goal 14 (Urbanization)
- Oregon Administrative Rule 731, Division 15, Department of Transportation Coordination Rules
- Oregon Transportation Plan (1992)
- Oregon Highway Plan (1999)
- Oregon Administrative Rule 734, Division 51 (Highway Approaches, Access Control, Spacing Standards and Medians)
- Highway Design Manual
- Port of The Dalles Chenoweth Interchange, Columbia River/Interstate 84, Final Environmental Impact Statement (1995)
- Intergovernmental Agreement/Settlement Agreement (No. 23886) – ODOT, City of The Dalles, and WM3, Inc. (2007)

Local

- Wasco County Comprehensive Plan (1983)
- Wasco County Land Use and Development Ordinance (1985, Updated 1999)
- City of The Dalles Comprehensive Plan (2006)
- City of The Dalles Growth Management Report (2007)
- City of The Dalles Land Use and Development Ordinance (1998, Updated 2008)
- City of The Dalles Transportation System Plan (1999, Updated 2006)
- City of The Dalles Capital Improvement Program, 2007-2012 (CIP)

CONSISTENCY WITH EXISTING PLANS

The IAMP has been developed to be consistent with local and state transportation policies. The review of local policies and regulations did not reveal conflicts with the primary goal of the IAMP to protect the function of the interchange but, at the same time, the existing regulatory tools also do not adequately address the future transportation needs in the area. Additional requirements regarding access management, local street connectivity, and transportation financing must be adopted if the transportation system in this area of The Dalles is going to support future planned growth. See Sections 7 and 8 for proposed amendments to existing plans required to make existing plans consistent with the IAMP.

Section 4

Inventory of Existing Transportation/Land Use Conditions

Inventory of Existing Transportation/Land Use Conditions

This section provides a review of existing land uses and transportation facilities as well as natural and cultural resources within the vicinity of the I-84 Chenoweth Interchange. As shown in Figure 4-1, the interchange is located at the northwest end of the city and has a service area much larger than the study area (shown in Figure 1-1). The information identified in this section is intended to provide a basis for identifying opportunities and constraints for meeting the goals and objectives of the IAMP.

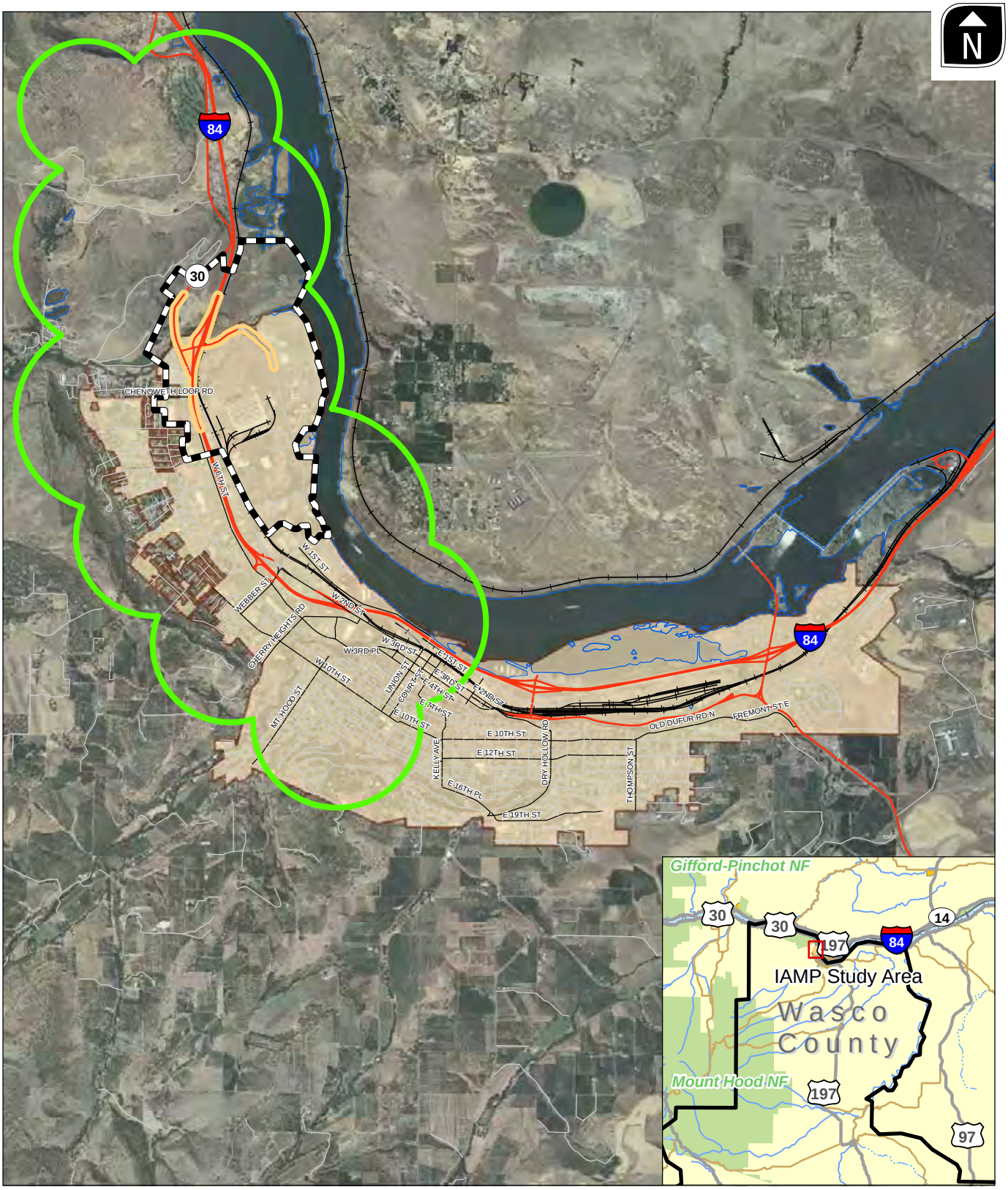
INTERCHANGE MANAGEMENT STUDY AREA

The Land Use Study Area shown in Figure 4-1 includes all properties that lie within a ½-mile of the interchange. Additionally, the Land Use Study Area includes the areas with trip-generation potential that are expected to have a direct affect on the design and function of the interchange. Developments to the east of I-84 were included if their primary access to the interchange is provided via River Road, including those located on Klindt Drive, Crates Way, and Steelhead Way. To the west of I-84, properties included in the Land Use Study Area primarily include those properties with potential access needs within the interchange crossroad access spacing standard distance of ¼-mile. The boundary of the Land Use Study Area extends south of the interchange to encompass the Northwest Aluminum Company parcels and all of the Port of The Dalles property.

Generally speaking, land uses outside of the Land Use Study Area in the Interchange Service Area (the area where trips using the interchange are likely to have a trip end) use the facility and are impacted by traffic using the facility, but are not anticipated to directly impact the function of the interchange because: they are already developed, have limited redevelopment potential, or are outside of The Dalles Urban Growth Boundary (UGB). Specific trip generation from land uses within the Land Use Study Area was calculated based on individual property development or redevelopment potential, while growth from outside of this area was represented through a regional traffic growth forecast as part of the traffic analysis for the IAMP.

Figure 4-1 also outlines the Interchange Operations/Access Review Area. The operations and access management of intersections and driveways within this area is the subject of analysis described later in this section.

A majority of the Land Use Study Area contains industrial land, which lies to the east of I-84. Many of the industrial properties gain access to I-84 through the Chenoweth Interchange via River Road, including those located on Klindt Drive, Crates Way, Columbia Road, and Steelhead Way. Land to the west and north of the interchange includes undeveloped and underdeveloped land, both inside and outside of The Dalles UGB.



LEGEND

- Interchange Service Area
- IAMP Operation/Access Study Area
- Land Use Study Area
- The Dalles Town Boundary

0 2,650 5,300 10,600 Feet

STUDY AREA VICINITY MAP
THE DALLES, OREGON

FIGURE **4-1**

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KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

EXISTING LAND USE

Pursuant to the requirements stated in the Oregon Administrative Rule 734-051-0155 for the preparation of an IAMP, a land use inventory was prepared for the I-84 Chenoweth IAMP study area. This section provides a description of the existing land-use patterns and zoning regulations that currently exist within the interchange study area.

DESIGNATIONS AND DEVELOPMENT STANDARDS

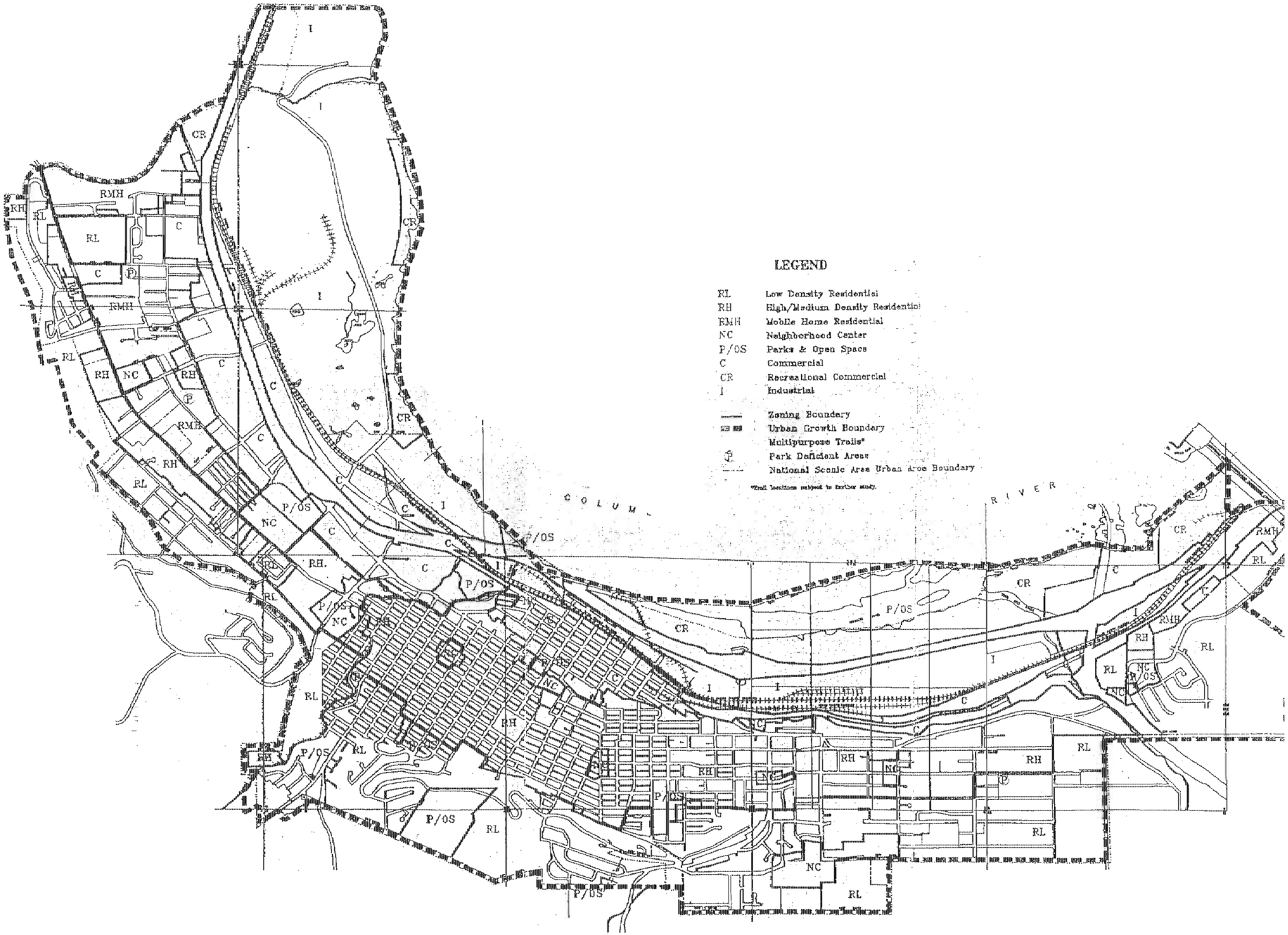
As shown in Figure 4-2, The Dalles Comprehensive Plan assigns the following designations to parcels within the Land Use Study Area and The Dalles city limits:

- Low Density Residential (RL)
- High/Medium Density Residential (RH)
- Mobile Home Residential (RMH)
- Neighborhood Center (NC)
- Park & Open Space (P/OS)
- General Commercial (C)
- Recreational Commercial (CR)
- Industrial District (I)

The Dalles' Land Use and Development Ordinance (LUDO) implements policies established in the City's Comprehensive Plan and regulates development through zoning designations and provisions that apply generally to all development and particularly to land divisions within the city. As shown in Figure 4-3, LUDO zoning is relatively consistent with The Dalles Comprehensive Plan designations, with the exception of the recent zoning designation of Commercial/Light Industrial District (CLI) in the immediate vicinity of the interchange. For the purposes of this IAMP, the analysis assumed land uses as designated in the City's Comprehensive Plan.

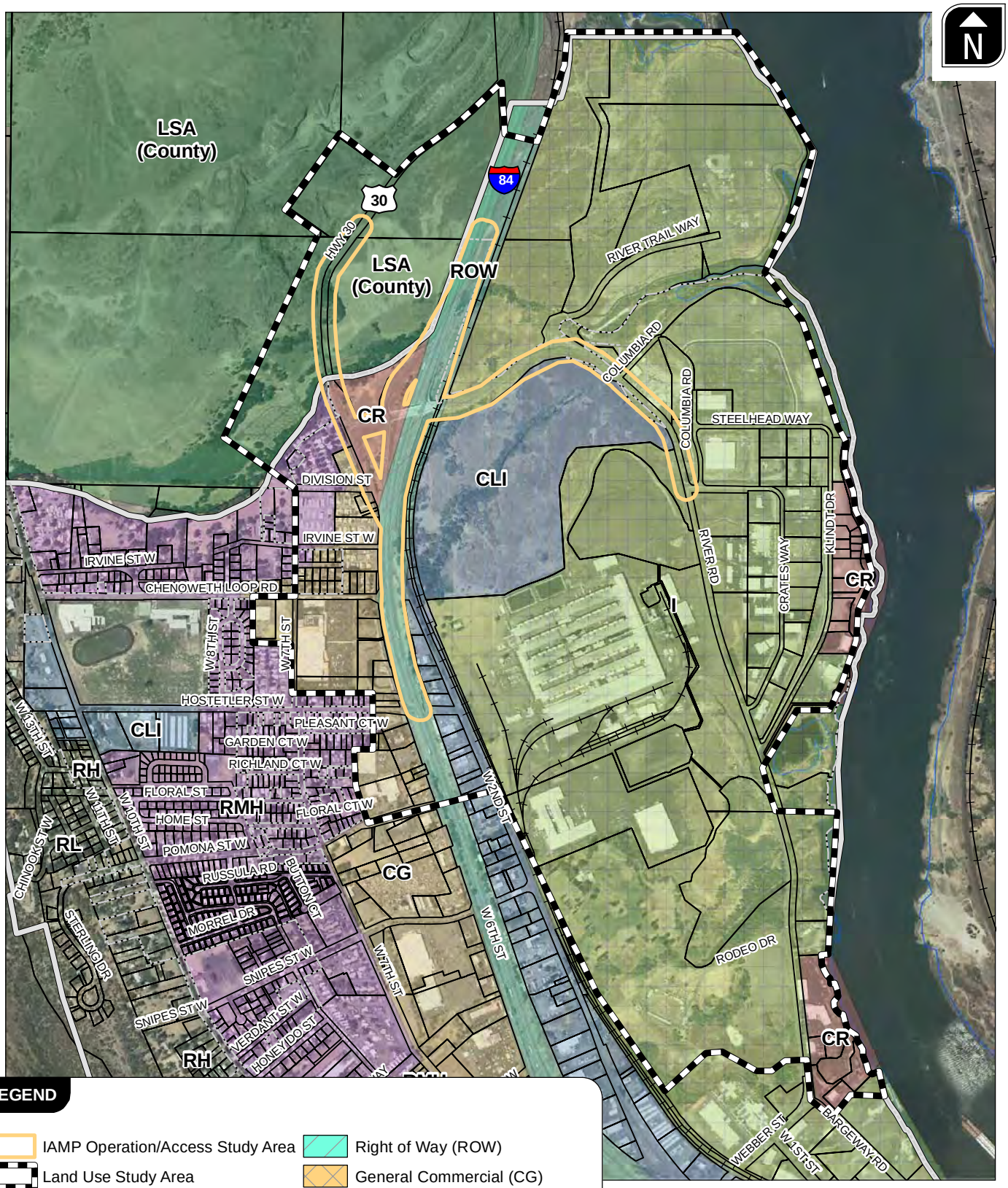
The majority of the land in the Land Use Study Area east of I-84 is zoned Industrial District. Uses allowed in this zone include what is generally considered "heavy industrial" uses, such as manufacturing and storage services; rail yards; shipyards; commercial docking facilities; rock and mineral processing; and, warehousing. With the exception of uses that support personal and professional services (e.g., restaurant, laundry, and cleaning services), commercial and retail uses are prohibited. The minimum lot size for development zoned Industrial is 10,000 square-feet. There are no upper limitations on lot size or lot coverage; however, building heights are limited to 55 feet in I zones.

Several properties are zoned for Recreational Commercial, including properties east of Klindt Drive, east of River Road near Webber Street, and between I-84 and West 6th Street near River Road. Light industrial uses that are compatible with commercial and recreational uses are allowed in this zone, as are restaurants, administrative offices, lodging, and campgrounds. Retail services with limited floor area (15,000 square feet) are allowed, but shopping centers are prohibited.



EXISTING COMPREHENSIVE PLAN LAND USE
THE DALLES, OREGON

FIGURE **4-2**



LEGEND

- IAMP Operation/Access Study Area
- Land Use Study Area
- The Dalles Town Boundary
- Tax Lots
- The Dalles UGB
- Lakes and Rivers
- Railroads
- Right of Way (ROW)
- General Commercial (CG)
- Commercial/Light Industrial (CLI)
- Recreational Commercial (CR)
- Industrial (I)
- Mobile Home Residential (RMH)
- Large-Scale Agriculture (LSA)

0 650 1,300 2,600 Feet

EXISTING ZONING CLASSIFICATIONS
THE DALLES, OREGON

FIGURE **4-3**

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The 67-acre property in the southeast quadrant of the interchange is zoned Commercial/Light Industrial (CLI) and is the subject of an Intergovernmental Agreement (IGA) between the property owner (WM3, Inc.), the City of The Dalles, and ODOT. Uses allowed in the zone that can be considered "light industrial" include: engineering; research and development; manufacturing; and, warehousing. Retail uses, including shopping centers and grocery stores, are also allowed. As in the Industrial zone, there is a minimum lot size required for development in the CLI zone (10,000 square feet), but no maximum limits on size, lot coverage, or lot width or depth. Building heights are also limited to 55 feet in the CLI zone.

Currently, land to the northwest of the interchange is largely outside of the city's existing UGB. The Wasco County LUDO governs land outside the city's UGB. County zoned land within the Land Use Study Area is A-1 (160), which corresponds to Exclusive Farm Use (EFU) zoning with a 160-acre minimum. The county portion of the IAMP study area, which is part of the Columbia River Gorge National Scenic Area (CRGNSA), and outside of the Urban Area, is also designated as General Management Area (GMA). Applicable provisions of the CRGNSA Management Plan are described in Technical Memorandum #2 in the Technical Appendix.

Permitted uses in the A-1 zone are limited to agricultural uses and structures for agricultural use. Transportation improvements, consistent with state law, are also permitted, as are schools, places of worship, and mineral and geothermal operations. Parks and community centers are allowed conditionally.

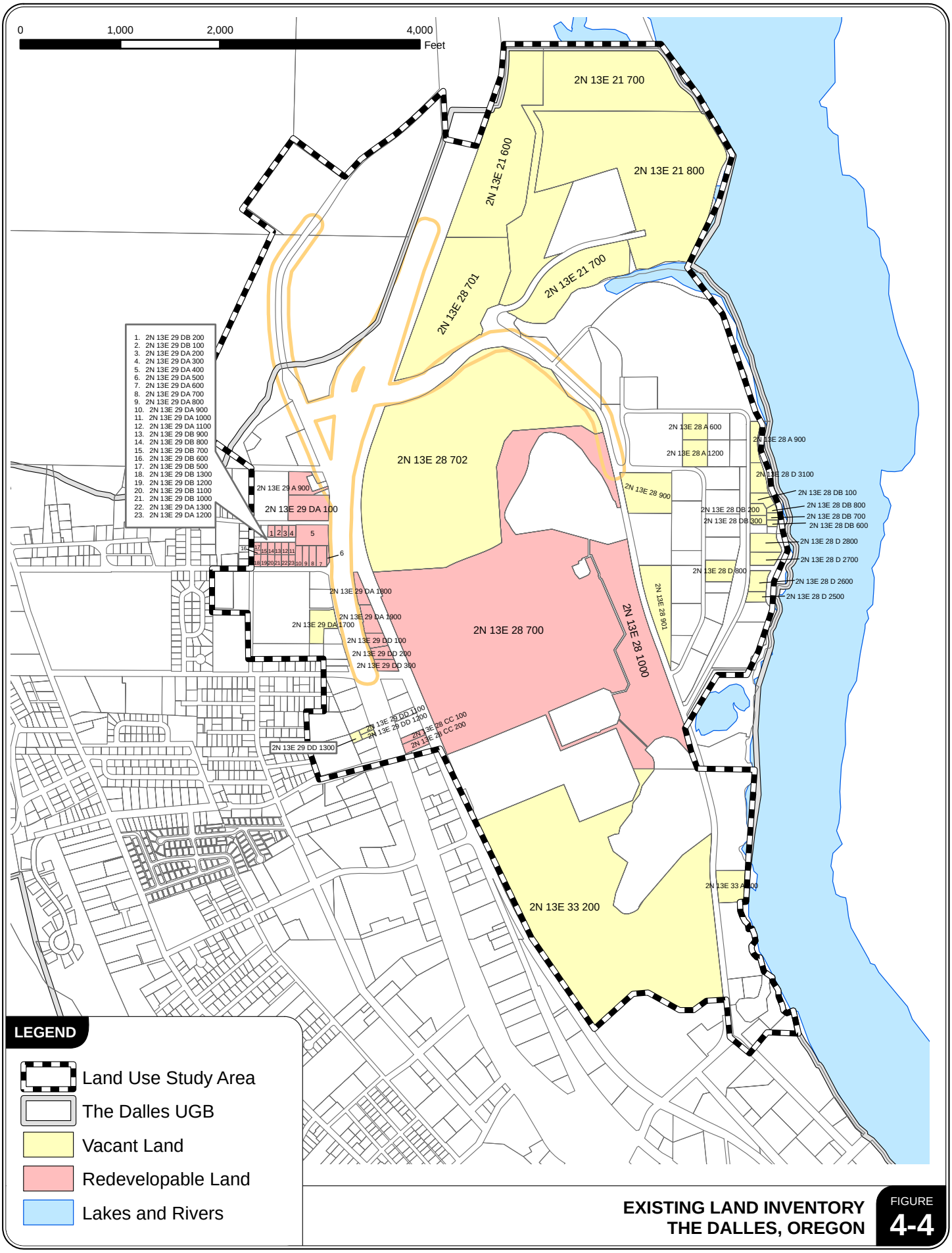
LAND USE INVENTORY

Existing land uses in the Land Use Study Area are largely consistent with the uses allowed by the underlying zoning. There are 200 acres in the Port Industrial Area, some in private ownership. The largest property owner is the Port of The Dalles, with multiple businesses leasing land, including Munsen Paving, a large rock crushing and aggregate company.

Another large land-holder is Northwest Aluminum Company, which currently owns an approximately 100-acre site that is being prepared for redevelopment. During its operation, Northwest Aluminum Specialties, a secondary aluminum casting operation, had 100 employees and was located to the south of the WM3, Inc. site.

An inventory of land within the IAMP Land Use Study Area was prepared based on GIS data and site observations. Figure 4-4 illustrates the identified vacant and re-developable lands. Re-developable land includes parcels that can be expected to be cleared and redeveloped without requiring deconstruction of valuable infrastructure. Vacant lands include parcels that have no buildings, which allows for the potential for new developments to be constructed. All other land is expected to continue to be used by existing tenants, or tenants with similar trip generation potential, through the 20-year study period. These classifications were used for analysis only and do not replace LUDO definitions of development, redevelopment, or improvements requiring development review.

Table 4-1 provides supporting information for each vacant and re-developable parcel. The tax lot identification for each parcel is labeled on the map for reference.



EXISTING LAND INVENTORY
THE DALLES, OREGON

FIGURE **4-4**

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TABLE 4-1 EXISTING LAND INVENTORY

Tax Lot	Acres	Zoning	Existing Development	Owner
2N 13E 28 CC 100	0.3	CLI	Various	LEE ERNEST W & MARY L
2N 13E 28 CC 200	0.6	CLI	Various	LEE ERNEST W & MARY L
2N 13E 29 DA 1800	0.6	CLI	Various	VELADOR AMADO & CHARLOTTE
2N 13E 29 DA 1900	1.0	CLI	Various	KOOPS DUANE C & JEAN M
2N 13E 29 DD 100	0.6	CLI	Various	STEELE CLARA S ET AL
2N 13E 29 DD 200	0.6	CLI	SPEE DEE HAULERS INC	SPEE DEE HAULERS INC
2N 13E 29 DD 300	0.5	CLI	SPEE DEE HAULERS INC	SPEE DEE HAULERS INC
2N 13E 28 700	94.3	I	NORTHWEST ALUMINUM CO	NORTHWEST ALUMINUM CO
2N 13E 28 1000	18.7	I	NORTHWEST ALUMINUM CO	NORTHWEST ALUMINUM CO
2N 13E 28 900	4.4	I	Vacant	CHENOWITH CREEK DEVELOPERS LLC
2N 13E 28 901	4.3	I	Vacant	NORTHWEST ALUMINUM CO
2N 13E 28 DB 600	0.2	CR	Vacant	RIVERFRONT ASSETS LLC
2N 13E 28 DB 300	0.3	CR	Vacant	RIVERFRONT ASSETS LLC
2N 13E 28 DB 700	0.2	CR	Vacant	RIVERFRONT ASSETS LLC
2N 13E 29 DA 1500	0.8	CG	Vacant	HOME DEPOT USA INC
2N 13E 29 DA 1501	1.0	CG	Vacant	MAGID ROBERT N
2N 13E 29 DA 1700	1.6	CG	Vacant	METRO INVESTMENTS LLC
2N 13E 29 DD 1100	0.2	CG	Vacant	DEAN SANDY ET AL
2N 13E 29 DD 1200	0.2	CG	Vacant	DEAN SANDY ET AL
2N 13E 29 DD 1300	0.2	CG	Vacant	DEAN SANDY ET AL
2N 13E 28 701	20.5	I	Vacant	NORTHWEST ALUMINUM CO
2N 13E 33 200	76.9	I	Vacant	NORTHWEST ALUMINUM CO
2N 13E 28 702	67.2	CLI	Vacant	WM3 INC
2N 13E 21 700	40.9	I	Vacant	PORT OF THE DALLES
2N 13E 21 800	42.5	I	Vacant	PORT OF THE DALLES
2N 13E 33 A 100	7.6	I	Vacant	FORT DALLES RIVERFRONT PROP LLC
2N 13E 21 600	22.2	I	Vacant	NORTHWEST ALUMINUM CO
2N 13E 28 A 600	1.5	I	Vacant	PORT OF THE DALLES
2N 13E 28 A 900	0.8	I	Vacant	PORT OF THE DALLES
2N 13E 28 A 1200	1.6	I	Vacant	PORT OF THE DALLES
2N 13E 28 D 3100	1.1	CR	Vacant	PORT OF THE DALLES
2N 13E 28 D 3000	1.2	CR	Vacant	PORT OF THE DALLES
2N 13E 28 D 2800	1.3	CR	Vacant	PORT OF THE DALLES
2N 13E 28 D 2700	0.9	CR	Vacant	PORT OF THE DALLES
2N 13E 28 D 2600	0.7	CR	Vacant	PORT OF THE DALLES
2N 13E 28 D 2500	0.9	CR	Vacant	PORT OF THE DALLES
2N 13E 28 D 800	1.4	I	Vacant	PORT OF THE DALLES

CR=Recreational Commercial, CLI=Commercial/Light Industrial, I=Industrial, CG=General Commercial

EXISTING TRANSPORTATION INVENTORY

The second major component of the I-84 Chenoweth IAMP existing conditions evaluation process is the transportation system. The existing transportation inventory provides a detailed description of all transportation facilities and travel modes within the study area. In addition, the inventory identifies the current operational, traffic control, and geometric characteristics of roadways and other transportation facilities, a safety analysis, access inventory, and identifies existing deficiencies.

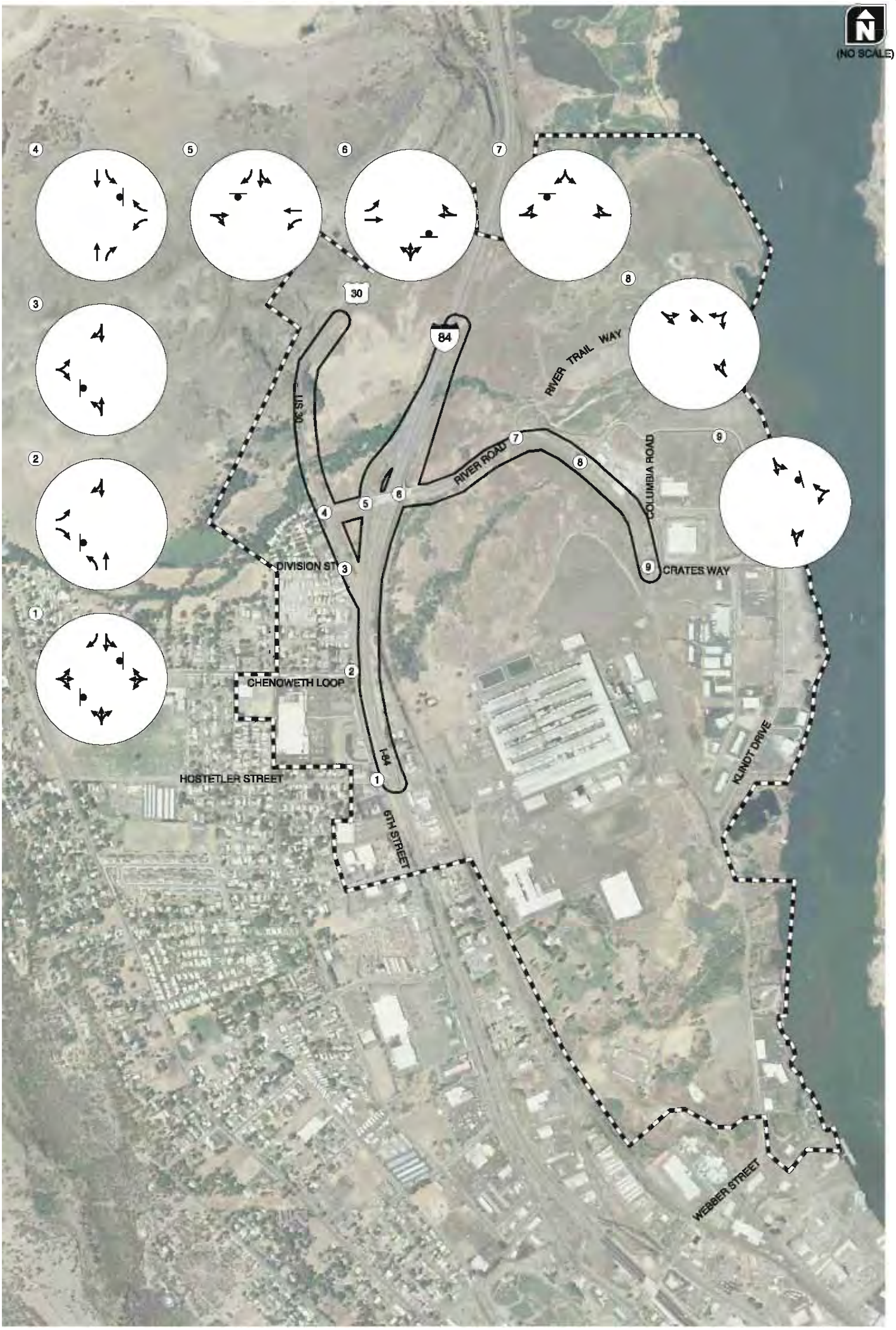
ROADWAY FACILITIES

The roadways within the study area include state, county, and city facilities. A description of each of the roadway facilities is summarized in Table 4-2. Figure 4-5 illustrates the existing lane configurations and traffic control devices at the respective study intersections.

TABLE 4-2 EXISTING TRANSPORTATION FACILITIES AND ROADWAY DESIGNATIONS

Roadway	Existing Roadway Ownership/ Functional Classification	Cross-section	Surface Type	Posted Speed (mph)	Side-walks?	Bicycle Lanes?	On-Street Parking?
I-84	ODOT/ Interstate Highway	4-lane	Paved	65	No	No[1]	No
West 6th Street	[2]City/ Arterial	2-lane	Paved	40	Partial	South of River Rd.	No
River Road	Wasco County/ Collector	2-lane	Paved	40	No	Yes	No
Hostetler Street	Wasco County/ Collector[3]	2-lane	Paved	30	Partial	West of West 6th Street	Yes
Chenoweth Loop	Wasco County/ Collector	2-lane	Paved	25	Partial	Yes	Yes
Division Street	Public Access/ Local	2-lane	Paved	25	No	No	Yes
River Trail Way	Wasco County/ Local	2-lane	Paved	Not Posted	No	No	No
Columbia Road	Local[3]	2-lane	Paved	20	Partial	No	No
Crates Way	Local[3]	2-lane	Paved	20	Partial	No	No

[1] It is illegal to operate a bicycle or other non-motorized vehicle on an interstate.
[2] 6th Street is an ODOT facility North of Division Street and is classified as a district highway and Oregon Scenic Byway
[3] Not documented in the City of The Dalles TSP; currently functioning as local streets.



LEGEND

- STOP SIGN
- TRAFFIC SIGNAL

EXISTING LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
THE DALLES, OREGON

FIGURE 4-5

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Interstate-84

I-84, a four-lane interstate highway that runs roughly north-south through The Dalles,, is the main east-west travel route within the State of Oregon providing connections between Portland, Oregon and Boise, Idaho. I-84 is part of the National Highway System and is designated in the 1999 Oregon Highway Plan (Reference 1) as an Interstate Highway, Freight Route, and Truck Route. The pavement conditions on Interstate-84 were observed to be in good condition in the vicinity of the I-84/Chenowith Interchange at the time of the study.

Interstate-84 Ramps

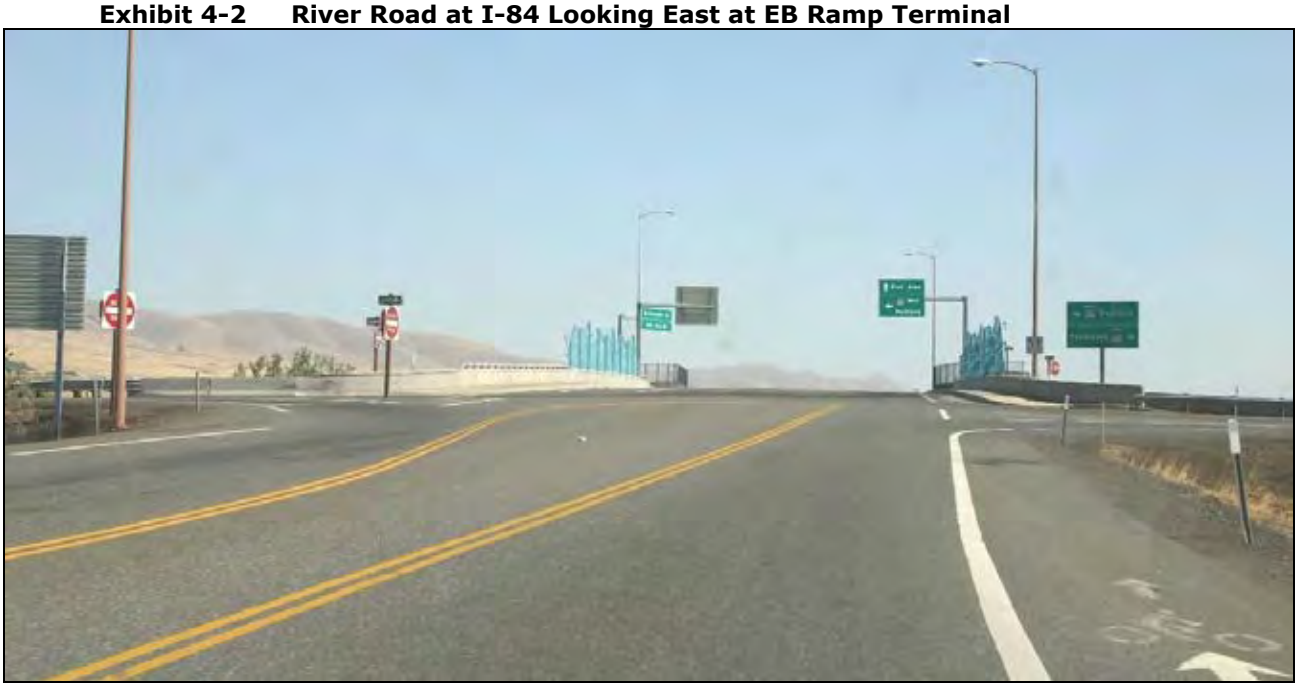
The interstate ramps are single-lane, paved connections between the right lane of travel on I-84 and River Road. The eastbound ramp provides approximately 900 feet for deceleration and queue storage from the ramp gore to the ramp terminal intersection. Right-turn storage is provided for approximately eight passenger cars on the eastbound I-84 off-ramp at the intersection with River Road. The Westbound ramp approach to the intersection with River Road provides approximately 800 feet for deceleration and queue storage from the ramp gore to the ramp terminal. The approach is flared to provide right-turn storage for approximately one passenger car. Due to the need to elevate River Road over I-84 and the parallel railroad tracks, the overpass has a grade that slopes down to the west from the high point located just east of the westbound ramp terminal as shown in Exhibit 4-1.

Exhibit 4-1 I-84 Chenoweth Interchange from North looking South at WB On-Ramp

Because the westbound ramp terminal is located at approximately the high point of the interchange, the eastbound ramp terminal is located at a lower elevation. Consequently, sight

distance from the eastbound off-ramp terminal is limited due to vertical curve when looking towards the east, as shown in Exhibit 4-2.

Exhibit 4-2 River Road at I-84 Looking East at EB Ramp Terminal



Although no crashes were reported at the ramp terminal intersection over a three-year period from January 1, 2005 to December 31, 2007, the perception by some local residents is that sight distance is inadequate and poses a traffic hazard at this location.

Based on field observations, the available sight distance to the east from the shared left/through lane on the eastbound off-ramp is approximately 275 feet. The design speed of the overpass is 35 miles per hour (mph); however, no speed limit is posted on the overpass. The closest speed limit sign designates a limit of 45 mph on River Road in the westbound direction approximately 1,750 feet east of the westbound ramp terminal intersection. On level grade the required stopping sight distances on 35 and 40 mph roadways is 250 and 305 feet, respectively. Accounting for the existing grade, estimated to be 3% or less, at the ramp terminal, the required stopping sight distances are 257 feet and 315 feet, respectively. Considering that the overpass was designed for and is estimated to provide adequate sight distance at a speed of 35 mph on the overpass, it is suggested that the actual sight distance be measured in the field and consideration be given to posting a speed limit of 35 mph on the overpass.

West 6th Street (US 30)

Highway 30, designated by the Oregon Highway Plan as a District Highway and an Oregon Scenic Byway, runs parallel to I-84 west of the study area and ends just south of River Road at Division Street. South of Division Street Highway 30 becomes West 6th Street, a city facility, which has a posted speed limit of 40 mph and in general has a two-lane cross-section with bicycle lanes and intermittent sidewalks along the west side. At some intersections there are exclusive left-turn and/or right-turn lanes. West 6th Street connects to I-84 again at the Webber Street interchange

approximately 1.5 miles south of the Chenoweth Interchange at River Road. The Dalles TSP classifies West 6th Street as an arterial.

River Road

River Road is a two-lane collector road that links US 30 and 1st Street. River Road is a Wasco County facility from the Chenoweth Interchange to Bargeway Road at which point it becomes Webber Street, a City of The Dalles facility. River Road has a posted speed of 40 mph and provides a connection between the I-84 Chenoweth and Webber Street Interchanges on the east side of I-84. It is the main access to the Port of The Dalles.

Hostetler Street

Hostetler Street is a Wasco County road running east-west connecting West 10th Street to West 2nd Street. It is the only crossing of I-84 between the Chenoweth and Webber Street Interchanges (this location is an underpass). The main access to the Northwest Aluminum Company industrial property is at the intersection of Hostetler Street and West 2nd Street. Hostetler Street is maintained by Wasco County east of West 6th Street and by the City west of West 6th Street. The county portion is classified as collector and the city portion is a local road. The speed limit is 30 mph near the West 6th Street intersection.

Chenoweth Loop

Chenoweth Loop is a two-lane Wasco County collector road that provides an east-west connection from West 10th Street to West 6th Street. The posted speed limit is 25 mph on Chenoweth Loop.

Division Street

Division Street is an un-striped, two-way local street maintained by the county. It provides access to a residential area west of I-84 and has a posted speed limit is 25 mph.

River Trail Way, Columbia Boulevard, and Crates Way

River Trail Way, Columbia Boulevard, and Crates Way are not classified in the City of The Dalles TSP. All three streets function as local streets providing access to local properties.

PUBLIC TRANSPORTATION FACILITIES

Existing public transportation service in The Dalles is provided by the Transportation Network. The Transportation Network, a member of the Gorge TransLink, provides dial-a-ride service for The Dalles and select portions of Wasco County. Service is provided Monday-Friday from 8:00 a.m. to 5:00 p.m. More information is available on the Gorge TransLink's website at www.gorgetranslink.com.

The Hood River County Transportation District offers public transportation services through Columbia Area Transit (CAT). CAT provides fixed-route service between Hood River, Mosier, and The Dalles on a daily basis and between Portland and The Dalles on a weekly basis. The current schedule provides two transit trips per day between The Dalles, Mosier, and Hood River during the

morning and evening time periods. Stop locations in The Dalles include: Rosauers, Columbia Gorge Community College, and The Transportation Center, located at 201 Federal Street.

Service to Portland is provided on Thursdays only. In The Dalles the pick-up and drop-off location is The Transportation Center. Stops include the CAT office (Hood River), Gateway MAX Station (Portland), Portland Art Museum, Oregon Health Sciences University, and Clackamas Town Center. Up-to-date schedules, stop location descriptions, and more information on transportation services offered by The Hood River County Transportation District is provided on their website at http://community.gorge.net/hrctd.

PEDESTRIAN AND BICYCLE FACILITIES

Pedestrian facilities throughout the study area include sidewalks on the west side of West 6th Street and on other local and collector facilities as outlined in Table 4-2. The existing segments of sidewalk form an incomplete system that does not provide consistent pedestrian connections. Pedestrian volumes were observed to be minimal.

Designated bicycle lanes provide connections between the Port of The Dalles and other properties located on the east side of I-84 and residential and commercial developments along West 6th Street west of I-84. Hostetler Road and Chenoweth Loop provide partial bicycle facilities west of West 6th Street. Low levels of bicycle activity were observed within the study area.

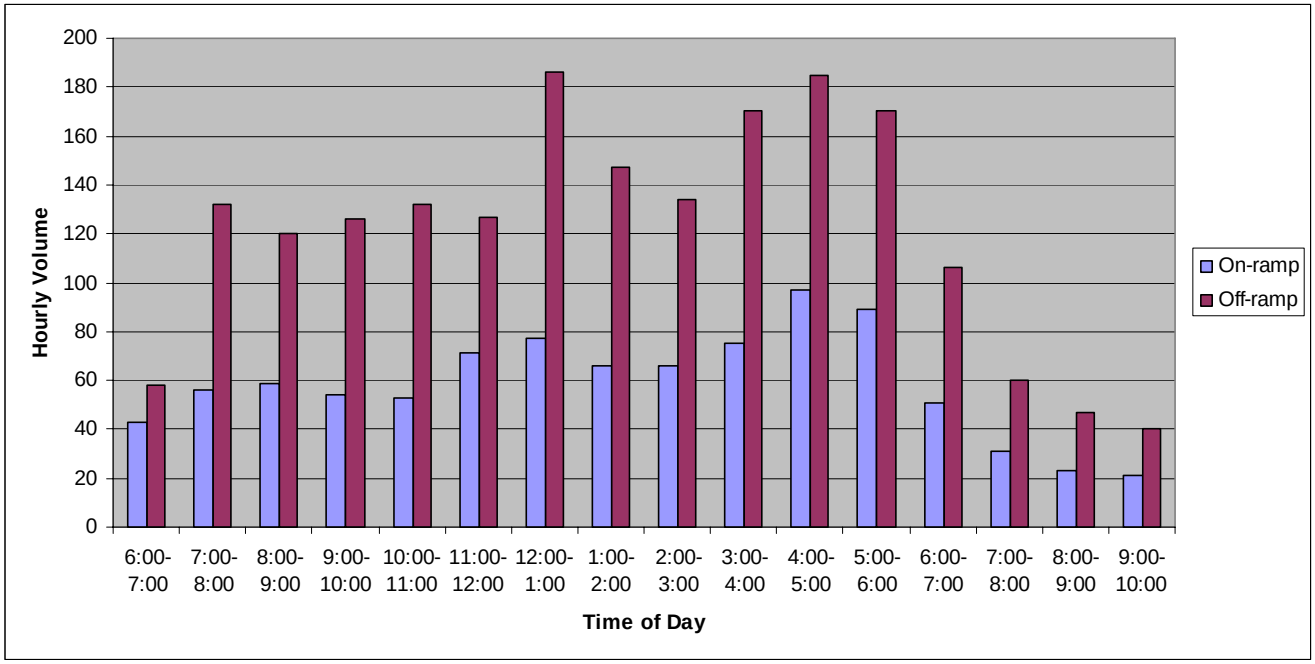
EXISTING TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

Manual intersection turning movement counts were obtained from ODOT at each of the study intersections to assess the operational performance and characteristics within the study area. These counts were conducted on mid-week days in July 2008. These traffic volume counts were supplemented with data from the July 2007 traffic counts collected for the WM3 Traffic Impact Analysis completed by DKS Associates. A description of the analysis conducted with this data is summarized in the following sections.

Peak Hour Intersection Volumes

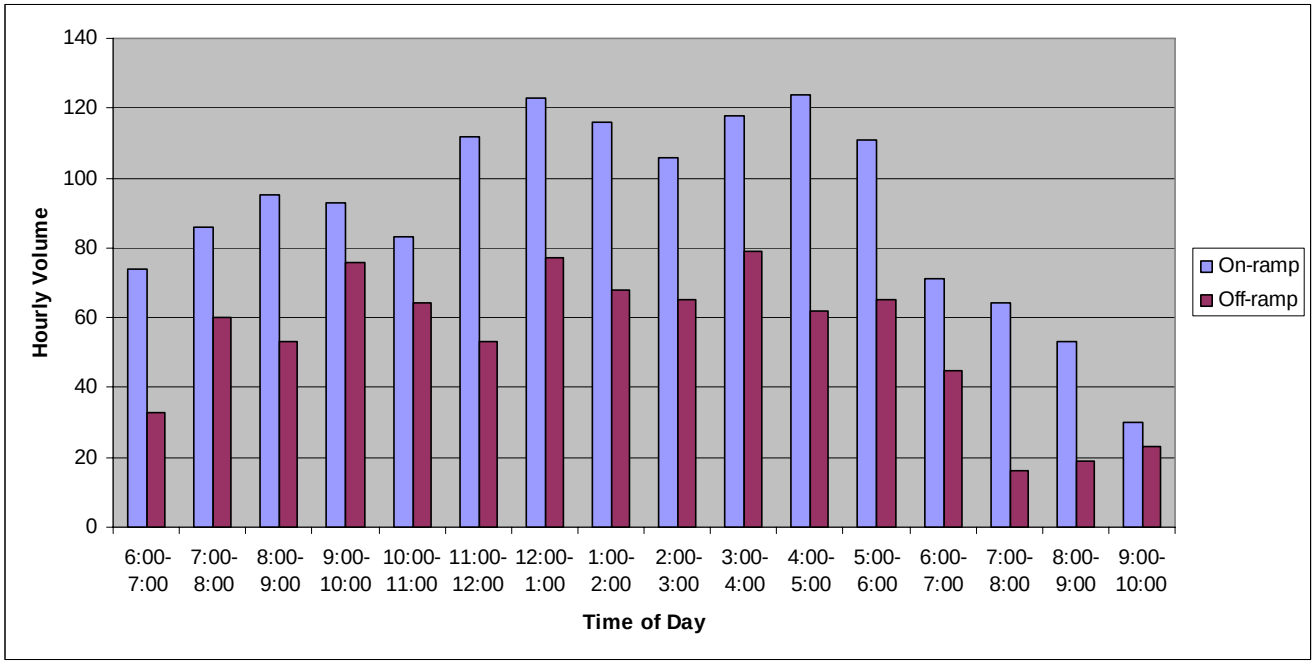
Turning movement counts at each intersection were recorded from 6:00 a.m. to 10:00 p.m. Because of the close proximity of the intersections, a system-wide peak hour was identified based on the volumes at all study intersections. The weekday p.m. peak hour in the study area was found to occur between 4:45–5:45 p.m. Exhibit 4-3 through Exhibit 4-5 illustrate the daily volume peaking characteristics of the I-84 ramp and through traffic. Exhibit 4-6 illustrates the daily volume peaking characteristics of River Road east of US 30.

Exhibit 4-3 Daily Traffic Volume Profile for I-84 Eastbound Ramps at Chenoweth



Note: On-ramp volumes collected in August 2008, Off-ramp Volumes collected in April 2008.

Exhibit 4-4 Daily Traffic Volume Profile for I-84 WB Ramps at Chenoweth



Note: On-ramp volumes collected in August 2008, Off-ramp Volumes collected in April 2008.

Exhibit 4-5 Daily Traffic Volume Profile for I-84 (bi-directional) at Chenoweth

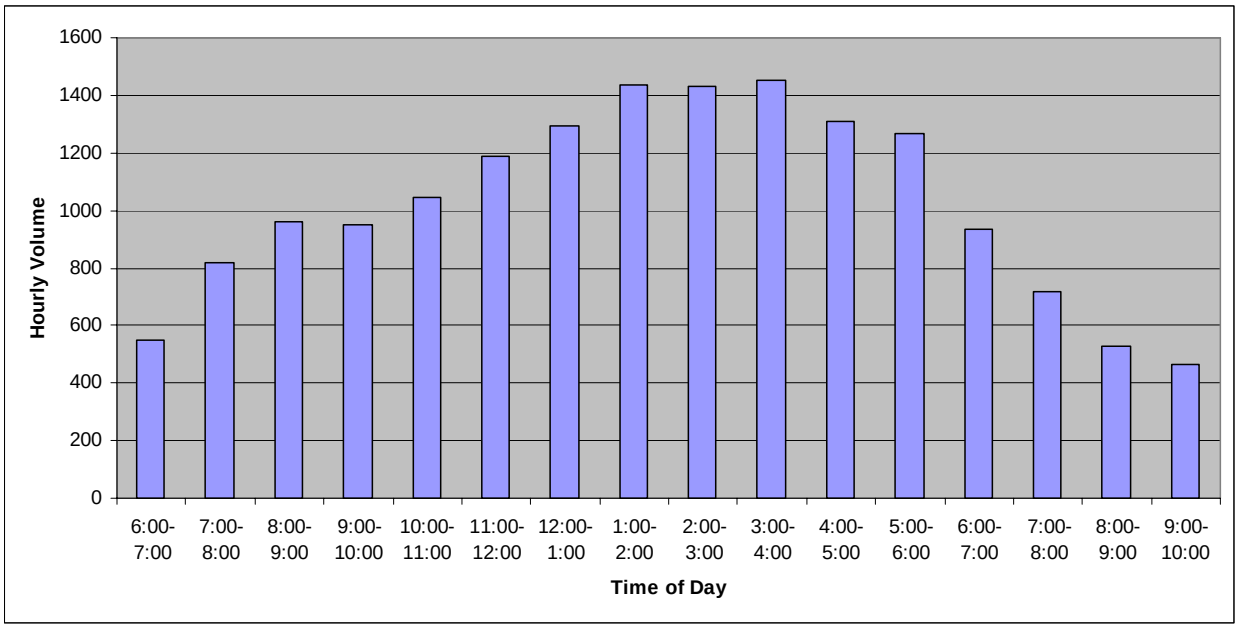
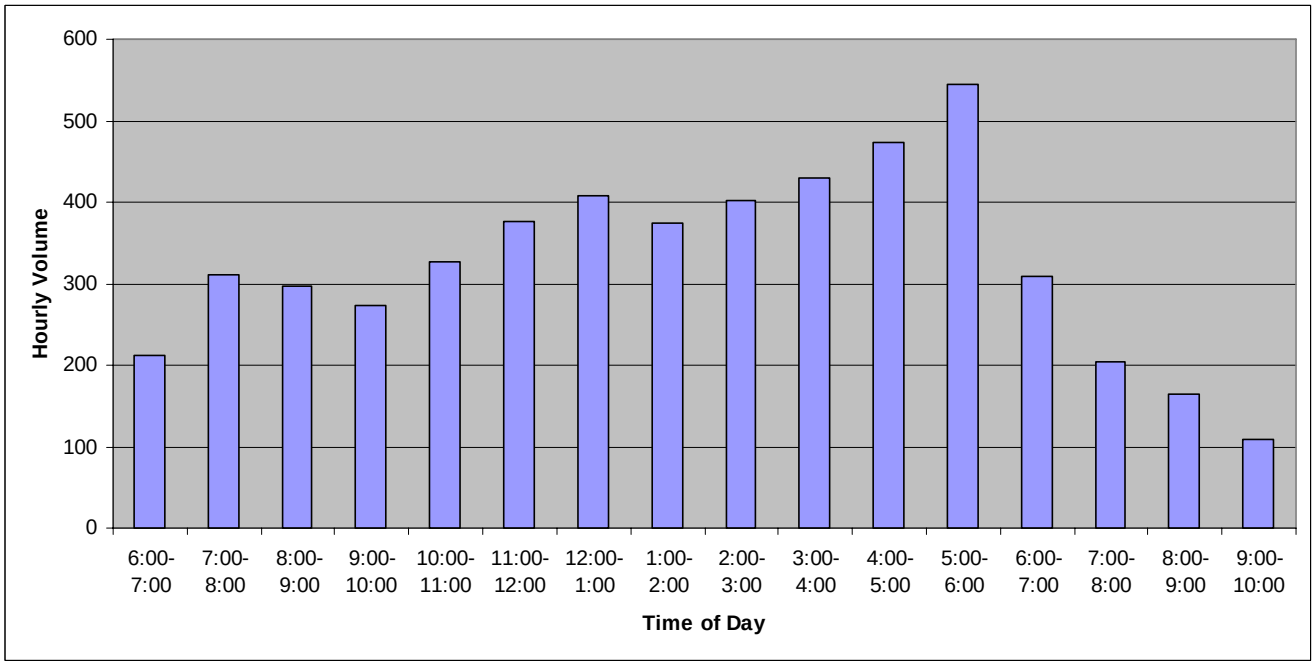


Exhibit 4-6 Daily Traffic Volume Profile on River Road (East of US 30)



As shown in Exhibit 4-6, the weekday a.m. peak hour traffic volumes on River Road are less than half of the weekday p.m. peak hour traffic volumes. Therefore, the existing and future traffic operations analysis was conducted during the weekday p.m. peak hour only.

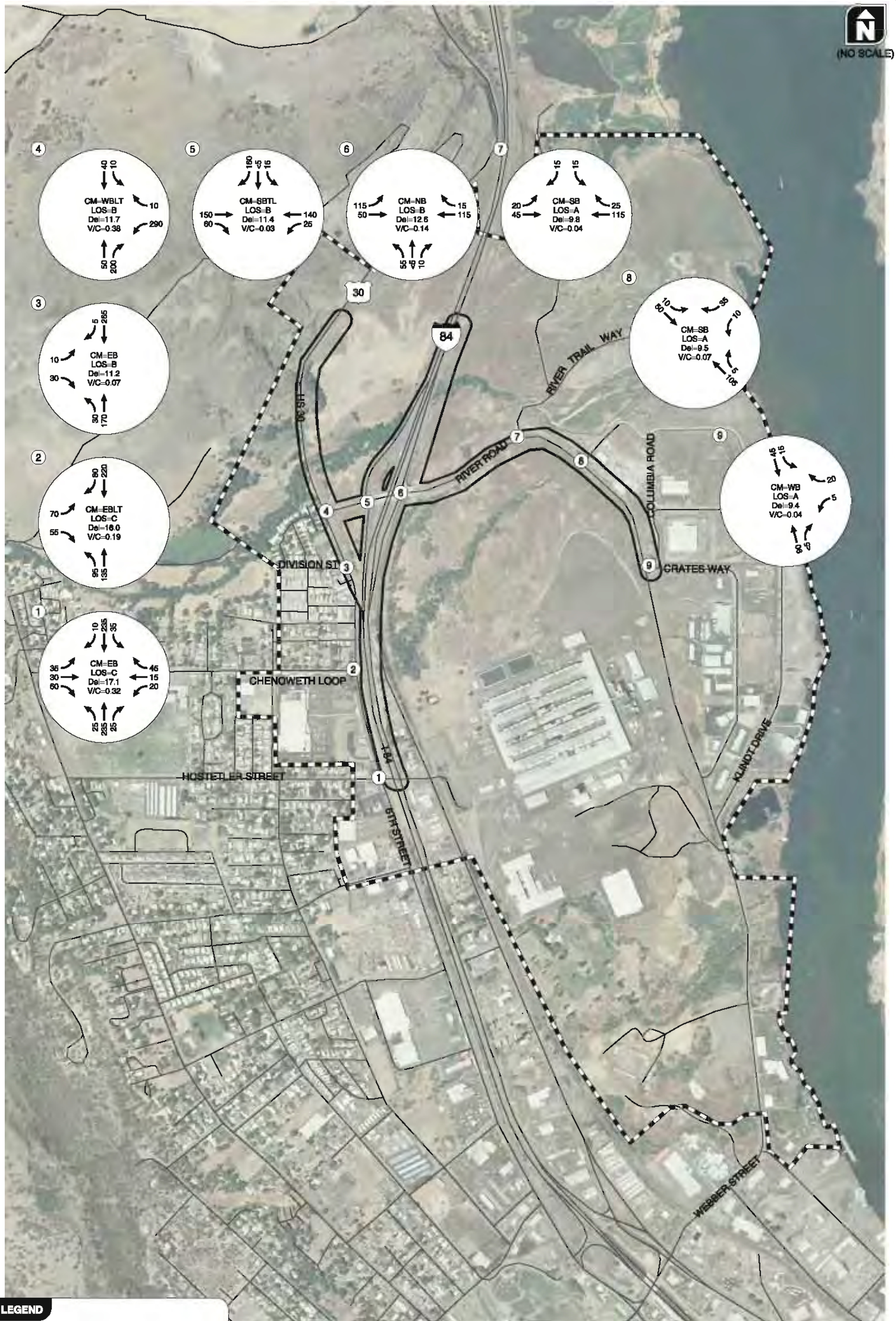
Seasonal Adjustments

Following the methodology outlined by ODOT's Analysis Procedures Manual (Reference 2), a seasonal adjustment factor was not applied to the traffic counts collected for the existing conditions

analysis. The counts were collected in late July, which was found to be the peak traffic volume time period of the year during four of the last five years at ODOT Automatic Traffic Recorder location 03-001, approximately 6 miles west of the Chenoweth Interchange on I-84. The weekday p.m. peak hour intersection turning movement counts used for the existing conditions analysis are shown in Figure 4-6.

Existing Intersection Operations

All level of service analyses described in this analysis was performed in accordance with the procedures stated in the 2000 Highway Capacity Manual (Reference 3). The operational standard for the ramp terminals is a volume-to-capacity ratio of 0.75. The operational standard for all other study intersections is a LOS D. As shown in Figure 4-6, all study intersections currently operate acceptably. The existing conditions operations worksheets are provided in the *Appendix "C" of the Technical Appendix.*



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

EXISTING TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
THE DALLES, OREGON

FIGURE **4-6**

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TRAFFIC SAFETY

The crash histories at the respective study intersections and three study roadway sections were reviewed in an effort to identify potential existing intersection safety issues. The three study roadway sections include: I-84 one mile in each direction of the Chenoweth Interchange, River Road from West 6th Street (US 30) to Klindt Drive, and West 6th Street (US 30) from Discovery Drive to Hostetler Street. Crash records were obtained from ODOT for the three-year period from January 1, 2005 through December 31, 2007.

No crashes were reported for the following intersections and roadway sections:

- Intersections
    - River Road/I-84 eastbound and westbound ramp terminals,
    - West 6th Street (US 30) /River Road,
    - River Road/Columbia Road,
    - River Road/Crates Way, and
    - River Road/River Trail Way.
- Segments
    - River Road from West 6th Street (US 30) to Klindt Drive.

Reported crashes on I-84 and West 6th Street are summarized in Table 4-3. There was one fatal crash involving a collision with a deer on West 6th Street (US 30) between Discovery Drive and Hostetler Street. The crash rates calculated along these segments were compared to statewide averages for similar facilities. As shown in Table 4-3 the crash rates for similar facilities in Oregon are greater than or equal to the crash rates for the study roadways. Further review of the crash patterns on I-84 shows that 67 percent of crashes were fixed object crashes. This proportion of fixed-object crashes is comparable to other single-vehicle crashes in Wasco County and on Oregon State Highways.

Table 4-4 summarizes the reported crashes at the study intersections where crashes occurred. No observable crash patterns have been identified within the study area; therefore, no traffic safety mitigation has been proposed. No crash rates are available at a statewide level for comparison with the calculated rates shown here. Generally a crash rate of 1.0 or greater indicates the need for further investigation. Given the relatively low entering volume and number of crashes, no patterns could be identified.

TABLE 4-3 ROADWAY SECTION CRASH HISTORIES (JANUARY 1, 2005 THROUGH DECEMBER 31, 2007)

Roadway Section	Segment Length (Miles)	Number of Crashes	Crash Type					Severity			Crashes/ MVM	Statewide Comparison	
			Fixed Object	Rear -End	Overturn	Turning	Other	PDO	Injury	Fatality			
I-84: 1 Mile Each Direction from Chenoweth Interchange	2.0	15	10	2	2	0	1	8	7	0	0.38	Interstate Freeway	0.38
West 6th Street (US 30) from Discovery Drive to Hostetler Street	1.9	5	1	1	1	1	1	2	2	1	0.51	Rural Cities, Minor Arterials	1.71

MVM = Million Vehicle Miles

TABLE 4-4 INTERSECTION CRASH HISTORIES (JANUARY 1, 2005 THROUGH DECEMBER 31, 2007)

Intersection	Number of Crashes	Crashes/MEV	Crash Type				Severity		
			Angle	Rear-End	Turning	Other	PDO	Injury	Fatality
West 6th Street/ Hostetler Street	3	1.1	1	1	1	0	3	0	0
West 6th Street/ Chenoweth Loop	1	0.4	0	0	1	0	0	1	0
West 6th Street/ Division Street	1	0.5	0	0	1	0	0	1	0

MEV = Million Entering Vehicles

EXISTING ROADWAY ACCESS CONDITIONS

There are currently ten private access points located within the Operations and Access Study Area, all of which are located on West 6th Street. There are an additional eight public road access points in the Operations and Access Study Area. Figure 4-7 shows the location and type (public or private) of each of the access locations within the access study area. Table 4-5 identifies the tax lots and existing businesses served by each of the access points.

Oregon Administrative Rule 734, Division 51 and the Oregon Highway Plan (OHP) identify ODOT's access management standards within the vicinity of interchanges. Within 1,320 feet from the ramp terminals no partial or full access is allowed according to the OHP. Figure 4-7 shows the 1,320 foot access control area as measured from the I-84 ramp terminal intersections. As shown, four private and three public accesses are located within the 1,320-foot control area west of the interchange. The three public accesses include the River Road/River Trail Way, River Road/West 6th Street/US 30 and West 6th Street/Division Street intersections. It should be noted that access to the recently approved WM3 commercial development comes via the River Road/River Trail Way intersection which is within the 1,320-foot access control area.

Access spacing standards are 500 feet for US 30, a District Highway, based on the spacing requirements stipulated in the OHP. South of Division Street, West 6th Street is designated as a City Arterial and minimum spacing standards are 300-400 feet between driveways and/or streets. Accesses #2 through #13 are in conflict with one or more access points, which will require access consolidation or modifications, particularly in the mid- or long-term when traffic volumes increase on West 6th Street. Minimum spacing standards for River Road, a major collector, are 150-300 feet between driveways and/or streets according to the City of The Dalles TSP. The public and private accesses on River Road within the Operations and Access Study Area meet these spacing standards.

TABLE 4-5 EXISTING PUBLIC/PRIVATE ACCESS APPROACH INVENTORY

Access Number	Approach Type (Jurisdiction)	Roadway	Side	Serves Tax Lot Number	Property Owner/ Business Name	Zoning	Acreage
1	Public (City)	West 6th Street	West	Hostetler Street	Wasco County	NA	NA
2	Private (City)	West 6th Street	West	2N 13E 29 DD 1900	Columbia Star LLC/ Adult Shop	CG	0.8
33	Private (City)	West 6th Street	West	2N 13E 29 DA 1600		CG	0.6
4	Private (City)	West 6th Street	West	2N 13E 29 DA 1700	MetroMetro Investments LLC/Vacant	CG	1.6
				2N 13E 29 DA 1501, 1400, and 1500	Home Depot USA Inc.	CG	11.2
5	Public (City)	West 6th Street	West	Chenoweth Loop Rd	Wasco County	NA	NA
6	Private (City)	West 6th Street	West	2N 13E 29 DA 600	Donnell Martin & Carlee	CG	0.5
7	Private (City)	West 6th Street	West	Lee Street	Private	NA	NA
8	Public (City)	West 6th Street	West	Irvine Street	City of The Dalles	NA	NA
	Private (City)			2N 13E 29 DA 400	Robinson Family/ Ideal Homes	CG	1.6
				2N 13E 29 DA 100	Robinson Family/ Marlett Homes	CG	2.4
9	Private (City)	West 6th Street	West	2N 13E 29 A 900	Robinson Family	CG	1.3
10	Private (City)	West 6th Street	West	2N 13E 29 A 1100	Long Stephen Marco	CG	0.4
11	Private (City)	West 6th Street	West	2N 13E 29 A 1000	Lindley Marion D/ Doug's Affordable Muffler	CG	0.3
12	Public (ODOT)	West 6th Street	West	Division Street	Wasco County	NA	NA
13	Private (ODOT)	West 6th Street	West	2N 13E 29 A 200	Hattenhauer John	CG	1.6
14	Public (ODOT)	River Road	West	West 6th Street	City of The Dalles	NA	NA
15	Private (ODOT)	US 30	West	2N 13E 29 100	Spee Dee Haulers	LSA (County)	155.0
16	Public (County)	River Road	North	River Trail Way	City of The Dalles	NA	NA
17	Public (County)	River Road	East	Columbia Road	City of The Dalles	NA	NA
18	Public (County)	River Road	East	Crates Way	City of The Dalles	NA	NA

LEGEND

- Minimum 1,320-foot IAMP Limits
- IAMP Operation/Access Study Area
- Land Use Study Area
- Tax Lots

Type of Access

- (#) Public Approach
- [#] Private Approach

0 650 1,300 2,600 Feet

EXISTING ROADWAY ACCESS LOCATIONS
THE DALLES, OREGON

FIGURE **4-7**

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EXISTING ROADWAY DEFICIENCIES

No significant existing roadway deficiencies were identified within the study area along the paved sections of roadway, with the exception of sight-distance limitations at the east-bound off-ramp terminal at the I-84 Chenoweth Interchange. As summarized previously in the existing facilities inventory subsection, although no crashes were reported at the ramp terminal intersection from January 1, 2005 to December 31, 2007, the perception by some local residents is that sight distance is inadequate and poses a traffic hazard at this location.

The length and grade of the I-84 ramps are not consistent with current ODOT design standards based on the speed of vehicles entering and exiting I-84.

Traffic operations at each of the study intersections are currently acceptable during the critical weekday p.m. peak hour and there are no identified safety issues based on the crash history.

NATURAL AND CULTURAL RESOURCES

Land in the I-84/Chenoweth IAMP study area includes two Columbia River Gorge National Scenic Area (CRGNSA) designations: Urban Area and General Management Area (GMA) A-1 (160). These designations are intended to preserve natural resources within the CRGNSA; however, the land within the UGB is "urban exempt" and not subject to the CRGNSA.

Based on a regulatory review of state and local government publications (see Technical Memorandum #2) there are currently no known fish or wildlife habitat, flood plains, historic properties, or archeological resources, hazardous materials, or major utilities identified within the IAMP study area boundary. Due to the historic presence of indigenous peoples in the area, it is possible that unknown archeological resources related to the Confederated Tribes of Warm Springs are in existence in the area.

Two significant natural resources in or adjacent to the study area include Chenoweth Creek and the Columbia River. Development in areas identified as natural drainageways, or within the FEMA 100-year flood boundary are subject to provisions in Chapter 8 (Physical and Environmental Constraints) of the City's Development Code.

Existing wetland boundaries are currently unknown; a survey to be completed by the Department of State Lands in late 2009 is planned for the portion of the IMSA that is owned by WM3, Inc.

The study area also includes a portion of the Columbia River Gorge Historic Highway, which is popular with recreational drivers and cyclists. Also referred to as the Mosier-The Dalles Highway or US 30, the highway is classified in the Oregon Highway Plan as a District Highway and a Scenic Byway. The highway is also subject to the design standards in the Historic Columbia River Highway Master Plan. The 2006 Master Plan addresses history, highway section recommendations, management activities, restoration progress, and funding plans. The chapter on management activities describes general cultural resource management for the roadway, bridges, viaducts, tunnels, retaining walls, parapets, footbridges, picnic areas and campgrounds. The same chapter also describes scenic resource management and resource management measures such as access control, speed zones, shuttle buses, and signage.

SUMMARY

- The primary roadways within the study area include Interstate-84, West 6th Street, US 30, and River Road.
- All of the study roadways have a two-lane cross-section with the exception of Interstate-84 which is a four-lane facility.
- All of the study intersections operate at a volume-to-capacity ratio of 0.38 or less and a Level-of-Service "C" or better during the weekday p.m. peak hour which satisfies the ODOT volume-to-capacity thresholds and local mobility standards, respectively.
- Based on a review of the most recent five years of available crash data, there are no identified safety issues within the study area.
- Sight distance at the I-84 eastbound off-ramp is limited by the vertical curve of the bridge over I-84 and the UPRR. Given the distance (over 1500 feet) between the interchange and the nearest speed limit sign, a speed limit sign posted at 35 miles per hour (the design speed of the overpass) may help to reduce potential for crashes due to limited sight distance.
- There are currently 1818 access points (8 public/10 private) located within the Operations and Access Study Area along West 6th Street and River Road. The existing access points are a combination of public and private approaches.
- ODOT's access spacing standard within the vicinity of the interchange is 1,320 feet from the ramp terminals to any type of access (partial or full). Three private access points and two public accesses (River Road/River Trail Way and West 6th Street/Division Street intersections) do not meet ODOT's current access spacing standard. One of the private approaches that does not meet ODOT's standard is north of River Road on Highway 30; the other two private approaches are located on West 6th Street south of River Road.
- Access spacing standards for US 30, a district highway, are based on the spacing requirements stipulated in the OHP of 500 feet.
- Access spacing standards for West 6th Street, a City Arterial south of Division Street, are based on the spacing requirements stipulated in the City of The Dalles TSP of 300-400 feet. The driveways and streets on West 6th Street in the Operations and Access Study Area do not consistently meet these spacing standards.
- There are no consistent pedestrian or bicycle facilities providing connection between properties east and west of I-84.
- Two significant natural resources in or adjacent to the study area include Chenoweth Creek and the Columbia River. Based on a regulatory review of state and local government publications (*see Technical Memorandum #2 in the Volume 2 Technical Appendix*) there are currently no known fish or wildlife habitat, flood plains, historic properties, archeological resources, hazardous materials, or major utilities identified within the IAMP study area boundary. Due to the historic presence of indigenous peoples in the area, it is possible that unknown archeological resources related to the Confederated Tribes of Warm Springs are in existence in the area.

- Department of State Lands is to complete a wetlands study in 2009 identifying wetland impacts in the Chenoweth IAMP area, specifically for the WM3 property. From preliminary reports, it appears these wetlands can be mitigated.

Section 5
2030 Future Conditions

2030 Future Conditions

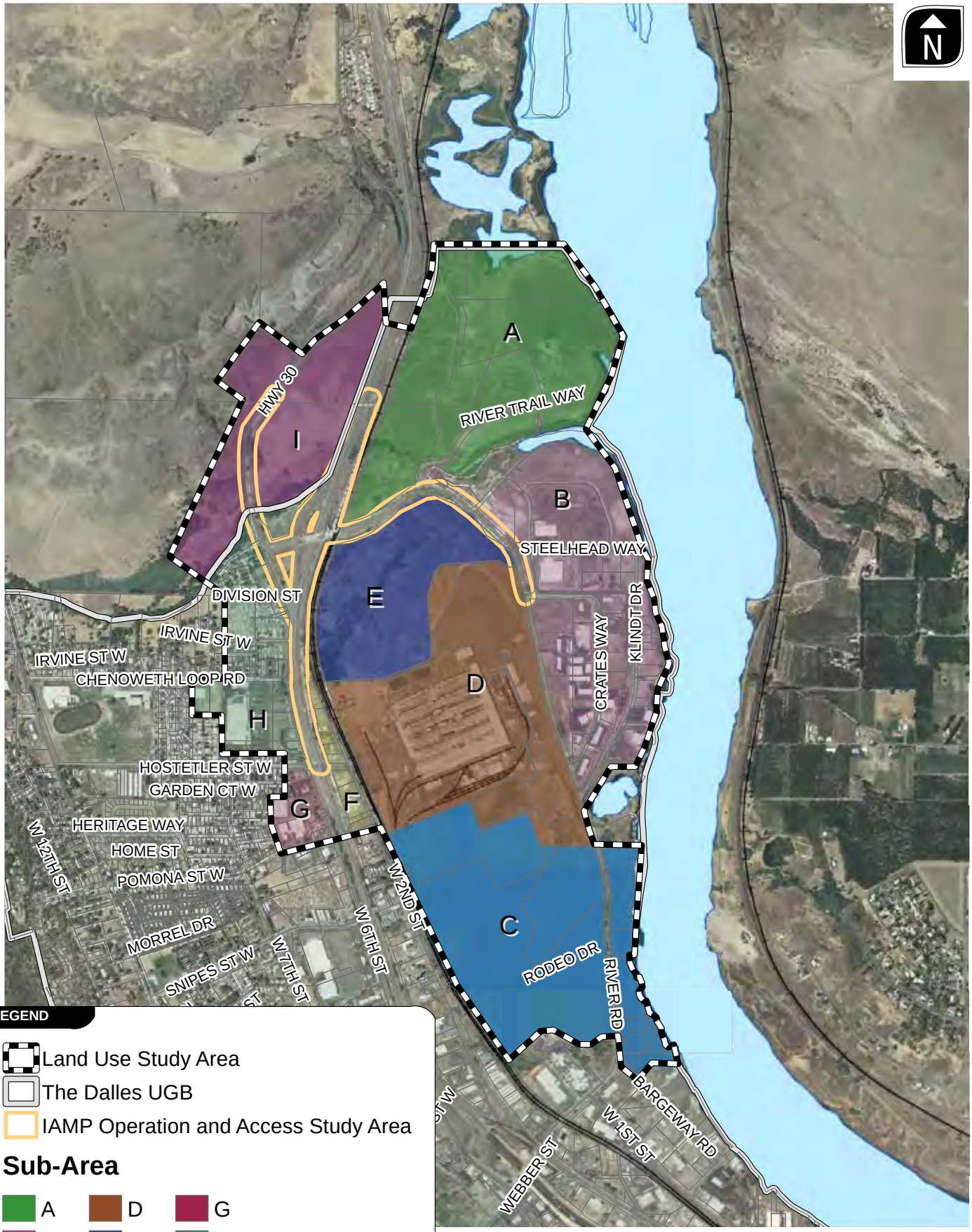
This section documents the future land use as well as the forecast traffic operations in the vicinity of the I-84 Chenoweth Interchange. Two future land use scenarios were developed with guidance from the Technical Advisory Committee (TAC) and Steering Committee (SC). The two Land Use Scenarios were assessed in year 2030 assuming no improvements are made to the system, beyond those already scheduled and funded.

FUTURE LAND USES

The analysis of future land uses within the vicinity of the I-84 Chenoweth Interchange was focused on parcels that are expected to have development or redevelopment potential that would generate traffic at the interchange. The analysis is intended to identify actions that could have a *favorable* effect on the facility, or an *adverse* effect on the facility. Figure 5-1 illustrates the parcels identified for study. The Land Use Study Area includes parcels that cumulatively include approximately 750 acres and incorporate a variety of land uses, including: commercial, industrial, residential, and agricultural. The majority of the land is zoned industrial.

For the purposes of forecasting future development potential and access alternatives, the study area was divided into eight sub-areas, as illustrated in Figure 5-1. The sub-areas were defined based on current zoning, the travel shed served, and point of primary access.

Each sub-area shown in Figure 5-1 is described in Table 5-1.



LEGEND

- Land Use Study Area
- The Dalles UGB
- IAMP Operation and Access Study Area

Sub-Area

A	D	G
B	E	H
C	F	I

SUB-AREA MAP
THE DALLES, OREGON

FIGURE **5-1**

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TABLE 5-1 FUTURE CONDITIONS SUB-AREA ANALYSIS ZONES

Sub-area	Zoning Classifications	Developable or Re-Developable Land (Acres)	Non-Buildable	Developed/ Occupied	Total Acreage	Primary Access
A	I	126.2	0.00	10.3	136.5	River Trail Way at River Road
B	I	14.0	0.00	89.1	109.4	Crates Way at River Road
	CR	6.3				
C	I	79.1	47.6	20.3	147.0	River Road
	CR	0.0				
D	I	113.0	29.2	0.00	142.2	River Road, Hostetler Street
E	CLI	25.0	2.5	0.00	67.2	River Road at River Trail Way
	I	36.4	3.3			
F	CLI	4.3	0.0	3.0	7.3	Hostetler Street
G	CG	0.6	0.0	10.5	11.1	West 6th Street
H	CG	11.6	0.0	34.7	46.3	West 6th Street
I	LSA	0.0	0.0	80.6	80.6	US 30
Total		416.5	82.6	248.5	747.6	

Zoning Classifications: I – Industrial; CR – Recreational Commercial; CLI – Commercial/Light Industrial; CG – General Commercial

As shown in Table 5-1, sub-areas 'A', 'C', 'D', and 'E' have the greatest potential for development and each gain access to the I-84 Chenoweth Interchange via River Road. The following section describes the characteristics of the sub-areas.

Sub-Area "A"

Sub-area "A" is located in the NE corner of the Land Use Study Area. The majority of land within Sub-area "A" is currently vacant, except for a power sub-station located in the center of the Sub-area. All parcels within Sub-area "A" are designated for industrial use and are accessed via River Trail Way, which connects to River Road east of the I-84 Chenoweth Interchange. This plan was developed assuming land within sub-area "A" develops consistent with existing land use designations. Development with more intense uses may have an adverse effect on the I-84 Chenoweth Interchange.

Sub-Area "B"

The land within sub-area "B" is composed of currently developed and vacant parcels zoned for Industrial (I) and Recreational Commercial (CR) use. A total of 20.3 acres in the Sub-area have been estimated to be developable or to have the potential to be redeveloped. Access to the developable or re-developable parcels is primarily served through an unsignalized intersection on River Road at Crates Way (North). The IAMP was developed assuming land within sub-area "B" develops

consistent with existing land use designations. Development with more intense uses may have an adverse effect on the I-84 Chenoweth Interchange.

Sub-Area "C"

Sub-area "C" is composed of multiple properties on the east side of River Road just north of Webber Street and one large parcel west of River Road. The majority of land within Sub-area "C" is currently vacant, with the exception of several smaller developments on the east side of River Road. A total of 47.6 acres within sub-area "C" consists of non-buildable land, which has been designated as a Brownfield area. It is assumed that traffic generated by new development within Sub-area "C" will utilize the Chenoweth and Webber Street interchanges to access I-84. This plan was developed assuming land within sub-area "C" develops consistent with existing land-use designations. Development with more intense uses may have an adverse effect on the I-84 Chenoweth Interchange.

Sub-Area "D"

The largest redevelopment opportunity within the Land Use Study Area is the Northwest Aluminum site which solely comprises Sub-area "D." The sub-area is located southeast of the I-84 Chenoweth Interchange and currently has two accesses to River Road. The current plan for the 100-acre site is to make it shovel ready for future industrial uses. According to Northwest Aluminum's project manager, there have been several inquires and site visits by future industrial users and discussion about how best to utilize the site. One potential plan would include dividing it into smaller parcels for future uses. Future users would likely continue to access River Road. The site is reportedly a fairly clean site, having gone through PCB abatement in the 1990s, and ongoing soil sampling as part of a final work plan that will be submitted to DEQ in early 2009. The site is also anticipated to be certified by the Oregon Economic and Community Development Department as a certified "shovel ready" industrial site. The project manager anticipates that there will be new industrial uses on the site by 2010. This plan was developed assuming land within sub-area "D" develops consistent with existing land use designations. Development with more intense uses may have an adverse effect on the I-84 Chenoweth Interchange.

Sub-Area "E"

Sub-area "E" was comprised of one 67.2 acre parcel zoned Commercial/Light Industrial District (CLI) but has recently been partitioned into five parcels, all of which are owned by WM3, Inc. (WM3). Twenty-five acres of sub-area will be developed with commercial uses, consistent with existing zoning. A development application for a 149,147 square-foot Wal-Mart to be constructed on 18.08 of the 25 acres has been approved by the city and the remaining 6.92 acres are expected to be developed with commercial uses. As discussed in *Technical Memorandum #2 in the Technical Appendix*, the type of use that is allowed to develop on the additional 42.2 acres is dependent on the outcome of this analysis as identified by the Interchange Area Management Plan and Implementation, as described in Section 7 and Section 8.

Two future land use scenarios were developed for the future analysis based on variation of the development potential within Sub-area "E." The following identifies the assumptions of each Land Use Scenario:

Scenario #1

- Commercial development of 25 acres.
- Industrial development of 36.4 acres.
- Dedicated right-of-way and wetland tract to utilize 5.8 acres.

Scenario #2

- Commercial development of 61.4 acres of buildable land.
- Dedicated right-of-way and wetland tract to utilize 5.8 acres.

Sub-Area "F"

Multiple parcels within Sub-area "F" make up 4.3 acres of land zoned CLI that is expected to have potential for re-development. Access to the Sub-area "F" parcels is provided via West 2nd Street, which connects to West 6th Street via Hostetler Street. These land uses will likely utilize both the Chenoweth and Webber Street interchanges to access I-84 depending on the ultimate origination/destination of the trips. Given the nature of existing development and size/shape of the parcels in sub-area "F" it was assumed, for future estimation of traffic demand, the land will redevelop with uses that generate trips more similar to a light industrial use than shopping center use. Under CLI zoning both uses are allowed. Development with more intense uses may have an adverse effect on the I-84 Chenoweth Interchange.

Sub-Area "G"

Three vacant parcels on the west side of West 6th Street comprise approximately 0.6 acres of land. The parcels are currently zoned General Commercial (CG) and are expected to attract similar commercial development. Development with more intense uses than CG may have an adverse effect on the I-84 Chenoweth Interchange.

Sub-Area "H"

Sub-area "H" is zoned CG. The majority of land within sub-area "H" is currently developed, with the exception of one retail pad associated with the Home Depot development that is currently for sale. Several parcels west of West 6th Street and between Division Street and Chenoweth Loop are currently developed with mobile homes, but the existing zoning classifications and comprehensive plan map classify these parcels as CG. In order to provide a reasonably conservative analysis of a 20-year development horizon, it is assumed these parcels will redevelop as commercial uses over the next 20 years. The parcels expected to redevelop combine to make up 11.6 acres adjacent to West 6th Street. Development with more intense uses may have an adverse effect on the I-84 Chenoweth Interchange.

Sub-Area "I"

Sub-area "I" is comprised of land in the northwest quadrant of the I-84 Chenoweth Interchange. The majority of this land is not included in the existing City of The Dalles Urban Growth Boundary (UGB) and is zoned Large-Scale Agriculture (LSA) by Wasco County. An approximately 3.6 acres parcel in the NW quadrant of the Chenoweth Interchange within sub-area "I" is within the UGB boundary, but is owned by ODOT and is not expected to be developed in the next 20 years.

It is difficult to anticipate when, or if, development outside the existing City of The Dalles UGB will occur in the 20-year planning horizon. Currently, this land is designated a National Scenic Area (NSA) and is governed by the provisions of the Columbia River Gorge National Scenic Area (CRGNSA) Act. The purpose of the CRGNSA Act is to protect and provide for the enhancement of the scenic, cultural, recreational and natural resources of 292,500 acres within the Gorge; and, to protect and support the economy of the Columbia River Gorge area by encouraging growth to occur in existing urban areas and by allowing future economic development. Uses and development on county land in the IMSA must comply with both Wasco County and CRGNSA Management Plan regulations according to applicable land use designations.

The City of The Dalles 2007 Growth Management Report provides findings to support a proposed expansion of the 2026 UGB, the expansion of The Dalles "Urban Area" consistent with the CRGNSA Act, and the establishment of the 2056 The Dalles Urban Reserve Area (URA). The current NSA designation must be converted to Urban Area in order to accommodate the adoption of the UGB expansion and the establishment of a URA. A rules committee convened by the Columbia River Gorge Commission must determine whether this conversion constitutes a "minor" or "major" amendment to the NSA management plan (see Columbia River Gorge National Scenic Area Management Plan/National Scenic Area Act section in *Technical Memorandum #2 in Appendix "B" of the I/84 Chenoweth IAMP Technical Appendix*). A minor amendment could be decided by the Columbia River Gorge Commission while a major amendment would need to be decided by Congress. It is possible that the rules committee decision and subsequent action, including potential appeals, will take several years.

According to the Generalized Comprehensive Plan (Map 6 in the Growth Management Report) the UGB expansion and designation of URA areas to the north/northwest of the city, including lands in the vicinity of the I-84 Chenoweth Interchange, are intended primarily for residential use. The Growth Management Report documents a twenty-year land need (to 2026, and in addition to land already inside the UGB) of approximately 540 gross buildable acres of residential land and approximately 85-120 buildable acres for employment throughout the City of The Dalles. This is the amount of land that is being proposed for inclusion in the UGB.

Given that there is uncertainty as to whether or not the UGB may be expanded, the land outside of the existing UGB is not assumed to generate new trips prior to 2030. However, if future expansion of the UGB includes the land in the northwest quadrant of the interchange, the interchange area should be evaluated, and the IAMP updated, as part of the amendment.

YEAR 2030 NO-BUILD TRAFFIC VOLUMES FORECAST METHODOLOGY

Year 2030 "No-Build" traffic volume forecasts for intersection turning movements and street segments were developed in order to analyze the effects of traffic growth on the I-84 Chenoweth Interchange and the surrounding transportation system. The year 2030 "No-Build" scenario was developed based on the currently adopted Wasco County and the City of The Dalles comprehensive plans. The remainder of this section describes the methodology and assumptions used to develop year 2030 forecasts.

Future year 2030 no-build traffic volumes were developed by considering the following traffic growth through year 2030:

- Future traffic growth related to development and redevelopment of land in the vicinity of the I-84 Chenoweth Interchange (including sub-areas "A" through "I").
- Future traffic related to regional growth within The Dalles UGB and along the I-84 Interstate corridor.

The specific assumptions used in each of these traffic growth components are summarized below.

Development and Redevelopment Traffic

To account for local traffic growth attributed to the development and redevelopment of vacant and re-developable land in the vicinity of the I-84 Chenoweth Interchange, the reasonable "worst-case" trip-generating potential of the properties was calculated.

The reasonable "worst-case" trip-generation potential of each parcel was estimated using a two-step approach. Step one included reducing the developable or re-developable area (summarized in Table 5-2) by 20 percent to account for utility and roadway right-of-way. Step two applied a Floor Area Ratio (FAR) of 0.25 for commercial zones and 0.40 for industrial lands. The Technical Advisory Committee agreed that these FARs represent a maximum FAR that could be expected for the area. Table 5-2 and Table 5-3 provide a summary of the development assumed to occur under Land Use Scenario #1 and #2, respectively.

The City of The Dalles Development Code does not specify a maximum FAR, but limits the height of development to 40 feet in CR zones and 55 feet in I, CLI, and CG zones.

TABLE 5-2 I-84 CHENOWETH INTERCHANGE AREA DEVELOPMENT ASSUMPTIONS – SCENARIO #1

Land Use	Total Developable or Re-developable Land Area (Acres)	Utilities and ROW (20%)	Net Developable or Re-developable Land Area (Acres)	FAR	Size (1,000 Sq. Feet GLA)
Sub-area "A"					
Industrial	126.2	(25.0)	101.2	0.40	1,763
Sub-area "B					
Industrial	14.0	(3.0)	11.0	0.40	192
Commercial	6.3	(1.0)	5.3	0.25	58
Sub-area "C"					
Industrial	79.1	(16.0)	63.1	0.40	1,099
Sub-area "D"					
Industrial	113.0	(23.0)	90.0	0.40	1,567
Sub-area "E"					
Commercial/ Light Industrial[1]	25.0	-	25.0	0.25	272
Industrial[1]	36.4	-	36.4	0.40	634
Sub-area "F"					
Commercial/ Light Industrial	4.3	(1.0)	3.3	0.25	35
Sub-area "G"					
Commercial	0.6	0.0	0.6	0.25	6
Sub-area "H"					
Commercial	11.6	(2.0)	9.6	0.25	104
Sub-area "I"					
LSA	0.0	0.0	0.0	-	-
				Total Industrial	5,255
				Total Commercial	168
				Total Commercial/Light Industrial	307
				TOTAL	**5,730**

[1] The developable land for Sub-area "E" includes a 5.83 acre reduction for utility and ROW land needs based on the Chenoweth Station Subdivision development application dated October 17, 2008.

TABLE 5-3 I-84 CHENOWETH INTERCHANGE AREA DEVELOPMENT ASSUMPTIONS – SCENARIO #2

Land Use	Total Developable or Re-developable Land Area (Acres)	Utilities and ROW (20%)	Net Developable or Re-developable Land Area (Acres)	FAR	Size (1,000 Sq. Feet GLA)
Sub-area "A"					
Industrial	126.2	(25.0)	101.2	0.40	1,763
Sub-area "B					
Industrial	14.0	(3.0)	11.0	0.40	192
Commercial	6.3	(1.0)	5.3	0.25	58
Sub-area "C"					
Industrial	79.1	(16.0)	63.1	0.40	1,099
Commercial	0.0	0.0	0.0	0.25	0
Sub-area "D"					
Industrial	113.0	(23.0)	90.0	0.40	1,567
Sub-area "E"					
Commercial/ Light Industrial[1]	61.4	-	61.4	0.25	669
Sub-area "F"					
Commercial/ Light Industrial	4.3	(1.0)	3.3	0.25	35
Sub-area "G"					
Commercial	0.6	0.0	0.6	0.25	6
Sub-area "H"					
Commercial	11.6	(2.0)	9.6	0.25	104
Sub-area "I"					
LSA	0.0	0.0	0.0	-	-
				Total Industrial	4,621
				Total Commercial	168
				Total Commercial/Light Industrial	704
				TOTAL	**5,493**

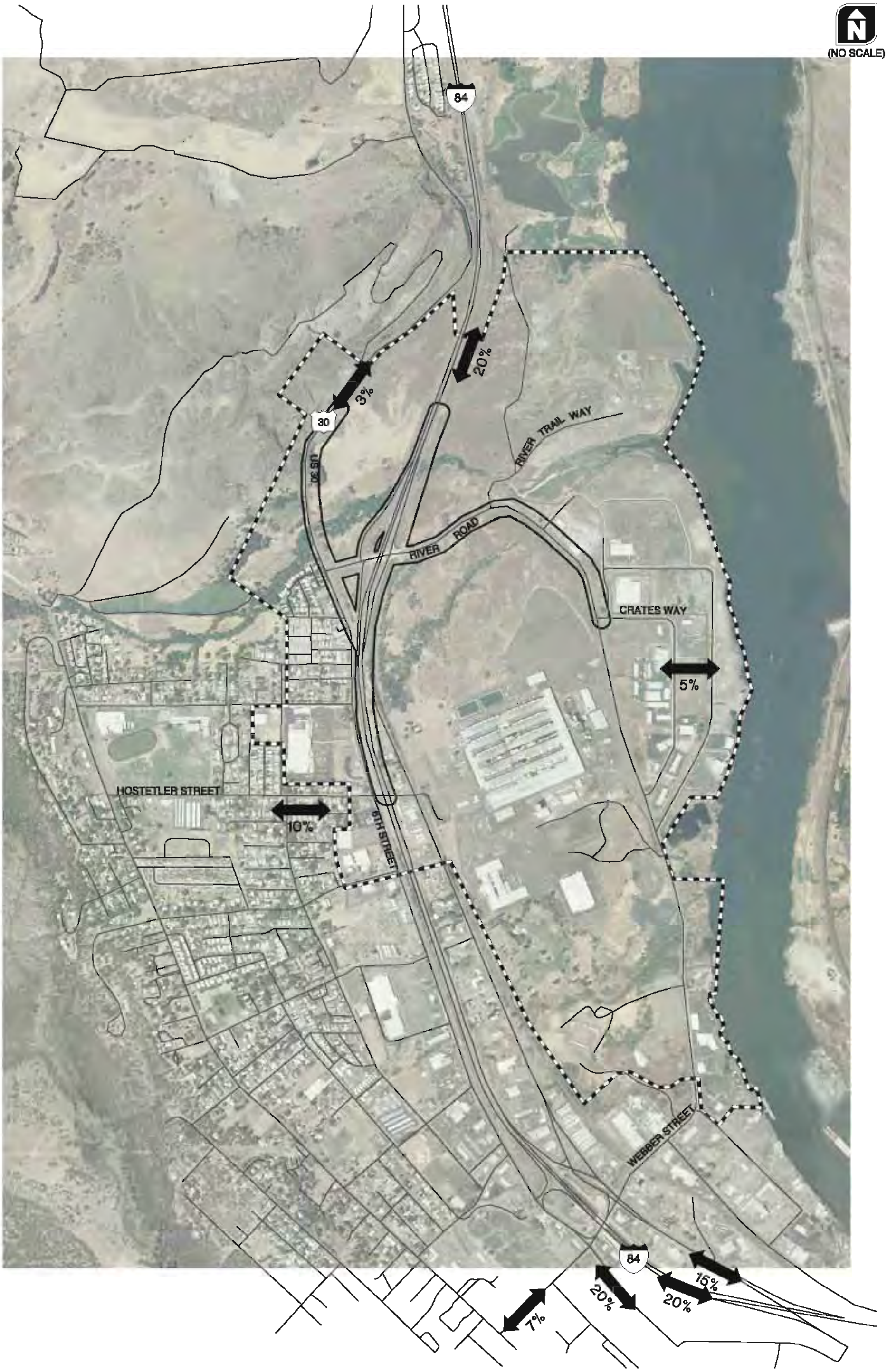
[1] The developable land for Sub-area "E" includes a 5.83 acre reduction for utility and ROW land needs based on the Chenoweth Station Subdivision development application dated October 17, 2008.

The trip generation potential for each sub-area was calculated for the weekday p.m. peak hour using the 7th Edition of Trip Generation (Reference 4), published by the Institute of Transportation Engineers (ITE). ITE trip generation rates for General Light Industrial developments were applied to the estimated square footage of buildings that could be constructed on parcels zoned Industrial. ITE's Shopping Center trip generation rates (fitted curve equation) were applied to the estimated

building sizes on parcels zoned CG. Parcels zoned CR were estimated by ITE's Specialty Retail rates. Pass-by trip reductions were applied to ITE Shopping Center trip generation rates only.

The assumed distribution patterns of trips generated within each sub-area were based on the existing zoning and relative attractions within the overall study area. Trip distribution patterns for Commercial and Industrial uses was developed based on trip distribution patterns developed for the WM3 site and knowledge of existing travel patterns within the City of The Dalles. Figure 5-2 and Figure 5-3 illustrate the estimated trip distribution patterns for commercial and industrial sub-areas, respectively.

A summary of the estimated net new trip generation potential of vacant and re-developable lands under Scenarios #1 and #2 are shown in Table 5-4 and Table 5-5, respectively. Net new trip generation potential reflects pass-by trip reductions. It was assumed that up to 34 percent of new trips generated by commercial developments are pass-by trips as long as the number of pass-by trips did not exceed 10 percent of through volumes at the site access point along River Road or West 6th Street. Under Scenario #2 the number of pass-by trips associated with commercial development within sub-area "E" was limited to 24 percent of new trips so that the commercial pass-by trips would be no more than ten percent of the traffic volumes projected on River Road from industrial development.



TRIP DISTRIBUTION PATTERN
COMMERCIAL LAND USE
THE DALLES, OREGON

FIGURE **5-2**

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TRIP DISTRIBUTION PATTERN
INDUSTRIAL LAND USE
THE DALLES, OREGON

FIGURE **5-3**

TABLE 5-4 FORECASTED TRIP GENERATION – SCENARIO #1

Land Use	ITE Code	Size (1,000 sq. feet)	Weekday PM Peak Hour		
			Total	In	Out
Sub-Area "A"					
Industrial	110	1,763	1,730	210	1,520
Sub-Area "B"					
Industrial	110	192	190	25	165
Commercial Recreational	814	58	160	70	90
Sub-Area "C"					
Industrial	110	1,099	1,080	130	950
Sub-Area "D"					
Industrial	110	1,567	1,540	185	1,355
Sub-Area "E"					
Industrial	110	634	620	75	545
Commercial Light Industrial	820	272	1,210	605	605
Pass-By Trip Reduction (34%)			*(410)*	*(205)*	*(205)*
Net New Commercial Trips			800	400	400
Sub-Area "F"					
Commercial Light Industrial	110	35	30	5	25
Sub-Area "G"					
General Commercial	820	6	100	50	50
Pass-By Trip Reduction (34%)			*(30)*	*(15)*	*(15)*
Net New Trips			70	35	35
Sub-Area "H"					
Commercial	820	104	640	320	320
Pass-By Trip Reduction (34%)			*(220)*	*(110)*	*(110)*
Net New Trips			420	210	210
Total New Trips			7,300	1,675	5,625
Pass-By Trip Reduction (34%)			*(660)*	*(330)*	*(330)*
Net New Trips			6,640	1,345	5,300

[1]ITE Land Use 820: Shopping Center was applied for Commercial zoning using the fitted equation.

[2]ITE Land Use 110: Light Industrial was applied to Industrial Sub-areas using the average trip rate.

As shown in Table 5-4, Scenario #1 assumes that 634,000 square feet of industrial development and 272,000 square feet of commercial could occur in sub-area "E" resulting in a total of 1,420 net new weekday p.m. peak hour trips generated by sub-area "E." A total of 6,640 net new weekday p.m. peak hour trips are expected to be generated under Scenario #1 from 5,730,000 square feet of

development (5,255,000 square feet of industrial and 475,000 square feet of commercial). Table 5-5 summarizes forecast trip generation for Scenario #2.

TABLE 5-5 FORECASTED TRIP GENERATION – SCENARIO #2

Land Use	ITE Code	Size (1,000 sq. feet)	Weekday PM Peak Hour		
			Total	In	Out
Sub-Area "A"					
Industrial	110	1,763	1,730	210	1,520
Sub-Area "B"					
Industrial	110	192	190	25	165
Commercial Recreational	814	58	160	70	90
Sub-Area "C"					
Industrial	110	1,099	1,080	130	950
Sub-Area "D"					
Industrial	110	1,567	1,540	185	1,355
Sub-Area "E"					
Commercial Light Industrial	820	669	2,190	1,095	1,095
Pass-By Trip Reduction (24%)			*(530)*	*(265)*	*(265)*
Net New Trips			1,660	830	830
Sub-Area "F"					
Commercial Light Industrial	110	35	30	5	25
Sub-Area "G"					
General Commercial	820	6	100	50	50
Pass-By Trip Reduction (34%)			*(30)*	*(15)*	*(15)*
Net New Trips			70	35	35
Sub-Area "H"					
Commercial	820	104	640	320	320
Pass-By Trip Reduction (34%)			*(220)*	*(110)*	*(110)*
Net New Trips			420	210	210
Total New Trips			7,660	2,090	5,575
Pass-By Trip Reduction (34%)			*(780)*	*(390)*	*(390)*
Net New Trips			6,880	1,700	5,185

[1]ITE Land Use 820: Shopping Center was applied for Commercial zoning using the fitted equation provided.
[2]ITE Land Use 110: Light Industrial was applied to Industrial Sub-areas using the average trip generation rate.

As shown in Table 5-5, Scenario #2 assumes that 61.4 acres in sub-area "E" will be developed with commercial uses resulting in a total of 1,660 net new trips generated by sub-area "E." A total of

6,880 net new p.m. peak hour trips are expected to be generated under Scenario #2 from 5,493,000 square feet of development (4,621,000 square-feet of industrial and 872,000 square-feet of commercial), which reflects an increase of 240 net new weekday p.m. peak hour trips above Scenario #1.

Background Traffic Growth

The proposed annual growth rates were determined based on a review of ODOT's Future Year Volume Tables, historical ADT counts, and future development assumptions within the study area. The growth was applied to the existing traffic volumes described in Section 4 to obtain future year forecast volumes.

US Highway 30 – West of 6th Street

An annual local growth rate was applied to the existing through volumes along West 6th Street, all turning movements at the Highway 30/River Road intersection, and turning movements to/from I-84 to the west. An annual growth rate was not be applied to local and collector street turning movements along West 6th Street as these trips are generated by existing development that is not impacted by regional growth. Given that growth rates were not applied consistently to all study intersections, future volumes were adjusted to address the overlap in trips being generated directly from within the land use sub-areas and those of a regional nature calculated by the growth rates along I-84, US Highway 30, and West 6th Street.

Based on a review of ODOT's Future Year Volume Tables (which are based on historic traffic volumes), a local growth rate was estimated for the IMSA based on two data points; one north of the US 30/River Road intersection, and one south of the intersection. To estimate a growth rate, volumes for the year 2007 were compared with ODOT's 2027 estimates. Table 5-6 illustrates the estimated local growth rates.

TABLE 5-6 BACKGROUND GROWTH RATE CALCULATIONS ON US 30

Mile Point	Location	Average Annual Daily Traffic		R-Squared Value	Per Year Growth Rate (2007-2027)[1]
		2007	2027		
38.00	0.05 mile north of connection from Columbia River Highway (I-84)	1,700	2,300	0.79	1.76%
38.53	0.13 mile south of connection from Columbia River Highway (I-84)	5,500	8,100	0.97	1.45%
Average					**1.6%**

[1] Per Year Growth Rate = [(2027 AADT– 2007 AADT) / (2007 AADT)] / (2027 – 2007)

The R-Squared Value shown in Table 5-6 indicates the degree of correlation between the dependent variable (historical traffic volume) and the independent variable (time). The ODOT Analysis Procedures Manual states that values over 0.75 are preferred, which indicates that the chosen

locations are acceptable for this analysis. As shown in Table 5-6, a 1.6% annual growth rate was identified for background traffic volumes in the vicinity of the I-84 Chenoweth Interchange. Therefore, through traffic volumes on Highway 30 and West 6th Street from 2008 will be increased by 35.2% to the forecast year 2030.

River Road

An annual growth rate will not be applied to intersections on River Road that are east of I-84 because this area has very limited through traffic volumes and all growth will be related to future redevelopment or new development as previously defined.

Interstate-84

The I-84 traffic growth rate will be applied to the existing through traffic volumes to forecast future traffic projections for I-84. Traffic volume analyses on I-84 east and west of the I-84 Chenoweth Interchange indicate that the interstate traffic volume have been steadily increasing over the past 10 years. Based on a review of ODOT's Future Volume Tables, a background growth rate was estimated for I-84 near the Chenoweth Interchange. Two data points on I-84 were used in the calculation, including one on each side of the interchange. To determine a growth rate estimate, volumes for the year 2005 were compared with ODOT's 2027 estimates. Table 5-7 summarizes the estimated growth rates.

TABLE 5-7 BACKGROUND GROWTH RATE CALCULATIONS ON I-84

Mile Point	Location	Average Annual Daily Traffic		R-Squared Value	Per Year Growth Rate (2005-2027)[1]
		2005	2027		
77.15	0.05 mile east of Rowena Interchange	19,900	31,300	0.93	2.6%
82.62	Hostetler Way Overcrossing	19,300	30,500	0.92	2.1%
Average					**2.4%**

[1] Per Year Growth Rate = [(2027 AADT– 2005 AADT) / (2005 AADT)] / (2027 – 2005)

The R-Squared Value indicates the degree of correlation between the dependent variable (historical traffic volume) and the independent variable (time). The APM states that values over 0.75 are preferred, which indicates that the chosen locations are acceptable for this analysis. As shown in Table 5-7, a 2.4% annual growth rate was identified for background traffic volumes on I-84 in the vicinity of the Chenoweth Interchange. Therefore, through traffic volumes on I-84 from 2008 will be increased by 52.8% to the forecast year 2030.

PLANNED TRANSPORTATION IMPROVEMENTS

No transportation improvements inside the IMSA are identified in ODOT's Statewide Transportation Improvement Plan (STIP) or the City of The Dalles Transportation System Plan.

Mitigations associated with the 25-acre commercial development approved on the WM3 Property in Sub-area "E" are expected to be completed by 2030. The mitigations associated with the WM3 commercial development, as outlined in the Chenoweth Station subdivision application, are outlined in Table 5-8. These improvements were included in the 2030 No-Build scenario analysis. Figure 5-4 illustrates the year 2030 no-build lane configurations and traffic control devices.

TABLE 5-8 WM3 DEVELOPMENT MITIGATIONS

Intersection/ Roadway	Recommended Mitigation	Completion By
River Road/ River Trail Way	Install 75-foot eastbound and westbound left-turn lanes with taper on River Road.	Day of Opening
River Road/ River Trail Way	Install 100-foot eastbound right-turn lane on River Road.	Day of Opening
River Road/ River Trail Way	Install northbound left-turn and shared through/right lanes out of development.	Day of Opening
West 6th Street (Hwy 30)/ River Road	Restripe northbound West 6th Street approach to include a 100-foot right-turn lane with taper at River Road	Year 2027 or Earlier
West 6th Street (Hwy 30)/ River Road	Restripe westbound left-turn lane on River Road to provide a minimum of 250 feet of storage	Year 2027 or Earlier
I-84 EB Ramp/ River Road	Install Traffic Signal	Year 2027 or Earlier
I-84 WB Ramp/ River Road	Install Traffic Signal	Year 2027 or Earlier

YEAR 2030 NO-BUILD TRAFFIC CONDITIONS

Future year 2030 "No-Build" weekday p.m. peak hour traffic volumes were determined for each future scenario by applying growth rates and trip generation estimates to the existing 2008 traffic network. The resulting year 2030 No-Build weekday p.m. peak hour traffic volumes for Scenarios #1 and #2 are shown in Figure 5-5 and Figure 5-6, respectively.

All level of service analyses were performed in accordance with the procedures stated in the 2000 Highway Capacity Manual (Reference 3). The operational standard for the ramp terminals is a volume-to-capacity ratio of 0.75. The operational standard for all other study intersections is a LOS D. Traffic operations analysis was performed for the study intersections using the forecast year 2030 No-Build weekday p.m. peak hour traffic volumes for Scenarios #1 and #2.

LEGEND

- STOP SIGN
- TRAFFIC SIGNAL

FUTURE 2030 LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
THE DALLES, OREGON

FIGURE **5-4**

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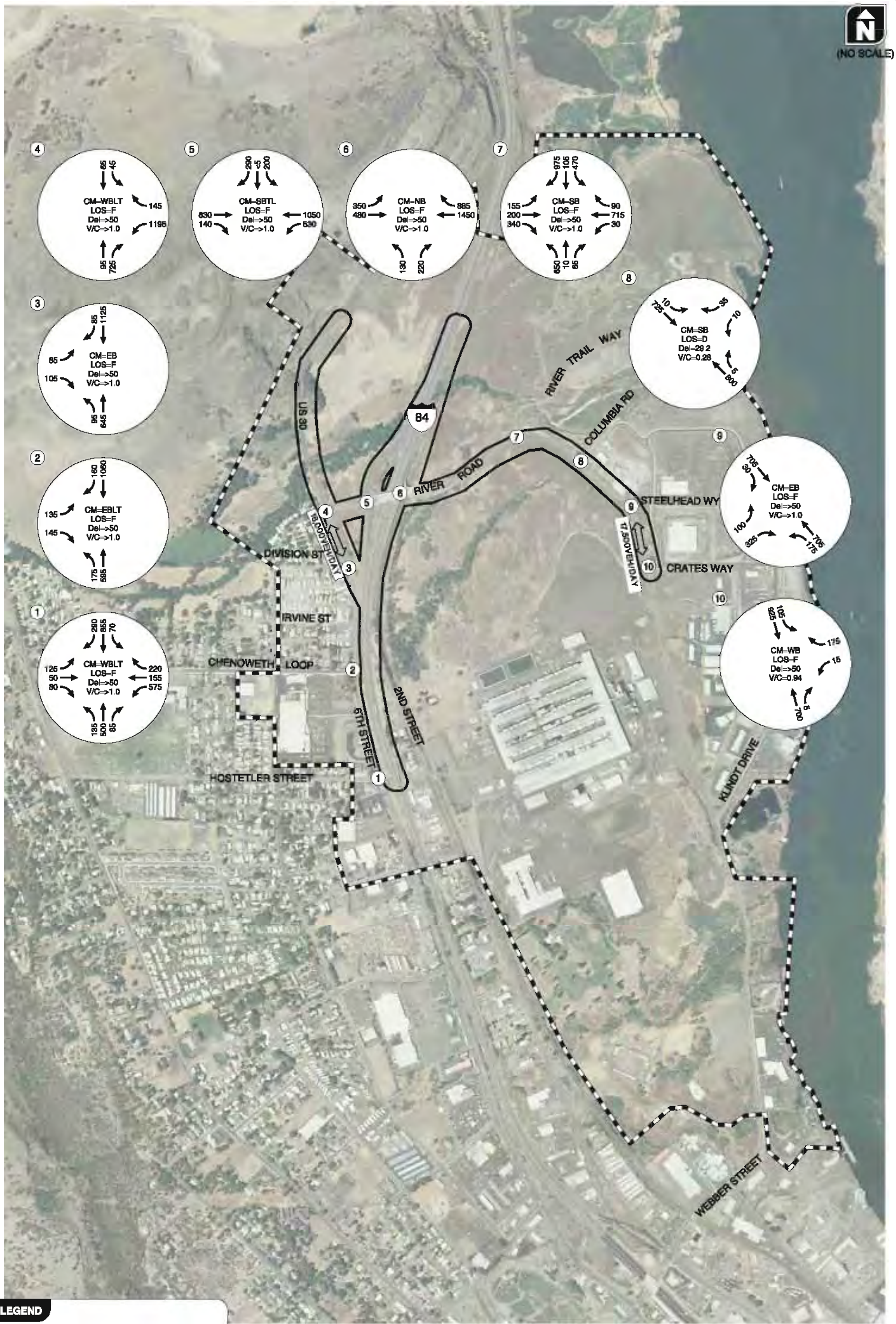
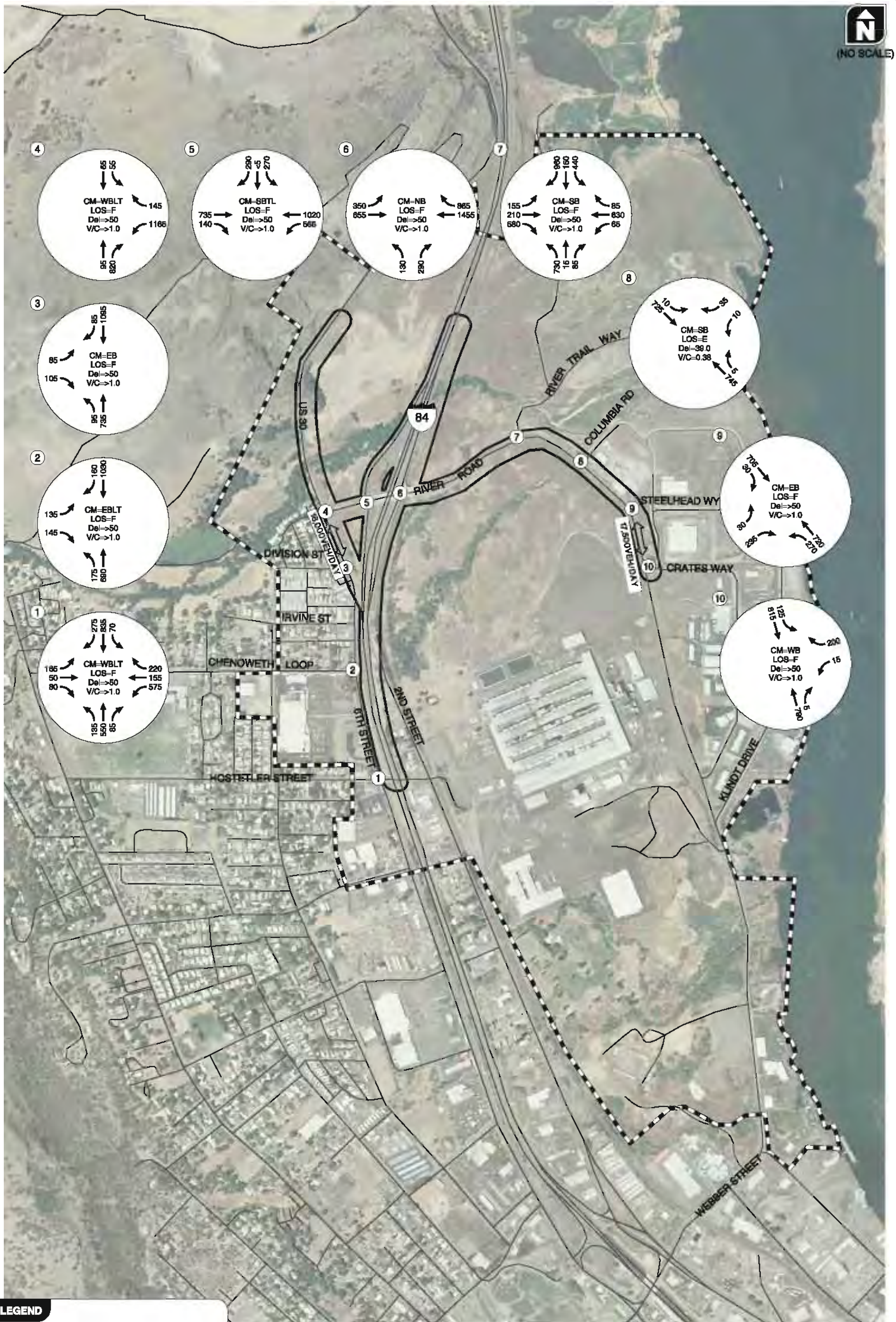


LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

YEAR 2030 TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
SCENARIO #1
THE DALLES, OREGON

FIGURE **5-5**



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

YEAR 2030 TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
SCENARIO #2
THE DALLES, OREGON

FIGURE **5-6**

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As shown in Figure 5-5 and Figure 5-6, the volume-to-capacity ratios of the ramp terminal intersections exceed 1.0 and all other intersections are forecast to operate with a LOS F under Scenarios #1 and #2.

SUMMARY OF YEAR 2030 FUTURE YEAR CONDITIONS

The year 2030 "No-Build" forecasts and analysis resulted in the following findings:

- Based on historic volumes on US 30, local growth is forecast at a rate of 1.6% per year from 2008 to 2030 resulting in a total of 35.2% growth over 22 years. This growth rate was applied to through-traffic volumes on West 6th Street, all turning movements at the West 6th Street (Hwy 30)/River Road intersection, and turning movements to/from West 6th Street at the I-84 ramp terminal intersections.
- The potential for new development or redevelopment of properties within the IMSA was accounted for by developing estimates of trip generation for two No-Build scenarios, based on reasonable worst-case development that could occur through 2030. Scenario #1 assumes the WM3 site will be developed with 25 acres of commercial and 36.4 acres of industrial uses. Scenario #2 assumes the WM3 site will be developed entirely as commercial uses. Both scenarios assume development of all other sub-areas will be consistent with existing land use designations in the City of The Dalles Comprehensive Plan and the Wasco County Comprehensive Plan.
    a. Land Use Scenario #1 is forecast to generate approximately 6,640 net new trips during the weekday p.m. peak hour associated with 5,255,000 square-feet of industrial space and 475,000 square-feet of commercial space.
    b. Land Use Scenario #2 is forecast to generate 6,880 net new trips during the weekday p.m. peak hour associated with 4,656,000 square-feet of industrial space and 837,000 square-feet of commercial space.
- No capacity enhancing transportation improvements were identified inside the IAMP study area in ODOT's STIP or the City of The Dalles TSP.
- Mitigations associated with the 25-acre commercial development approved on the WM3 Property in Sub-area 'E' are expected to be completed by 2030 and were included in the 2030 "No Build" scenario analysis.
- Under Scenarios #1 and #2, the I-84 ramp terminal intersections at River Road are forecast to operate with volume-to-capacity ratios greater than 1.0 during the weekday p.m. peak hour. ODOT's volume-to-capacity ratio standard for the interchange ramp terminals is 0.75.
- Under Scenarios #1 and #2 all unsignalized intersections on River Road and on West 6th Street within the IAMP Operation and Access Study Area are forecast to operate at LOS F during the weekday p.m. peak hour. The City of The Dalles specifies a LOS D or better be maintained.

Section 6
Alternative Development and Analysis

Alternative Development and Analysis

This section documents the development and evaluation of the local circulation and access concepts as part of the IAMP process. Twenty-two concepts were developed and taken through a thorough screening process that included input from Technical Advisory Committee (TAC), Steering Committee (SC), local property and business owners, and the public at-large. Based on results of the initial screening, a refined analysis was conducted that resulted in the identification of a preferred alternative. The following sections document the concepts that were evaluated and the results of the screening process.

CONCEPT DEVELOPMENT PROCESS

The development of the initial local circulation and access concepts for the I-84 Chenoweth Interchange began with a design workshop at a joint meeting of the TAC and SC on February 11, 2009. Additional concepts were developed at a public workshop that was attended by local agency representatives, interested citizens, business owners, and landowners on March 5, 2009.

Workshop participants were presented with an overview of applicable design parameters and local circulation/access management techniques. Following the presentation, participants were asked to sketch their ideas for improving the future local circulation and access system. Participants were encouraged to consider improvement opportunities at all intersections within the IMSA, including the I-84 Chenoweth Interchange, and opportunities to create new connections to support the collector/local street circulation network.

Following the completion of the public workshop, the consultant team refined the ideas generated during TAC and SC Meeting and public workshops to develop a series of individual local circulation and access concepts in the north, south, and east regions of the IMSA. These concepts are described in the following sections.

LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS

Based on the general design ideas developed as part of the workshop exercises, a set of local circulation and access concepts were developed and grouped by geographic location. A total of 22 concepts were developed, including: 6 to the west of I-84; 13 to the east of I-84 and south of the River Road; and, 3 to the north of River Road. These concepts represent a culmination of the individual design ideas developed by the workshop participants. Each of the concepts and key design components are described below.

Westerly Local Circulation and Access Design Concepts

Local circulation and access design concepts developed for the portion of the study area west of I-84 include: access control along West 6th Street (US 30) and modifications to traffic control at the intersections on West 6th Street (US 30) at River Road, Division Street, Chenoweth Loop, and Hostetler Street. Each westerly (W-X) concept is described below and illustrated in Figure 6-1 through Figure 6-6.

Concept W-1 (Combined West 6th Street and I-84 EB Ramp Terminal Roundabout)

- Combine adjacent intersections of West 6th Street (US 30)/River Road and I-84 Eastbound Ramp Terminals/River Road at a single roundabout.
- Convert the intersections of Chenoweth Loop and Hostetler Way at West 6th Street to signal control.
- Restrict access on West 6th Street between River Road and Chenoweth Loop to public streets including Division Street, Irvine Street, and Lee Street. The existing private approaches on West 6th Street would be routed via backage roads and/or cross-over easements to West 6th Street via Division Street and Irvine Street.
- Provide a local street access from Division Street to property in the northwest quadrant of the West 6th Street/Division Street intersection.
- Relocate the private driveway on the west side of US 30 (just north of Chenoweth Creek) to a location further north of the West 6th Street (US 30)/River Road intersection to meet the 1,320-foot access spacing standard.

Concept W-2 (West 6th Street/River Road Roundabout)

- Convert West 6th Street (US 30)/River Road intersection from stop control to a traffic signal.
- Convert the intersections of Chenoweth Loop and Hostetler Way at West 6th Street from stop control to signal control.
- Restrict eastbound left-turn movements from Division Street to West 6th Street.
- Restrict access on West 6th Street between River Road and Chenoweth Loop to public streets, including Division Street, Irvine Street, and Lee Street. The existing private approaches on West 6th Street would be routed to West 6th Street via Division Street and Irvine Street.
- Provide a local street access from Division Street to property in the northwest quadrant of the West 6th Street/Division Street intersection.
- Relocate the private driveway on the west side of US 30 (just north of Chenoweth Creek) to a location further north of the West 6th Street (US 30)/River Road intersection to meet the 1,320-foot access spacing standard.

Concept W-3 (Dual Roundabouts with West 6th Street Center Median)

- Convert West 6th Street (US 30)/River Road and West 6th Street/Chenoweth Loop intersections from stop control to roundabouts.
- Construct a median on West 6th Street from River Road to Chenoweth Loop.
- Convert the intersection of West 6th Street/Hostetler Way from stop control to signal control.
- Relocate the private driveway on the west side of US 30 (just north of Chenoweth Creek) to a location further north of the West 6th Street (US 30)/River Road intersection to meet the 1,320-foot access spacing standard.

Concept W-4 (Reconfigured West 6th Street/River Road Intersection)

- Modify geometry of West 6th Street (US 30)/River Road intersection to provide continuous through movements between River Road and West 6th Street to the south. US 30 would be realigned to intersect River Road as a perpendicular, stop-controlled approach.
- Convert the intersections of Chenoweth Loop and Hostetler Way at West 6th Street to signal control.
- Restrict access on West 6th Street between River Road and Chenoweth Loop to public streets, including Division Street, Irvine Street, and Lee Street. The existing private approaches on West 6th Street would be routed to West 6th Street via access to Division Street and Irvine Street.
- Provide a local street access from Division Street to property in the northwest quadrant of the West 6th Street/Division Street intersection.
- Relocate the private driveway on the west side of US 30 (just north of Chenoweth Creek) to a location further north of the West 6th Street (US 30)/River Road intersection to meet the 1,320-foot access spacing standard.

Concept W-5 (Traffic Signals with West 6th Street Center Median)

- Convert the following intersections from stop control to signal control:
    - West 6th Street (US 30)/River Road
    - West 6th Street/Division Street
    - West 6th Street/Irvine Street
    - West 6th Street/Chenoweth Loop
    - West 6th Street/Hostetler Street
- Construct median on West 6th Street from River Road to Irvine Street.

Concept W-6 (Local Frontage Road on West 6th Street)

- Convert the following intersections from stop control to signal control:
    - West 6th Street (US 30)/River Road

  - West 6th Street/Division Street
  - West 6th Street/Chenoweth Loop
  - West 6th Street/Hostetler Street
- Restrict access on West 6th Street between River Road and Irvine Street and develop a frontage road that would provide access to commercial and residential properties.
- Extend West 7th Street from Irvine Street to Division Street to improve local connectivity and provide a connection from Division Street to West 6th Street.
- Relocate the private driveway on the west side of US 30 (just north of Chenoweth Creek) to a location further north of the West 6th Street (US 30)/River Road intersection to meet the 1,320-foot access spacing standard.

LOCAL LOCAL CIRCULATION AND ACCESS DESIGN CONCEPT
CONCEPT W-1: COMBINED WEST 6TH STREET AND I-84 EB RAMP TERMINAL ROUNDABOUT
THE DALLES, OREGON

FIGURE 6-1

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT W-2: WEST 6TH STREET/RIVER ROAD ROUNDABOUT
THE DALLES, OREGON

FIGURE 6-2

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT W-3: DUAL ROUNDABOUTS WITH WEST 6TH STREET CENTER MEDIAN
THE DALLES, OREGON

FIGURE 6-3

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT W-4: RECONFIGURED 6TH STREET/RIVER ROAD INTERSECTION
THE DALLES, OREGON

FIGURE 6-4

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT W-5: TRAFFIC SIGNALS WITH 6TH STREET MEDIAN
THE DALLES, OREGON

FIGURE 6-5

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT W-6: LOCAL FRONTAGE ROAD ON 6TH STREET
THE DALLES, OREGON

FIGURE 6-6

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Easterly Local Circulation and Access Design Concepts

Local circulation and access design concepts developed for the portion of the study area in the southeast quadrant of the interchange include: constructing additional connections from River Road to West 2nd Street and ultimately to West 6th Street; modifications to traffic control at the River Road/River Trail Way intersection; and, construction of local streets to improve connectivity and circulation between West 2nd street and River Road. Each easterly (E-X) concept is described below and illustrated in Figure 6-7 through Figure 6-18.

Concept E-1 (New Interchange)

- Construct a new fly-over style interchange with I-84 between the existing Chenoweth and Webber interchanges. The new interchange would provide connections from River Road (at River Trail Way and Crates Way) to I-84.

Concepts E-2A through E-2C (Two Grade-Separated Crossings of the Union Pacific (UP) railroad at West 2nd Street and Hostetler Street)

- Construct an overpass crossing of the UP railroad north of Hostetler Street to provide access from River Road to West 2nd Street (Concepts E-2A and E-2B2B).
- Construct an underpass crossing of the UP railroad north of Hostetler Street to provide access from River Road to West 2nd Street (Concepts E-2C).
- Construct an underpass crossing of the UP railroad at Hostetler Street to provide access from River Road to West 2nd Street(Concepts E-2A through E-2C).
- Develop a local street network to provide circulation and improve connectivity between West 2nd Street and River Road.
- Convert stop control at River Road/River Trail Way intersection to a roundabout or a signal.

Concept E-3A through E-3C (One Northern Grade-Separated Crossing of the UP)

- Construct an overpass crossing of the UP railroad at West 2nd Street or an underpass of the UP at Hostetler Street to provide access from River Road to West 2nd Street and ultimately West 6th Street.
- Develop a collector and local street network that will alleviate congestion on River Road by providing an alternative north-south route between the River Road/River Trail Way intersection and Webber Street.

Concept E-4A and E-4B (Two Grade-Separated Crossings of the UP at Hostetler Street and Snipes Street)

- Construct a grade-separated crossing (overpass or underpass) of the UP Railroad at Hostetler Street and Snipes Street.
- Construct a grade-separated crossing (overpass or underpass) of I-84 at Snipes Street. (Concept E-4A only).

- Develop a local street network to provide circulation and improve connectivity between West 2nd Street and River Road.

Concept E-5 (One Southern Grade-Separated Crossing of the UP)

- Construct a grade-separated crossing (overpass or underpass) of the UP Railroad on the south side of West 2nd Street (north of Webber Street).
- Develop a local street network to provide circulation and improve connectivity between West 2nd Street and River Road.

Concept E-6 (At-grade Crossings of the UP at Hostetler Street)

- Maintain the existing at-grade crossing of the UP at Hostetler Street and enhance it's connections to River Road. The intersection will be signal or roundabout controlled.
- Develop a local street network to provide circulation and improve connectivity between the West 2nd Street/Hostetler Street intersection and River Road.

Concept E-7 (Close At-Grade Crossing of the UP at Hostetler Street)

- Restrict access to Hostetler and West 2nd Street from the existing Northwest Aluminum property.
- Develop a collector and local street network west of River Road.

Concept E-8 (One Grade-Separated Crossing of the UP at Chenoweth Loop Road)

- Construct a grade-separated underpass of the UP Railroad at Chenoweth Loop Road.
- Develop a local street network to provide circulation and improve connectivity between West 2nd Street and River Road.

LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-1: NEW INTERCHANGE
THE DALLES, OREGON

FIGURE 6-7

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-2A: TWO GRADE-SEPARATED CROSSINGS OF THE UP AT 2ND ST AND HOSTETLER ST
THE DALLES, OREGON

FIGURE 6-8

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-2B: TWO GRADE-SEPARATED CROSSINGS OF THE UP AT 2ND ST AND HOSTETLER ST
THE DALLES, OREGON

FIGURE 6-9

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-2C: TWO GRADE-SEPARATED CROSSINGS OF THE UP AT 2ND ST AND HOSTETLER ST
THE DALLES, OREGON

FIGURE 6-10

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-3A: ONE NORTHERN GRADE-SEPERATED CROSSING OF THE UP
THE DALLES, OREGON

FIGURE 6-11

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-3B: ONE NORTHERN GRADE-SEPERATED CROSSING OF THE UP
THE DALLES, OREGON

FIGURE 6-12

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-3C: ONE NORTHERN GRADE-SEPERATED CROSSING OF THE UP
THE DALLES, OREGON

FIGURE 6-13

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-4A: TWO GRADE-SEPARATED CROSSINGS OF THE UP (HOSTETLER ST AND SNIPES ST)
THE DALLES, OREGON

FIGURE 6-14

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-4B: TWO GRADE-SEPARATED CROSSINGS OF THE UP (HOSTETLER ST AND SNIPES ST)
THE DALLES, OREGON

FIGURE 6-15

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-5: ONE SOUTHERN GRADE-SEPERATED CROSSING OF THE UP
THE DALLES, OREGON

FIGURE 6-16

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-6: AT-GRADE CROSSING OF THE UP AT HOSTETLER ST
THE DALLES, OREGON

FIGURE 6-17

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-7: CLOSE AT-GRADE OF THE UP AT HOSTETLER ST
THE DALLES, OREGON

FIGURE 6-18

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-8: ONE GRADE-SEPERATED CROSSING OF THE UP AT CHENOWETH LOOP ROAD
THE DALLES, OREGON

FIGURE 6-19

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Northerly Local Circulation and Access Design Concepts

Local circulation and access design concepts developed for the portion of the study area to the north of River Road and east of I-84 include: developing a collector and local street network; constructing an I-84 overpass north of the existing Chenoweth Interchange to connect to US 30 on the west side of I-84; and, constructing a bridge over Chenoweth Creek to connect River Trail Way to Columbia Road. Each northerly (N-X) concept is described below and illustrated in Figure 6-20 through Figure 6-22.

Concept N-1 (Local Street Network Only)

- Develop a collector and local street network.

Concept N-2 (I-84 Overpass)

- Construct an I-84 overpass north of the existing Chenoweth Interchange to connect to US 30 on the west side of I-84.
- Develop a collector and local street network.

Concept N-3 (Chenoweth Creek Bridge)

- Construct a bridge over Chenoweth Creek to connect River Trail Way to Columbia Road.
- Develop a collector and local street network.

LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT N-1: LOCAL STREET NETWORK ONLY
THE DALLES, OREGON

FIGURE 6-20

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT N-2: I-84 OVERPASS
THE DALLES, OREGON

FIGURE 6-21

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT N-3: CHENOWETH CREEK BRIDGE
THE DALLES, OREGON

FIGURE 6-22

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PRELIMINARY SCREENING ANALYSIS

A screening analysis was conducted to separate those concepts that warranted further evaluation from those that did not. The screening process was conducted at a qualitative level and was based on a relative comparison of each concept. The concepts were compared based on the extent of the improvements needed to accommodate forecasted land use projections. The following section provides detailed explanation of this preliminary screening analysis with respect to roadway cross-sections and intersection operations, and identifies which concepts were forwarded by the TAC and SC for further evaluation.

All analysis of future conditions was based on traffic volumes developed for Land Use Scenario #2, as outlined in Section 5. Land Use Scenario #2 assumes that the WM3 property will be developed as General Commercial land, which generates 240 more net new trips than Land Use Scenario #1 and is expected to provide a conservative analysis of future conditions.

Roadway Cross-Section Comparison

Section 5 summarizes the forecast traffic conditions analysis, which assumed no capacity improvements to the existing facilities. The analysis showed that future development, in accordance with existing land use designations, would increase traffic demand beyond capacity of the existing network. Further analysis shows that if no land use restrictions are imposed, no alternative mobility standards are adopted, and no geometric changes are made to the study area roadways, the resulting theoretical cross-section need on the I-84 Chenoweth Interchange bridge would require nine lanes, including:

- Three westbound through lanes
- Two westbound left-turn lanes to I-84 eastbound
- Two eastbound left-turn lanes to I-84 westbound
- Two eastbound through lanes

A nine-lane cross-section on River Road was determined not to be a feasible option, due to the surrounding street network, construction costs, and right-of-way impacts. A six-lane section on the River Road overpass is the widest structure that could feasibly be constructed. A bridge structure with more than six lanes would include two-lane ramps to support dual left-turn lanes to I-84 westbound, which is infeasible to construct without moving the entire interchange. Railroad lines on the east side of I-84 limit the ability to increase the width of westbound off and on-ramps. Due to the pressure of Chenoweth Creek to the north, relocating the interchange was not considered due to interchange spacing requirements. Additionally, providing more than two through lanes in each direction on the River Road overpass at I-84 would require greater cross-sections on West 6th Street and River Road than are suitable for their intended function.

A feasible future scenario was assumed to require the use of a combination of: system-wide improvements, alternative mobility standards, and/or land use management (e.g. trip cap/trip budget) alternatives. System-wide improvements include a new connection to West 2nd Street from

River Road and other localized improvements, as shown in the local circulation and access design concepts. In addition, a combination of these measures could be implemented to address future forecast travel demand.

In order to evaluate and compare roadway improvements to alternative development measures, a development threshold analysis was completed based on cross-sections of the River Road overpass and West 6th Street. Table 6-1 provides a summary of the minimum cross-sections required to minimize queuing and satisfy ODOT mobility standards, based on incremental levels of development. Full development in accordance with Land Use Scenario #2 is assumed, except where a trip cap/trip budget is shown to limit development. For example, a trip cap/trip budget of 85 percent reflects a 15-percent reduction from full development (or a corresponding alternative mobility standard that would allow for the additional 15 percent of forecasted development).

TABLE 6-1 DEVELOPMENT THRESHOLD ANALYSIS OF STUDY ROADWAYS

Cross-Section			I-84 Interchange Cross-Section Feasible (Yes/No)	Connection to W. 2nd Street	Trip Cap/ Trip Budget or Alternative Mobility Standards	Allowable FAR (Commercial/ Industrial)
I-84 Interchange (Between Ramp Terminals)	West 6th Street (North of Hostetler Street)	Hostetler Street (Under I-84)				
9-lanes	5-lanes	2-lanes	No	No	None	(0.25/0.40)
6-lanes	5-lanes	2-lanes	No	No	50%	(0.13/0.20)
8-lanes	5-lanes	5-lanes	No	No	None	(0.25/0.40)
7-lanes	5-lanes	5-lanes	No	No	85%	(0.21/0.34)
6-lanes	5-lanes	4-lanes	Yes	Yes	85%	(0.21/0.34)
4-lanes	5-lanes	4-lanes	Yes	Yes	75%	(0.19/0.30)
4-lanes	5-lanes	4-lanes	Yes	No	55%	(0.14/0.22)

As shown in Table 6-1, a connection from River Road to West 2nd Street is needed in order to reduce the cross-section of River Road from nine lanes to eight lanes at the I-84 Interchange. In order to further reduce the cross-section, land use management strategies (e.g., trip cap/trip budget) or alternative mobility standards are needed in combination with a West 2nd Street Connection.

Interchange Form Evaluation

Alternative interchange forms were considered, but due to the location of the interchange with respect to existing rail lines, Chenoweth Creek, and West 6th Street it was determined that other interchange forms are not feasible. The most likely alternative interchange form would include loop ramps, as they provide free-flow turning movements. However loop ramps require a large amount of right-of-way which is not available to the east or west of I-84. Section 7 identifies specific modifications for the existing interchange.

West 6th Street Evaluation

The cross-section of West 6th Street is shown as a 5-lane section, which includes: two southbound lanes, two northbound lanes, and a northbound left-turn lane. Two through lanes are only required in the southbound direction at the West 6th Street/River Road and the West 6th Street/Hostetler Street intersections; however, for continuity purposes and consistency with The Dalles TSP, a continuous 5-lane section is assumed. Given that analysis was performed on the evening peak hour, an equal lane configuration is assumed in the northbound direction to serve weekday morning peak hour traffic, in order to account for directional distributions during the peak hour time periods.

West 2nd Street Connection Evaluation

A connection to West 2nd Street is shown to reduce traffic demand on River Road at the I-84 Interchange. Although the design concepts show connections to West 2nd Street at various locations (see Concepts E-4 and E-5), all screening analyses assumed the benefits of a connection at Hostetler Street. It is expected that the reduction in traffic on the River Road overpass will not be as great if a connection to West 2nd Street is south of Hostetler Street. If concepts E-4 and E-5 are selected for further evaluation, traffic volumes within the study area will be redistributed to account for the connection location. Traffic is more likely to redistribute from the Chenoweth Interchange if a new connection to West 2nd Street is closer to the Chenoweth Interchange than the Webber Street Interchange.

Based on the identified benefits of a new connection to West 2nd Street, **Concept E-7 was removed from further evaluation because the concept does not include new connections to West 2nd Street**. All other concepts are compatible with the analysis shown in Table 6-1.

Intersection Operations

All study intersections are forecast to exceed capacity during the forecasted year 2030 peak hour, except the River Road/Columbia Road intersection. Mitigations to the intersections include installation of roundabouts or traffic signals at unsignalized intersections. *See Appendix D of the Technical Appendix for the 2030 no-build operational analysis details.*

Operational analysis of roundabouts was conducted during the preliminary screening process at the following locations where design concepts suggested single-lane or double-lane roundabouts:

- River Road/River Trail Way
- West 6th Street/River Road
- West 6th Street/Chenoweth Loop

Roundabout vs. Signalization Analysis

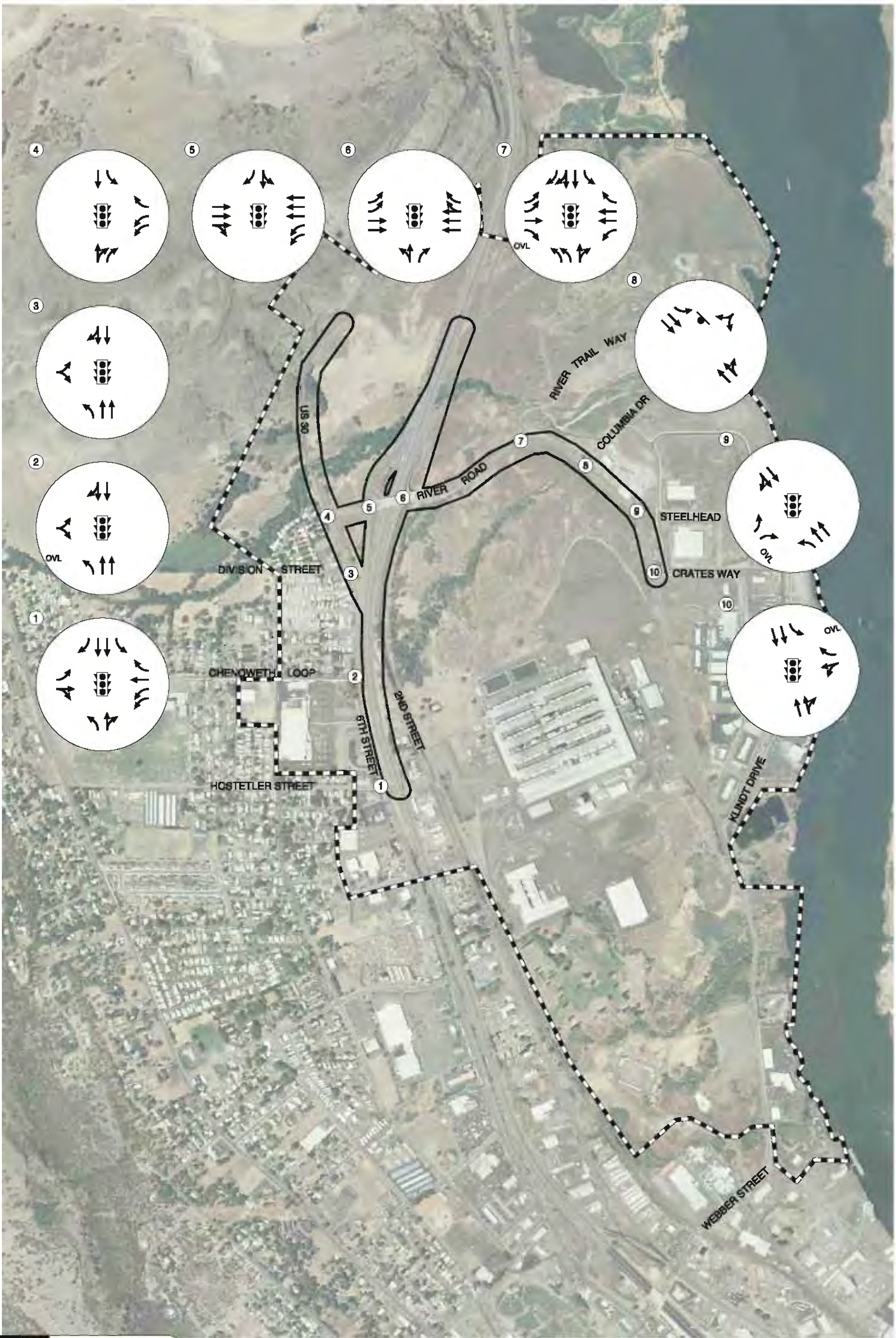
The operational analysis of roundabout alternatives is summarized in Table 6-2, based on NCHRP Report 572 methodology for single-lane and double-lane roundabouts. *Technical Memorandum #7 in Appendix "E" of the I-84 Chenoweth IAMP Technical Appendix provides a summary of the lane geometry assumed on each approach and summarizes the operational analysis.*

TABLE 6-2 ROUNDABOUT OPERATIONAL ANALYSIS SUMMARY

Geometry Information	West 6th Street/ Chenoweth Loop			West 6th Street/ River Road			River Road/River Trail Way			
	North Leg	West Leg	South Leg	East Leg	North Leg	South Leg	East Leg	North Leg	West Leg	South Leg
Number of Entry/ Exit Lanes	2/2	1/1	2/2	2/2	1/1	2/2	2/1	2/1	2/2	2/2
Right Turn By-Pass	No	No	No	No	No	No	No	Yes	No	No
Circulating Lanes	1	2	1	1	2	1	2	2	2	2
Performance Measure	2030 Operations without New Connection to West 2nd Street									
Critical Lane Volume//Capacity	0.63	0.51	0.70	0.64	0.24	0.75	0.65	0.71	0.81	0.65
Critical Lane Average Delay (sec)	10.0	13.2	11.6	9.4	9.5	12.7	16.3	27	23	15.2
95% Queue Length (ft)	125	75	150	125	25	200	125	150	225	125
Performance Measure	2030 Operations with New Connection to West 2nd Street									
Critical Lane Volume//Capacity	0.54	0.46	0.60	0.56	0.22	0.67	0.55	0.75	0.83	0.52
Critical Lane Average Delay (sec)	8.2	10.6	9.0	7.9	8.3	9.7	13.1	28.2	25.7	9.3
95% Queue Length (ft)	100	75	125	100	25	150	100	175	250	100

As shown in Table 6-2, the roundabouts are forecast to operate acceptably under Land Use Scenario #2 volume conditions, with or without a new connection to West 2nd Street. However, a connection to West 2nd Street reduces average delay at the West 6th Street/Chenoweth Loop and West 6th Street/River Road intersections. The operational analysis shows that a two-lane roundabout is needed at the River Road/River Trail Way intersection. At the West 6th Street/River Road intersection a partial two-lane roundabout is needed, which includes a two-lane circulatory roadway on the north approach and a single-lane circulatory roadway at the south and east approaches.

Signalized intersection alternatives were analyzed using Highway Capacity Manual procedures (Reference 3). Three signalized scenarios were evaluated with and without a new connection to West 2nd Street. Lane configurations were developed to provide acceptable operations at all study intersections. Given the directionality of the weekday p.m. peak hour volumes, through lanes were assumed to be equal in each direction of major traffic flow. A summary of mitigated lane configurations and traffic control devices are shown in Figure 6-23 and Figure 6-24. Figure 6-25 and Figure 6-26 summarize the operational analysis of the signalized mitigated scenarios.



LEGEND

OVL - OVERLAP

- STOP SIGN

- TRAFFIC SIGNAL

2030 MITIGATED LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
FUTURE NO BUILD
THE DALLES, OREGON

FIGURE **6-23**

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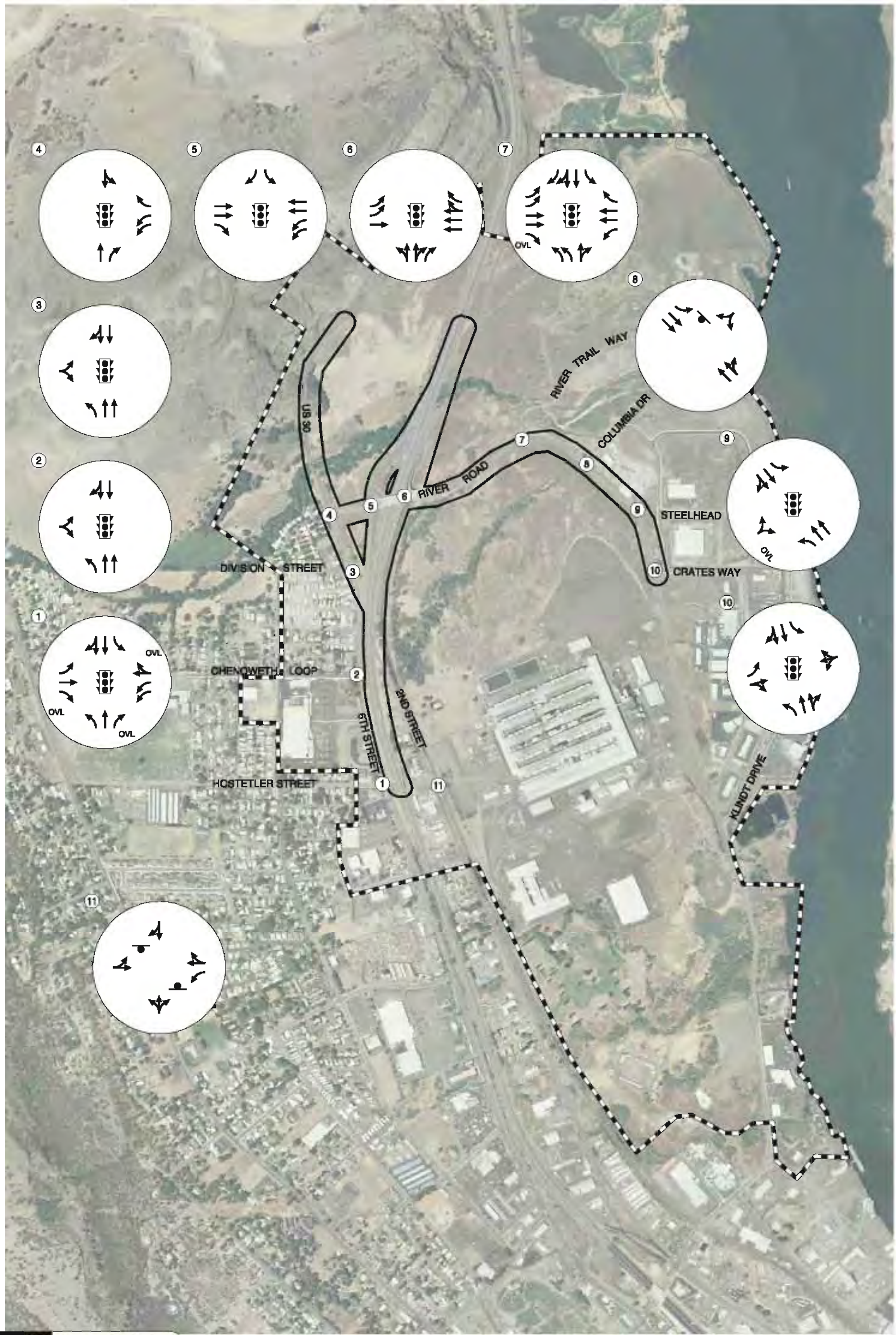

LEGEND

OVL - OVERLAP

- STOP SIGN

- TRAFFIC SIGNAL

2030 MITIGATED LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
2ND STREET CONNECTION
THE DALLES, OREGON

FIGURE **6-24**

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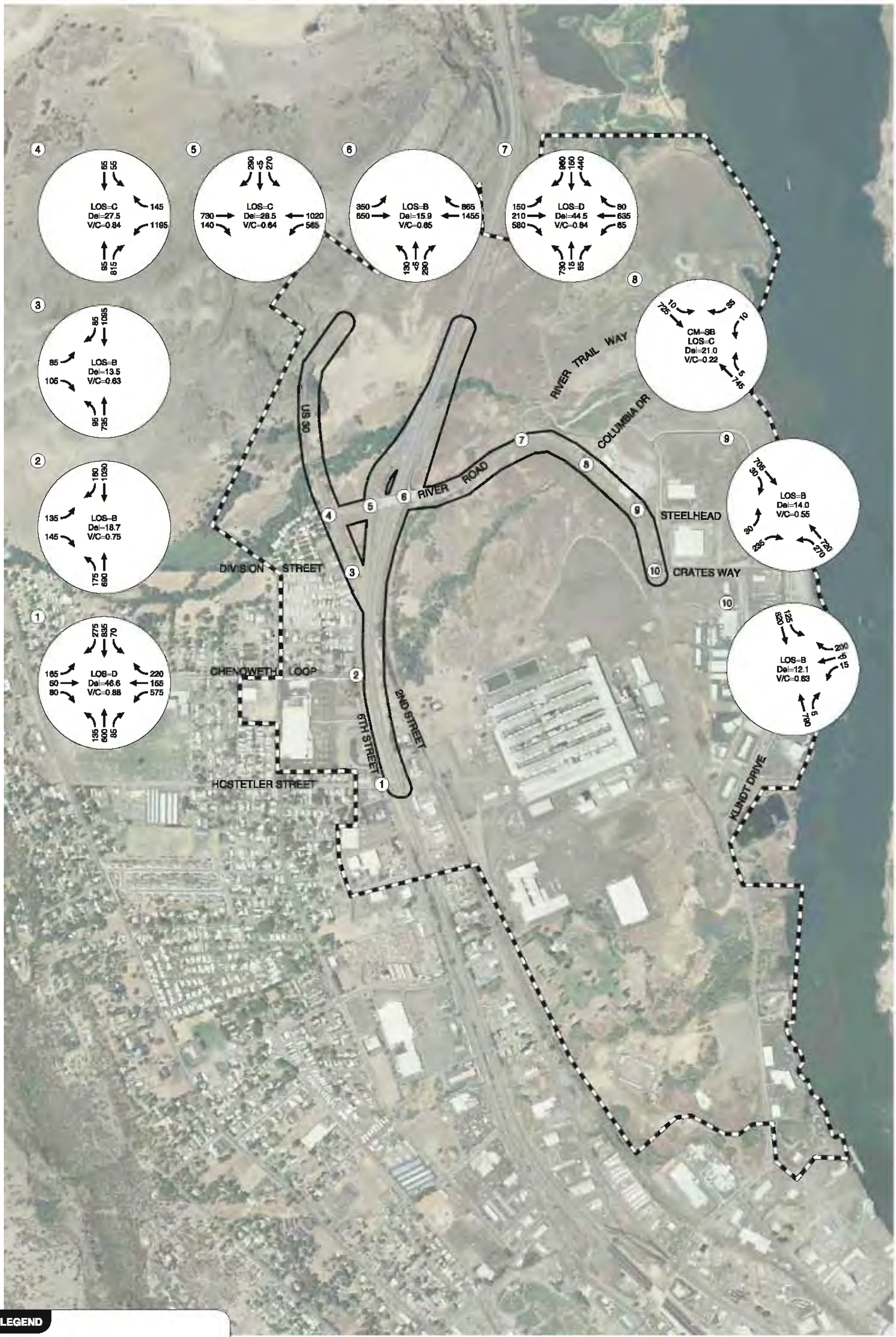

LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

2030 MITIGATED TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
FUTURE NO BUILD
THE DALLES, OREGON

FIGURE **6-25**

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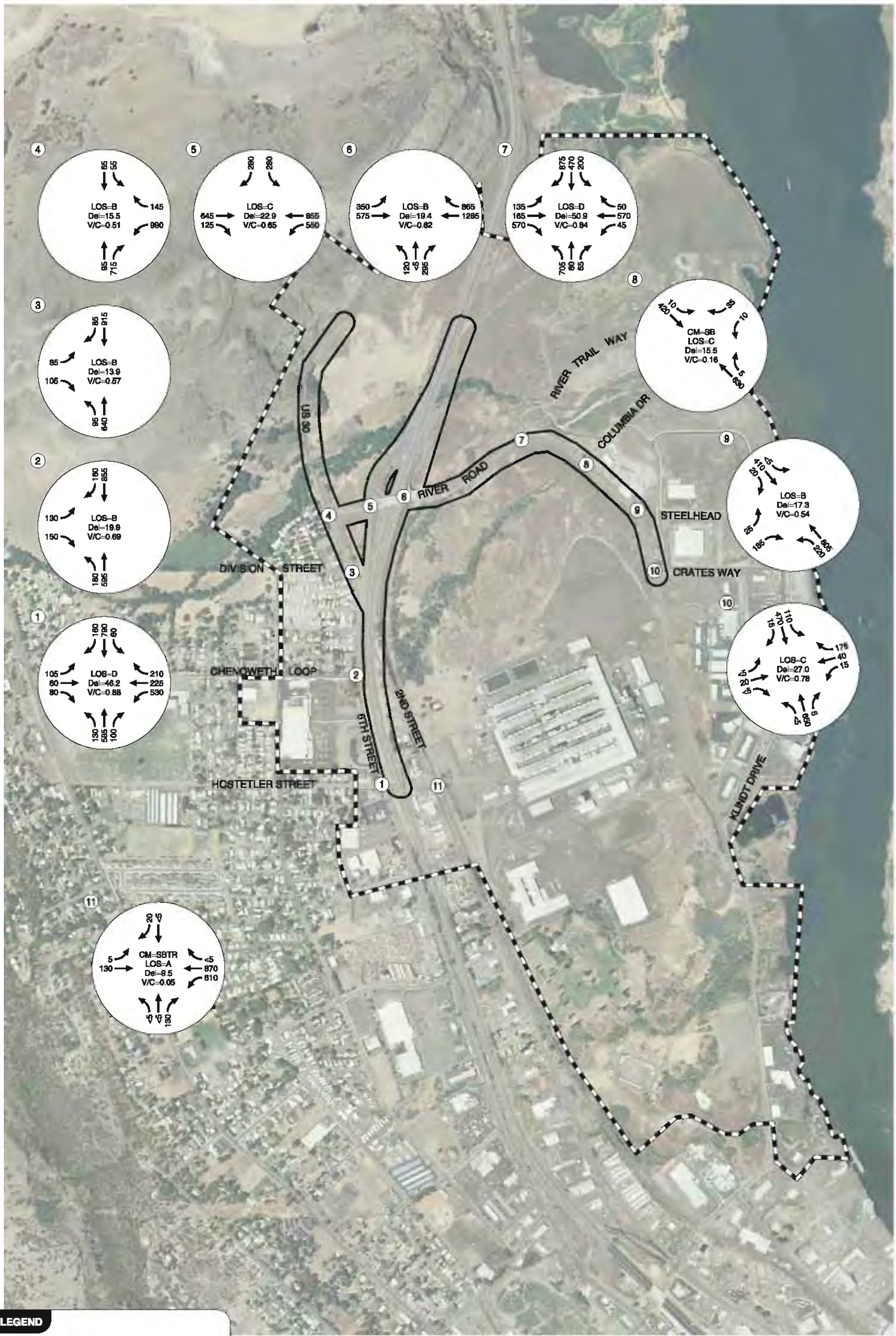

LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

2030 MITIGATED TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
2ND STREET CONNECTION
THE DALLES, OREGON

FIGURE **6-26**

Table 6-3 provides a summary of roadway cross-section for the critical approach to the three roundabout intersections as compared to the signalized options. The lane configurations are based on a maximum V/C ratio of 0.85 and future concepts with a new connection to West 2nd Street.

TABLE 6-3 INTERSECTION CONTROL CROSS-SECTION COMPARISONS

Intersection	Intersection Control	Critical Approach	Entering Lanes	Exiting Lanes	Total
River Road/ River Trail Way	Roundabout	Eastbound	2	2	4
	Traffic Signal		5	2	7
West 6th Street/ River Road	Roundabout	Westbound	2	1	3
	Traffic Signal		3	1	4
West 6th Street/ Chenoweth Loop	Roundabout	Eastbound	1	1	2
	Traffic Signal		1	1	2

As shown in Table 6-3, roundabouts can effectively minimize the width of intersection approaches as compared to signalized alternatives. At the River Road/River Trail Way intersection a roundabout is expected to reduce the number of lanes by three on the critical approach. If the intersection were to operate with a traffic signal, the eastbound approach would require two left-turn lanes, two through lanes, and an exclusive right-turn lane. Roundabouts are evaluated in greater detail in the Refined Concept Evaluation later in this section.

Concept W-1 included a roundabout option that combines the intersections of River Road at West 6th Street and I-84 Eastbound. Operational analysis of this roundabout option showed that this design could not provide adequate capacity. Therefore, **Concept W-1 was excluded from further study.** *Technical Memorandum #7 in Appendix "E" of the I-84 Chenoweth IAMP Technical Appendix includes a sketch of the roundabout alternative.*

PRELIMINARY QUALITATIVE EVALUATION

An initial comparison of the remaining 20 concepts was conducted based on a qualitative assessment of the evaluation criteria outlined in Section 1. The comparison is intended to identify those concepts that do not have any "'fatal flaws" and warrant further detailed evaluation.

To rank each of the concepts according to the evaluation criteria, a scoring system was developed. In essence, each evaluation criterion was assigned a range of numerical values (+2, +1, 0, -1, or -2). The concepts that achieve each metric better than others receive a "+2", those that do not impact the metric receive a "0", those that underperform compared to other concepts receive a "-2" score, and those that fall in between receive a "+1" or "-1" score. The following outlines the elements considered in the initial evaluation and aspects of each that characterized the variations between concepts:

Operations/Land Use/Economic Development

- Ability to develop land within the study area per existing zoning designations, with little or no restrictions (dependant on operational capacity).
- Additional connection to West 2nd Street is expected to reduce through traffic on River Road and West 6th Street, which provides for higher intensity of development and greater potential for growth.
- Additional connection to West 6th Street over/under I-84 (at Hostetler Street, Chenoweth Loop, or Snipes Street) is expected to reduce the number of lanes and congestion on the River Road overpass of I-84, which provides for higher intensity of development and greater potential for growth.

Cost

- Overpass/underpass crossing(s) of UP railroad.
- Overpass/underpass crossing of I-84.
- Bridge structure required for crossing Chenoweth Creek.

Property Impacts/Accessibility

- The ability to access properties and businesses within the study area to/from the regional infrastructure network.
- Non-perpendicular crossing of West 2nd Street impacts existing development more than perpendicular crossing.
- Crossings of West 2nd Street require retaining walls and extended length of roadway to return from above or below grade to existing grade.
- Collector or local roadways run parallel to West 2nd Street and impact existing businesses.

Environmental

- Roadway location conflicts with existing natural resource (Chenoweth Creek).
- Multiple local roadways increase the amount of paved roadway within the area and impact the amount of storm water runoff.

Table 6-4 provides a summary of the initial evaluation of concepts based on these elements.

TABLE 6-4 INITIAL QUALITATIVE CONCEPT EVALUATION

Concept	Operations	Cost	Property Impacts	Environmental	Average Score	Forwarded for Further Consideration?
E-1	1	-2	-2	0	-0.75	No
E-2A	1	-2	-1	0	-0.50	No
E-2B	1	-2	-2	-1	-1.00	No
E-2C	1	-2	-1	0	-0.50	No
E-3A	1	-1	-1	0	-0.25	Yes
E-3B	1	-1	-1	-1	-0.50	Yes – combined with E-3C
E-3C	1	-1	-1	0	-0.25	Yes – combined with E-3B
E-4A	2	-2	-2	-1	-0.75	Yes – modified to include Snipes Street underpass only
E-4B	2	-2	-1	-1	-0.50	No
E-5	0	-1	-1	-1	-0.75	No
E-6	1	0	-2	-2	-0.75	No
E-8	1	-1	0	-1	-0.25	Yes
W-2	1	-1	0	0	0.00	Yes
W-3	1	-1	0	0	0.00	Yes
W-4	1	-1	0	0	0.00	Yes
W-5	0	-1	0	0	-0.25	Yes
W-6	0	-1	-1	0	-0.50	No
N-1	-1	0	0	0	-0.25	Yes
N-2	1	-1	0	0	0.00	Yes
N-3	0	-1	0	-1	-0.50	No

Each concept was compared to other concepts within each sub-area of the study area and the lowest scoring concepts were removed from further consideration. Each concept that scored an average of -0.50 or less was not forwarded for further evaluation with two exceptions (E-3C and E-4A which were forwarded for further evaluation with modifications to improve their viability). Five easterly, four westerly, and two northerly concepts were forwarded for additional evaluation based on this criteria. Table 6-5 provides additional information on the primary reason a concept was recommended for elimination or modification.

TABLE 6-5 PRIMARY REASON FOR CONCEPT ELIMINATION OR MODIFICATION

Concept	Average Score	Recommended for Further Evaluation?	Primary Reason for Concept Elimination or Modification
E-1	-0.75	No	Proposed interchange would not meet interchange spacing standards and would not provide new local east-west connectivity.
E-2A	-0.50	No	There is no significant operational benefit of providing two grade-separated crossings to West 2nd Street as compared to one as provided in Concept E-3A, B, and C.
E-2B	-1.00	No	There is no significant operational benefit of providing two grade-separated crossings to West 2nd Street as compared to one as provided in Concept E-3A, B, and C.
E-2C	-0.50	No	There is no significant operational benefit of providing two grade-separated crossings to West 2nd Street as compared to one as provided in Concept E-3A, B, and C.
E-3A	-0.25	Yes	NA
E-3B	-0. 50	Yes	Concept E-3B and E-3C are similar in that they both include one grade-separated crossing located at Hostetler Street and were combined into one alternative (E-3D) that reduces the property impacts at Webber Street and the proposed collector roadway and combines the intersections of River Trail Way, the proposed north-south collector roadway, and River Road as the intersection spacing in Concept E3-C is undesirable.
E-3C	-0.25	Yes	
E-4A	-0.75	Yes	Modify to remove the Hostetler Street underpass as there is no significant operational benefit of providing two grade-separated crossings and Concept E-3 presents the Hostetler Street grade-separation Concept.
E-4B	-0.50	No	A grade-separated crossing of the UP line to West 2nd Street is infeasible due to the constraints of distance for grade-transition and property access.
E-5	-0.75	No	Does not provide operational relief to the Chenoweth Interchange and directs additional traffic to the Webber Street Interchange.
E-6	-0.75	No	An at-grade crossing of the UP line with a public roadway is unlikely to be permitted.
E-7	N/A	No	Does not provide necessary connectivity to West 2nd Street and results in the need for severe reduction of development potential.
E-8	-0.25	Yes	NA
W-1	N/A	No	Operational analysis indicated the roundabout operations would not meet mobility standards.
W-2	-0.50	Yes	NA
W-3	0.00	Yes	NA
W-4	0.00	Yes	NA
W-5	-0.25	Yes	NA
W-6	-0.50	No	Property impacts too severe.
N-1	-0.25	Yes	NA
N-2	0.00	Yes	NA
N-3	-0.50	No	Bridge structure would have environmental impacts and would provide no significant operational benefit.

Based on the initial screening of the concepts, the following concepts were forwarded to be refined and evaluated in greater detail:

East concepts

- E-3A
- E-3B/C (Hybrid)
- E-4A (Modified)
- E-8

West Concepts

- W-2
- W-3
- W-4
- W-5

North Concepts

- N-1
- N-2

The preliminary screening process led to further evaluating local circulation and access designs for four easterly concepts (E-3A, E-3B/C Hybrid renamed as E-3D, a Modified E-4A renamed as E-4C, and E-8), four westerly concepts (W-2, W-3, W-4, and W-5), and two northerly concepts (N-1 and N-2). The two modified concepts are shown in Figure 6-27 and Figure 6-28. Each of the above concepts was evaluated in greater detail.

LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-3D: HOSTETLER STREET EXTENSION
THE DALLES, OREGON

FIGURE 6-27

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-4C: SNIPES STREET CROSSING
THE DALLES, OREGON

FIGURE 6-28

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REFINED CONCEPT EVALUATION

Given the remaining alternatives, the refined concept evaluation focused on identifying a preferred design concept within each concept area. The selection of a preferred concept in each concept area was impacted by the selected design concepts within the other areas. Therefore, the preferred concept in the area that is least impacted by others was selected first.

The magnitude and cost of potential improvements are greatest within the easterly concept area, while the westerly concepts are most impacted by the other concept areas; therefore, the preferred concept was identified for the northerly area (recognized as the most independent) and then the easterly area prior to identifying the preferred concept for the westerly area. Evaluation and selection of a preferred concept considered: the preferred location of a new east-west crossing of I-84, preliminary project cost estimates, and intersection operations.

Northerly Concept Refinement

Two concepts were qualitatively compared north of River Road and east of I-84: N-1 and N-2. The primary differentiator between the two concepts is a new crossing of I-84 approximately 2,000 feet north of the I-84 Chenoweth Interchange, as shown in Concept N-2. Given that the forecast distribution of trips to/from this portion of the study area (Sub-area "A") is primarily to/from the south of the I-84 Chenoweth Interchange and along the I-84 corridor, it is not expected that much traffic would divert to the north in order to return south on US Highway 30. Ultimately, the new connection would also increase the needs at the Highway 30/River Road/West 6th Street intersection. There would be operational benefits at the River Road/River Trail Way intersection but they are not sufficient enough to outweigh the cost of the potential overpass. **Therefore, the northerly concept without a new crossing of I-84, as shown in Concept N-1, was incorporated into a preferred local circulation and access design concept. Included in this concept is the recommendation that right-of-way be preserved that would provide the option for a future overpass.** This overpass could have significant system benefits if the city were to expand its urban growth boundary in the future in the area northwest of the interchange along US Highway 30.

Easterly Concept Refinement

As discussed previously and as summarized in Table 6-1, providing a new east-west connection across I-84 and the UPRR allows more development to occur consistent with the existing comprehensive plan, while maintaining a feasible cross-section on the River Road overpass of I-84. The evaluated crossing locations are identified from north to south:

- North 2nd Street Overpass (Concept E-3A)
- Chenoweth Loop Underpass (Concept E-8)
- Hostetler Street Underpass (Concept E-3D)
- Snipes Street Overpass (Concept E-4C)

An evaluation of the crossing locations was conducted that considered the preliminary cost, traffic operations, and property impacts.

Cost Estimates

Cost estimates (excluding right-of-way) were prepared to evaluate the financial impacts of each alternative location. Table 6-6 summarizes the cost estimates for each proposed crossing location. *Technical Memorandum #7 in Appendix "E" of the I-84 Chenoweth IAMP includes the detailed summary of the preliminary cost estimates.*

TABLE 6-6 PRELIMINARY COST ESTIMATES OF EAST-WEST CROSSING ALTERNATIVES

Crossing Location	Cost Estimate (millions)[1]
North 2nd Street Overpass (E-3A)	$19.8
Chenoweth Loop Underpass (E-8)	$20 to $30
Hostetler Street Underpass (E-3D)	$14.1
Snipes Street Overpass (E-4C)	$32.2

[1]Includes 40-percent contingency

The order of magnitude of the preliminary cost estimates shown in Table 6-6 is primarily related to the bridge and retaining wall construction costs. The crossing with the highest estimated cost, at Snipes Street, is greater than two times the cost of the Hostetler Street Extension. This cost differential reflects the length of the bridge structure needed to go over the UP Railroad and I-84 which was estimated to include two bridge structures totaling 220 feet. In comparison, the UP Railroad overcrossing structure at Hostetler Street is estimated at 130 feet.

A specific cost estimate was not prepared for the Chenoweth Loop Underpass, but an estimated cost range was developed based on a relative comparison with other crossing locations. The Chenoweth Loop Underpass is expected to be more expensive than concept E-3A, but less expensive than Concept E-4C. The following assumptions form the basis for this comparison:

- In the vicinity of Chenoweth Loop the elevation of 6th Street is approximately six to eight feet below the elevation of I-84. Therefore, an undercrossing will have less impact to businesses and properties along 6th Street and Chenoweth Loop than an overpass.
- New bridge structures would be needed to support I-84 and the UPRR where Chenoweth Loop would pass under each.
- Retaining walls would be needed under both I-84 and the UPRR, and along 6th street and Chenoweth Loop to minimize impacts to adjacent properties.
- Given the grade separation between existing roads and I-84, less excavation (total earthwork) would be required at Chenoweth Loop than at Snipes Street.

Qualitative Assessment of Operations

Each proposed east-west crossing location was evaluated with respect to the benefits or impacts each crossing has on traffic operations. Although operations were evaluated as part of the preliminary assessment, the impacts on operations were considered in more detail under the refinement evaluation.

Additional refinements to this operational analysis included limiting the Hostetler Street undercrossing to three lanes. As shown in Exhibit 6-1, the existing cross-section is two-lanes. A detailed assessment of the I-84 underpass at Hostetler Street showed that a three-lane cross-section is the maximum that can be accommodated under the existing structure, while providing reasonable clearance to the columns. The distance between the existing bridge piers is approximately 50 feet, providing approximately 6 to 7 feet on either side of the travel lanes between the fog line and the piers. Sidewalks and bike lanes would be provided behind the piers. Reconstruction of the underpass to accommodate additional lanes is a possibility but, in order to minimize cost, widening is not proposed at this time.

Exhibit 6-1 Photo of Hostetler Street Undercrossing of I-84 (Looking East)

North 2nd Street Overpass (E-3A)

As shown in Concept E-3A, north of Hostetler Street the proposed crossing of the UP Railroad would connect West 2nd Street to River Road and provide an east-west connection at Hostetler Street. This crossing location is expected to have three shortcomings and no unique benefits compared to Concept E-3D. The shortcomings include:

- Low potential for diversion of traffic from River Road
    - It is expected that a significant proportion of traffic on the River Road using the I-84 Chenoweth Interchange bridge would not divert to the new connection route. This is expected due to the orientation of the overcrossing and resulting location of a

local street connection to River Road within the northern portion of the Easterly Concept Area.

- High proportion of turning movements at West 2nd Street/Hostetler Street
    - Operationally, the majority of traffic that reroutes to use the new east-west connection would be making a southbound right-turn during weekday p.m. peak hour and an eastbound left-turn during the weekday a.m. peak hour at the West 2nd Street/Hostetler Street intersection. The larger proportion of turn movements generated with the new connection is expected to reduce the operational capacity of the West 2nd Street/Hostetler Street intersection compared to the connection to West 2nd Street at Hostetler in Concept E-3D.
- High potential for impacting traffic operations at Webber Street
    - The orientation of the UP Railroad crossing would direct through movements onto West 2nd Street in the southbound direction. Much of this traffic would be expected to continue straight on West 2nd Street and increase traffic volumes at the I-84 Webber Street interchange. Furthermore, the northerly location of the east-west connection under this scenario would not be as likely to attract east-west trips from the Easterly Concept Area that currently utilize the Webber Street interchange to access West 6th Street.

Chenoweth Loop Underpass (E-8)

Concept E-8 would create a new undercrossing of I-84 and the UPRR at Chenoweth Loop. In the vicinity of Chenoweth Loop the elevation of 6th Street is approximately six to eight feet below the elevation of I-84, which makes an underpass more feasible than an overpass. Two new bridge structures would be needed to support I-84 and the UPRR where Chenoweth Loop would pass under each. Retaining walls would be needed under both I-84 and UP Railroad, and along 6th street and Chenoweth Loop to minimize impacts to adjacent properties.

Given the location of Chenoweth Loop with respect to the Chenoweth and Webber Interchanges, the Chenoweth Loop Underpass is expected to provide a lesser diversion of traffic than the Hostetler Street and Snipes Street Crossing locations from the Chenoweth Interchange and a greater diversion than the North 2nd Street Overpass. Relative to other crossing locations the Chenoweth Loop location is expected to have less impact on the Webber Street interchange than the Hostetler Street Underpass given that drivers may utilize a new intersection on 2nd Street to connect to Webber Street and less will do so if the underpass of I-84 is further from Webber Street.

Hostetler Street Underpass (E-3D)

As shown in Concept E-3D (a hybrid of E-3B and E-3C), an extension of Hostetler Street could provide access to/from River Road from multiple directions. The concept includes an undercrossing of the UPRRUPRR that would be constructed to allow through traffic using the existing undercrossing of I-84 to access West 6th Street. The undercrossing of I-84 at West 6th Street includes two bridge structures carrying I-84 eastbound and westbound traffic and lowering of West 6th Street and Hostetler Street. Due to the cost and impacts to property access of, constructing bridges on I-84

and lowering West 6th Street, such a connection would be very difficult to replicate at another location under existing conditions.

This connection location is expected to provide several benefits and has no negative operational impacts relative to the other Hostetler Street crossing, Concept E-3A. The greatest benefit is moderate to high potential for diversion of future traffic from River Road and potentially the Webber Street interchange. The location of this crossing allows for a connection to River Road approximately midway between the existing I-84 interchanges at a location that is familiar to motorists.

Snipes Street Overcrossing (E-4C)

Concept E-4C includes a new overcrossing of I-84 and the UP railroad at Snipes Street. This new connection provides an alternative to a crossing of I-84 at Hostetler Street, but the benefits of this location are not expected to outweigh the additional costs of a new grade-separated crossing of I-84. (While there is an existing grade-separation of I-84 and Hostetler Street providing connectivity between West 2nd Street and West 6th Street, no such connection is currently provided at Snipes Street.)

It is expected that this crossing location will have low potential for diversion of traffic from River Road due to its southerly location. The amount of traffic that is expected to be diverted from the River Road overpass of I-84 to a new Snipes Street crossing is expected to be less than the Hostetler Street location and less than the location north of Hostetler, given that Snipes Street is closer to the Webber Street interchange.

Property Impacts of Grade Changes

Preliminary estimates of grade changes associated with each crossing were prepared by CH2MHill based on field observations of existing elevations. Given the required clearance for an under or over crossing of the UP Railroad and I-84, the distance required to tie back into existing roadway grade is expected to range from 200 to 1000 feet depending on the existing elevations. Until survey information is obtained, these represent a conservative estimate based on relative differences in elevation. The following sections outline the estimated impacts of grade changes to the roadways based on the proposed crossing form at each location.

North 2nd Street Overpass (E-3A)

As shown in Figure A, the North 2nd Street Overpass is expected to impact properties along 2nd Street from the proposed overpass location south to Hostetler Street (approximately 1000 feet). Retaining walls would be required to gain elevation prior to the overpass of the UP Railroad and may block access to four to five parcels on the west side of 2nd Street. This crossing location does not impact 6th Street, however capacity constraints at the 2nd Street/Hostetler Street intersection may reduce the potential operational benefit of this location.

Depending on approval of the proposed Wal-Mart in the southwest quadrant of the I-84 Chenoweth Interchange, the alignment shown may need to be modified to avoid impacts to the site plan.

Chenoweth Loop Underpass (E-8)

Given the existing difference in elevation between I-84 and 6th Street at Chenoweth Loop, retaining walls are expected to be required up to 800 feet in each direction from the 6th Street/Chenoweth Loop intersection and the 2nd Street/Chenoweth Loop intersection. Both intersections would be below grade in order to go under I-84 and the UPRR. Within 800 feet of the 6th Street/Chenoweth Loop intersection access to commercial and residential properties would be impacted, including access to Home Depot which has primary access on 6th Street and secondary access on Chenoweth Loop. On 2nd Street three to four parcels would likely be impacted.

Hostetler Street Underpass (E-3D)

The Hostetler Street Underpass location is expected to result in the least number of properties impacted by grade changes and associated retaining walls given the existing underpass of I-84 at Hostetler Street. As shown in a photo taken in the southbound direction on 6th Street, the existing elevation of 6th Street at Hostetler Street is depressed in order to provide the existing undercrossing. Construction of an undercrossing of the UPRR on Hostetler Street would require reduction in elevation of 2nd Street, but minimizes impacts to properties on 6th Street.

Snipes Street Overcrossing (E-4C)

As shown in Figure D, the Snipes Street Overcrossing alternative includes two overpass structures that span I-84 and the UPRR east of 2nd Street. In order to provide an overpass of I-84 and the UPRR, while maintaining connections on 6th Street and 2nd Street, the elevation of each roadway will be increased to match grade with the overpass structure. Retaining walls would be utilized to obtain grade increases which are expected to impact access to residential and commercial properties on 2nd Street and 6th Street for up to 1,000 feet in each direction from the intersections. Given the density of existing development on 6th Street and 2nd Street (residential and commercial) within the vicinity of the Snipes Street, this crossing location has the greatest impact on existing property access relative to other crossing locations.

Comparison of East-West Crossing Locations

The crossing locations were ranked relative to one another with respect to preliminary cost estimates, property impacts, and expected operational benefits. Each crossing location was ranked on a scale of one to three. The highest ranking crossing location in each category (1 being the highest, 3 being the lowest) provided the lowest cost estimate, the least impacts to adjacent properties, and the greatest operational benefits. Operational benefits were measured by the potential to divert traffic from the Chenoweth Interchange and not increase traffic impacts to the Webber Street interchange. A summary of the relative ranking of east-west crossing locations is provided in Table 6-7.

TABLE 6-7 RELATIVE COMPARISON MATRIX OF EAST-WEST CROSSING LOCATIONS

Crossing Location	Cost Estimate Rank	Property Impact Rank (# of Properties Impacted)	Potential to Divert Traffic from Chenoweth Interchange Rank	Potential to Negatively Impact Webber Interchange Rank	Total Ranking Score
North 2nd Street Overpass (A)	2	2 (7)	3	4	11
Chenoweth Loop Underpass (B)	3	3 (20)	2	2	10
Hostetler Street Underpass (C)	1	1 (4)	1	3	6
Snipes Street Overcrossing (D)	4	4 (26)	4	1	13

As shown in Table 6-7, the Hostetler Street Underpass is expected to provide the relatively best location for a new east-west crossing when considering the cost, anticipated property impacts, and impacts to adjacent I-84 interchanges. In addition it should be noted that the Hostetler Street Underpass has access impact to four properties while the three remaining alternatives impact seven or more properties. For example, the Chenoweth Loop Road underpass would impact approximately 20 properties.

As shown in Table 6-7, the Hostetler Street crossing alternative scored the best in all four categories. **Therefore, the Hostetler Street crossing alternative, as shown in Concept E-3D, was incorporated into the preferred circulation and access design concept.**

Westerly Concept Refinement

The following refined concept evaluation focuses on identifying the preferred design concept for the west concept area. Four westerly concepts have been included in refined evaluation: W-2, W-3, W-4, and W-5. The critical elements that distinguish westerly concepts from one another include feasibility of roundabout intersection control and the type of access control measures implemented. Both elements are discussed in the following sections.

Roundabout vs. Signalized Operations

Roundabouts and signal alternatives were considered in order to serve the forecast demand volumes at West 6th Street/River Road, West 6th Street/Chenoweth Loop, and West 6th Street/Hostetler Street. The operational analysis results are summarized below. For this analysis it was assumed that Concept N-1 and E-3D are the preferred concepts for their respective areas (i.e., there will not be a future I-84 overpass north of the Chenoweth Interchange and there will be an I-84 and UP railroad underpass at Hostetler Street).

All traffic volumes were developed based on a conservative estimate of future traffic demand generated by new developments. This was assumed to be achieved by a future volume scenario that includes development of up to 85 percent of full development as allowed under Land Use Scenario #2. This does not represent the maximum development that could occur, but represents a likely development scenario for the purpose of comparison between traffic control types.

West 6th Street/River Road

At the West 6th Street/River Road intersection, Concepts W-2 and W-3 propose a roundabout, Concept W-4 proposes a "T" intersection, and Concept W-5 proposes a signalized intersection.

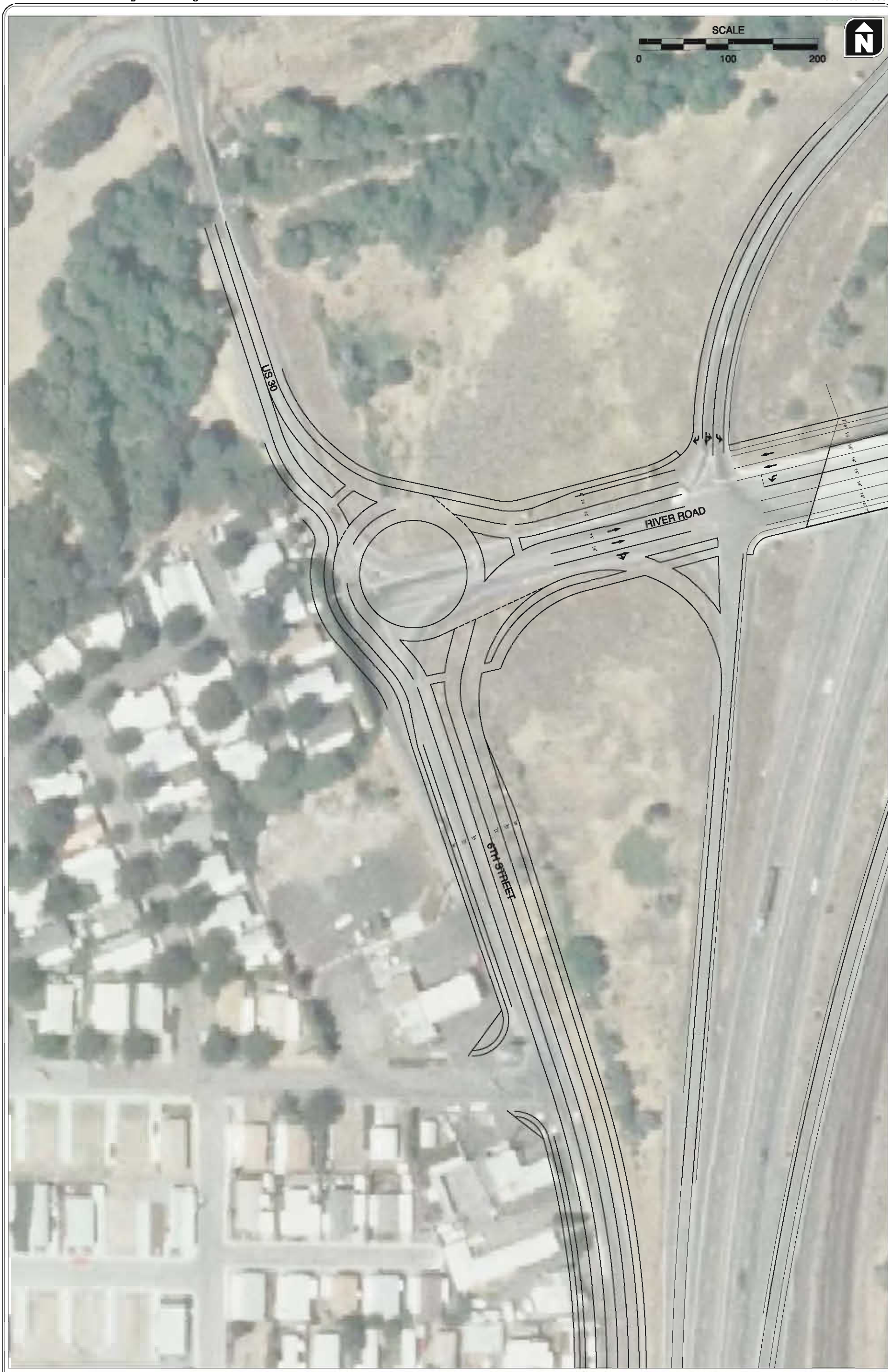
Given the demand volumes anticipated on West 6th Street the analysis assumed a 5-lane section on West 6th Street south of River Road through Hostetler Street. This cross-section includes two southbound lanes, one center turn lane, and two northbound through lanes. During the weekday p.m. peak hour, the southbound traffic warrants two through lanes. In order to account for weekday a.m. peak hour directional traffic, an equal cross-section was assumed in the northbound direction.

Table 6-8 provides a summary of the roundabout and signal operations at the West 6th Street/River Road intersection.

TABLE 6-8 ROUNDABOUT AND SIGNAL OPERATIONS AT WEST 6TH STREET/RIVER ROAD

Geometric Description	Signalized			Roundabout		
	East Leg	North Leg	South Leg	East Leg	North Leg	South Leg
Entry Lanes	2	1	2	2	1	2
Right Turn By-Pass?	N/A			NO	NO	NO
Circulating Lanes	N/A			1	2	1
Exit Lanes	N/A			1	1	2
Performance Measure						
Critical Lane Volume / Capacity	0.58			0.50	0.20	0.28
Critical Lane Average Delay (sec)	13.9			7.0	7.4	4.7
95% Queue Length (ft)	200	100	150	75	25	50

As shown in Table 6-8 the operational benefits of a roundabout include reduced delay and queuing. Figure 6-29 conceptually shows the right-of-way impacts expected with a roundabout. As shown, a two-lane roundabout could be constructed at this location without significant impacts to adjacent properties.



PRELIMINARY ROUNDABOUT DESIGN AT 6TH STREET/RIVER ROAD
THE DALLES, OREGON

FIGURE **6-29**

West 6th Street/Chenoweth Loop

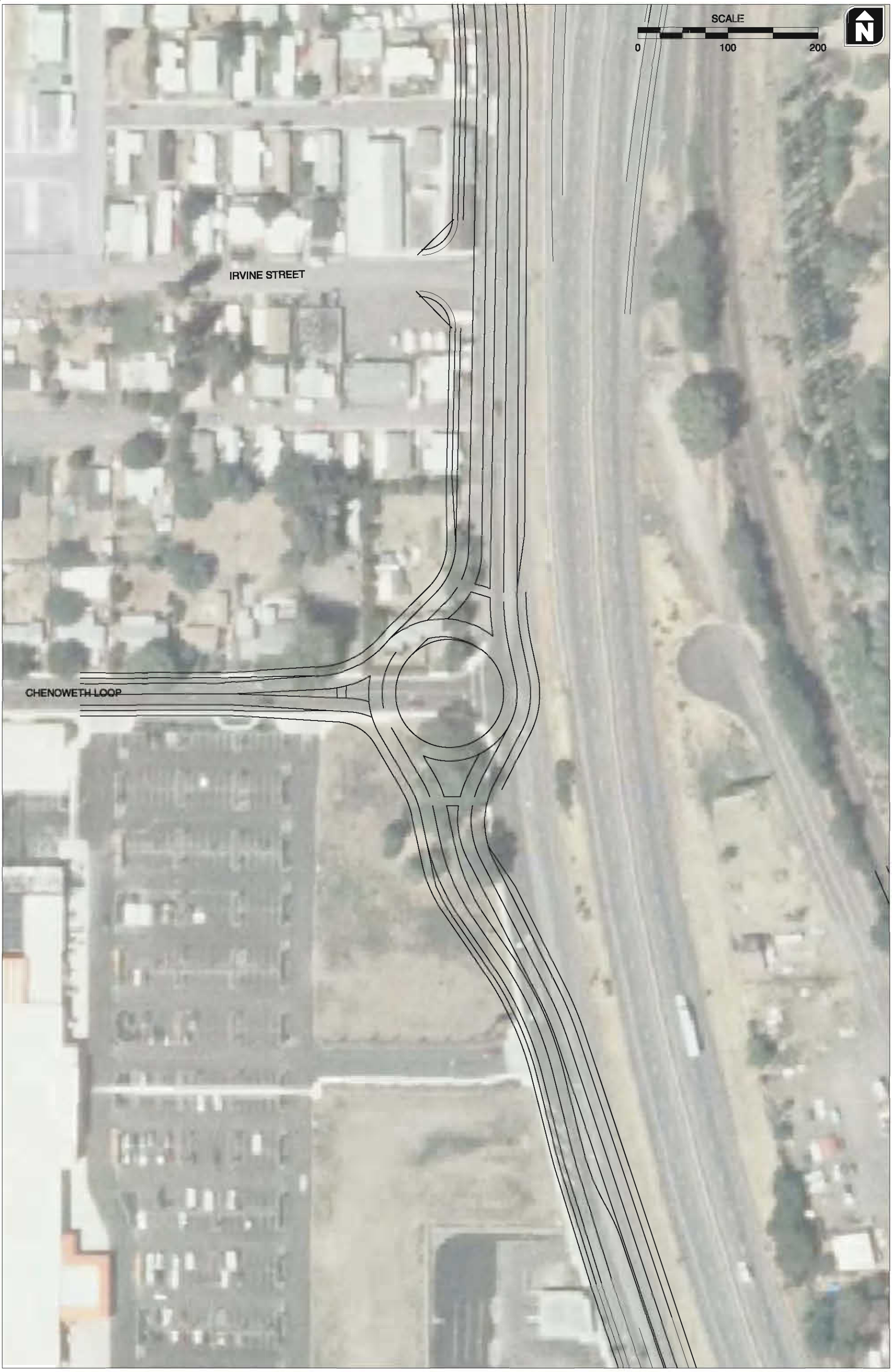
Concept W-3 proposes a roundabout at the West 6th Street/Chenoweth Loop intersection, while Concepts W-2, W-4, and W-5 propose a signalized intersection. Table 6-9 provides a summary of the signal and roundabout operations at West 6th Street/River Road

TABLE 6-9 ROUNDABOUT AND SIGNAL OPERATIONS AT 6TH STREET/CHENOWETH LOOP

Geometric Description	Signalized			Roundabout		
	North Leg	West Leg	South Leg	North Leg	West Leg	South Leg
Entry Lanes	2	1	2	2	1	2
Right Turn By-Pass?	N/A			NO	NO	NO
Circulating Lanes	N/A			1	2	1
Exit Lanes	N/A			2	1	2
Performance Measure						
Critical Lane Volume / Capacity	0.44			0.52	0.37	0.35
Critical Lane Average Delay (sec)	9.4			8.4	8.4	5.7
95% Queue Length (ft)	250	200	150	50	25	50

As shown in Table 6-9, a roundabout is forecast to operate with less delay and queuing than the signal. However, both a roundabout and signal provide adequate capacity and minimal delay.

Figure 6-30 shows a conceptual design of a two-lane roundabout and illustrates the right-of-way impacts of a roundabout at the West 6th Street/Chenoweth Loop intersection. The sketch shows the additional right-of-way required for sidewalks and utilities as a dashed line. As shown in Figure 6-30, a two-lane roundabout could be constructed at this location, but would impact adjacent property, including recently constructed businesses in front of the Home Depot in the southwest quadrant of the intersection.



PRELIMINARY ROUNDABOUT DESIGN AT 6TH STREET/CHENOWETH LOOP
THE DALLES, OREGON

FIGURE 6-30

West 6th Street/Hostetler Street

Table 6-10 provides a summary of the signal and roundabout operations at West 6th Street/Hostetler Street

TABLE 6-10 ROUNDABOUT AND SIGNAL OPERATIONS AT 6TH STREET/HOSTETLER STREET

Geometric Description	Signalized				Roundabout			
Approach	East	North	West	South	East	North	West	South
# Entry Lanes	2	4	3	4	2	2	1	2
Right Turn By-Pass	N/A				NO	NO	NO	NO
Circulating Lanes	N/A				2	2	2	1
Exit Lanes	N/A				1	2	1	2
Performance Measures								
Critical Lane Volume/Capacity	0.91				0.58	0.73	0.59	0.44
Critical Lane Average Delay, sec	35.2				12.3	19.6	18.4	7.2
95% Queue Length, ft	250	275	125	150	100	175	100	75

As shown in Table 6-10, a roundabout is forecast to operate with less delay and queues than the signal. However, a roundabout or a signal provides adequate capacity and minimal delay.

Figure 6-31 shows a conceptual design of a two-lane roundabout and illustrates the right-of-way impacts of a roundabout at the West 6th Street/Hostetler Street intersection. As shown in Figure 7-7, a two-lane roundabout could be constructed at this location, but would significantly impact adjacent property, including businesses in the southwest quadrant and the northwest quadrant of the intersection.

Access Control

In order to provide access control and improve traffic flow along West 6th Street, a median is proposed in Concepts W-5 and W-3. The challenge associated with a continuous center lane median is the ability to provide access to all sites through right-in/right-out movements, which requires u-turns at the intersections. If two roundabouts are provided on West 6th Street at River Road and Chenoweth Loop, u-turns by both passenger cars and large vehicles can be made relatively easily. However, if signals are installed along with a median, as proposed in Concept W-5, u-turns by large vehicles cannot be made in the southbound direction at Chenoweth Loop or in the northbound direction at River Road.

PRELIMINARY ROUNDABOUT DESIGN AT 6TH STREET/HOSTETLER STREET
THE DALLES, OREGON

FIGURE 6-31

Westerly Concept Comparison

The operational analysis showed that roundabouts will operationally perform better than signals along the West 6th Street corridor. However, due to right-of-way impacts, a roundabout is not recommended at the West 6th Street/Hostetler Street intersection.

Future traffic volume forecasts indicate that 6th Street will need to be a 5-lane facility in the future. For safety reasons, a center median is proposed on West 6th Street from River Road to Chenoweth Loop to prevent left-out turns at public street intersections and all left-turn movements at driveways, as shown in Concepts W-3 and W-5. Left-in movements would be provided at Division Street and Irvine Street. At the north and south termini of the median either roundabouts or signals are feasible, although it is anticipated that shorter queuing at the roundabout intersections as compared to the signalized intersection treatments will allow for more left-turn access to be provided than if signalized treatments are used.

The roundabout intersections are anticipated to provide greater access to properties impacted by a median because they would provide the ability for vehicles to make u-turns at either end of the median section. U-turns are unlikely to be feasible at a signalized intersection treatment at 6th Street/River Road and 6th Street/Chenoweth Loop Road because these are three-leg t-intersections without the northbound left and southbound left-turn movements, respectively, that would typically accommodate a u-turn. Furthermore, if a u-turn lane and signal phase were added to the intersections, the geometry would make u-turns difficult for any vehicle larger than a passenger car.

Although access management measures shown in Concepts W-2 and W-4 are expected to improve traffic flow within the vicinity of the interchange, they do not provide as much access control as a median. Additionally, Concepts W-2 and W-4 impose full driveway closures, which may have a significant impact on the viability of local businesses.

In order to effectively serve businesses while maintaining access control through a median, left-in turns would be provided at Division Street and Irvine Street and u-turns would be provided at the Chenoweth Loop and River Road intersections. A fourth signal phase (a u-turn specific phase) would need to be added to the existing 3-phase signalized intersections at River Road and Chenoweth Loop, if a roundabout is not constructed. This would reduce the projected traffic capacity at these intersections and may increase the number of needed lanes at the intersection or reduce the amount of development that could be accommodated by the proposed improvements. **Therefore, a continuous median on West 6th Street from River Road to Chenoweth Loop with openings for left-turns off of West 6th Street at Division Street and Irvine Street, as shown in Concept W-2, is included in the preferred local circulation and access design concept. Roundabouts are preferred at River Road and Chenoweth Loop and a signal is preferred at the Hostetler Street intersection on West 6th Street.**

PREFERRED ALTERNATIVE REFINED CAPACITY ANALYSIS

The refined concept evaluation resulted in selection of a preferred concept from the easterly, westerly, and northerly local circulation and design concepts. Concepts N-1, E-3D, and W-2 were selected and together form the preferred alternative.

Refined analysis of the preferred alternative was conducted to improve upon the accuracy of the capacity estimates provided by the preliminary evaluation of alternatives. The refined analysis focused on identifying the maximum development that could occur in the study area assuming implementation of the improvements identified in the preferred alternative. Additionally, the analysis helped to identify the timeline in which improvements will need to be made as development occurs over the next 20 or more years.

Refined Analysis Assumptions

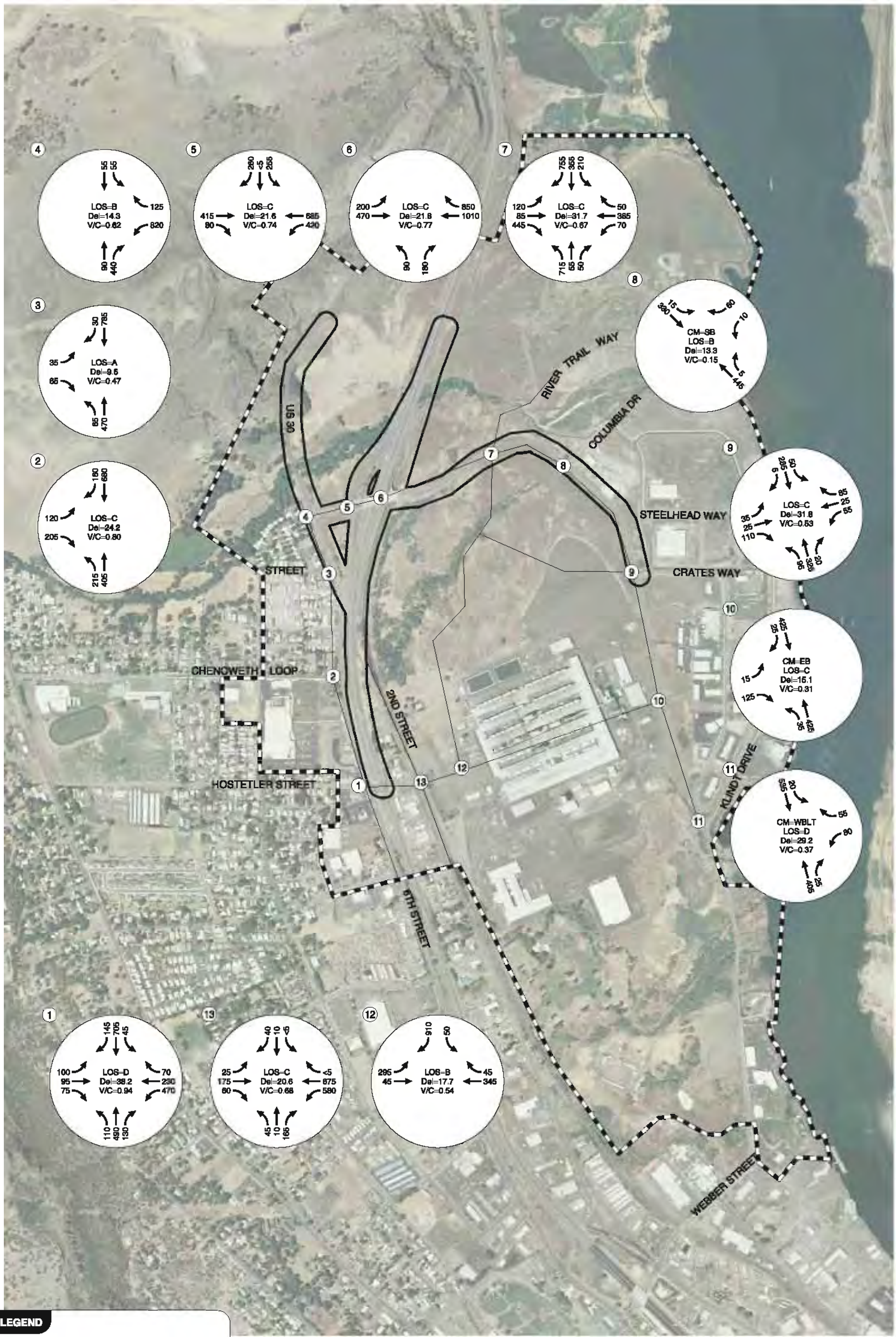
All refined analysis was conducted using Synchro software, in accordance with HCM parameters and ODOT APM guidance. SimTraffic simulations were also observed in order to evaluate the queue interactions between closely-spaced intersections. The analysis focused on critical intersections including: I-84 Eastbound Ramp Terminal/River Road, I-84 Westbound Ramp Terminal/River Road, West 6th Street/River Road, and West 6th Street/Hostetler Street. At the ramp terminal intersections forecast queues were maintained within available storage lengths and volume-to-capacity ratios were maintained at or below 0.70. All other study intersections are forecast to operate at or below mobility standards.

Development potential was measured in terms of the percent of full development that was forecast to occur in the study area under Land Use Scenario #2 (outlined in Section 5). An 85-percent development scenario (estimated to be a FAR of approximately 0.21 for commercial development and 0.34 for industrial development) assumes that the maximum amount of development that is allowed in the study area.

Analysis of development thresholds was conducted assuming a network of signalized intersections and no roundabouts; although roundabouts are identified as preferred at some study intersections (see Figure 7-2). Development capacity is not limited by intersection locations where roundabouts are proposed. Roundabouts were found to operate better than signals (i.e., reduce delay and queuing) at all locations where a roundabout was identified as preferred, therefore the analysis represents a conservative approach.

Maximum Development of Preferred Alternative

The refined capacity analysis found that the preferred alternative was able to accommodate up to 85-percent of full development under Land Use Scenario #2, while still operating below capacity and meeting ODOT mobility standards at the ramp terminals. Additional development beyond 85-percent of build-out is forecast to increase the queuing on River Road at the I-84 Ramp Terminal intersections and at the West 6th Street/Hostetler Street intersection beyond the available storage length. Figure 6-32 summarizes the forecast traffic volumes and operations based on up to 85-percent of full development.



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

YEAR 2030 85% DEVELOPMENT POTENTIAL TRAFFIC CONDITIONS
WEEKDAY PM PEAK HOUR
THE DALLES, OREGON

FIGURE **6-32**

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Section 7
Interchange Area
Management Plan

Interchange Area Management Plan

The IAMP provides a local circulation and access plan which includes a Transportation Improvement Plan (described in Figure 7-1 and Table 7-1), street standards, and improvement phasing for implementing the plan in the short-, mid-, and long-term horizon. As described in Section 6, the long-term improvement plan can only accommodate up to 75 percent of the maximum density development; therefore, the IAMP also includes land use management strategies to ensure that the maximum development threshold for the long-term improvement plan is not exceeded without the IAMP and funding mechanisms being updated. The IAMP also includes an Access Management Plan that:

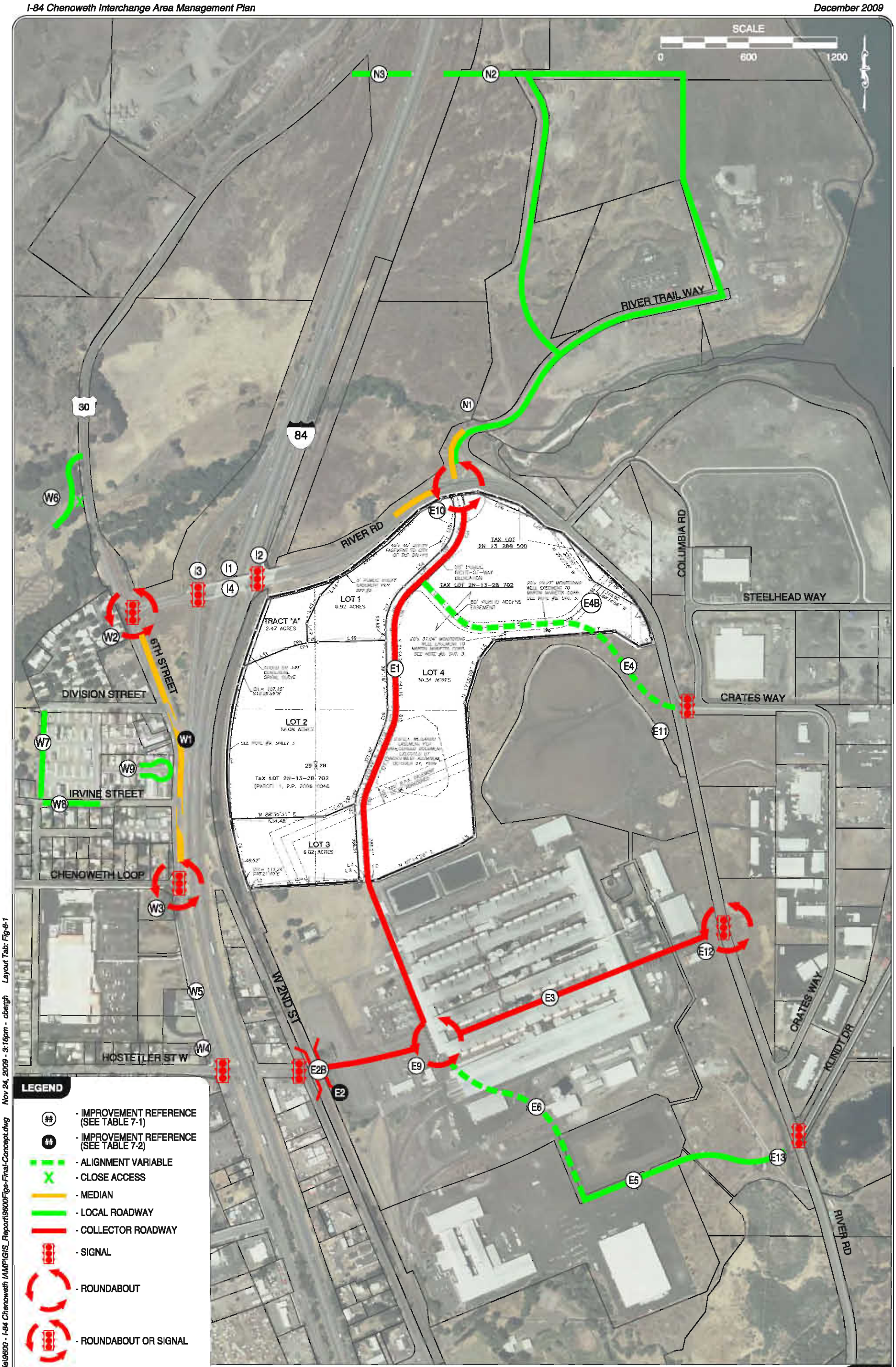
1. identifies future access locations for undeveloped properties in the IMSA;
2. identifies goals and policies that will guide evaluation of existing access for properties in the IMSA that might redevelop; and
3. documents the justification for the necessary deviations to ODOT's access management standards.

Through adoption by the City of The Dalles, Wasco County, and ODOT, future development located within the IMSA will be required to make circulation and access improvements, right-of-way dedications, and pay STSDC fees, as identified in this plan. Implementation of the IAMP is expected to preserve the functional integrity of the interchange over time and ensure viable access to existing and future land uses. Finally, the action items contained within the implementation plan (Section 8) will ensure proper coordination between the various stakeholders and that the IAMP remains a dynamic long-term planning tool.

TRANSPORTATION IMPROVEMENT PLAN OVERVIEW

A comprehensive transportation improvement plan including a local circulation and access plan within the IMSA was developed based on the alternative screening and evaluations outlined in Section 6. Figure 7-1 illustrates the transportation improvement plan including proposed alignments of new roadways and intersections, and locations where existing intersection control will be modified. Each transportation improvement identified in Figure 7-1 is described in Table 7-1 or Table 7-2. Figure 7-2 illustrates the lane configurations and traffic control devices associated with the improvement plan.

As shown in Figure 7-2, roundabouts or signals are identified for potential intersection control at the intersections of River Road/Hostetler Street, West 6th Street/Chenoweth Loop, and West 6th Street/River Road. Roundabouts are recommended on River Road at River Trail Way and on Hostetler Street at the proposed intersection with River Trail Way in order to provide consistency in the network and to reduce the number of approach lanes necessary when compared to signal alternatives.



IAMP TRANSPORTATION IMPROVEMENT PLAN
THE DALLES, OREGON

FIGURE 7-1

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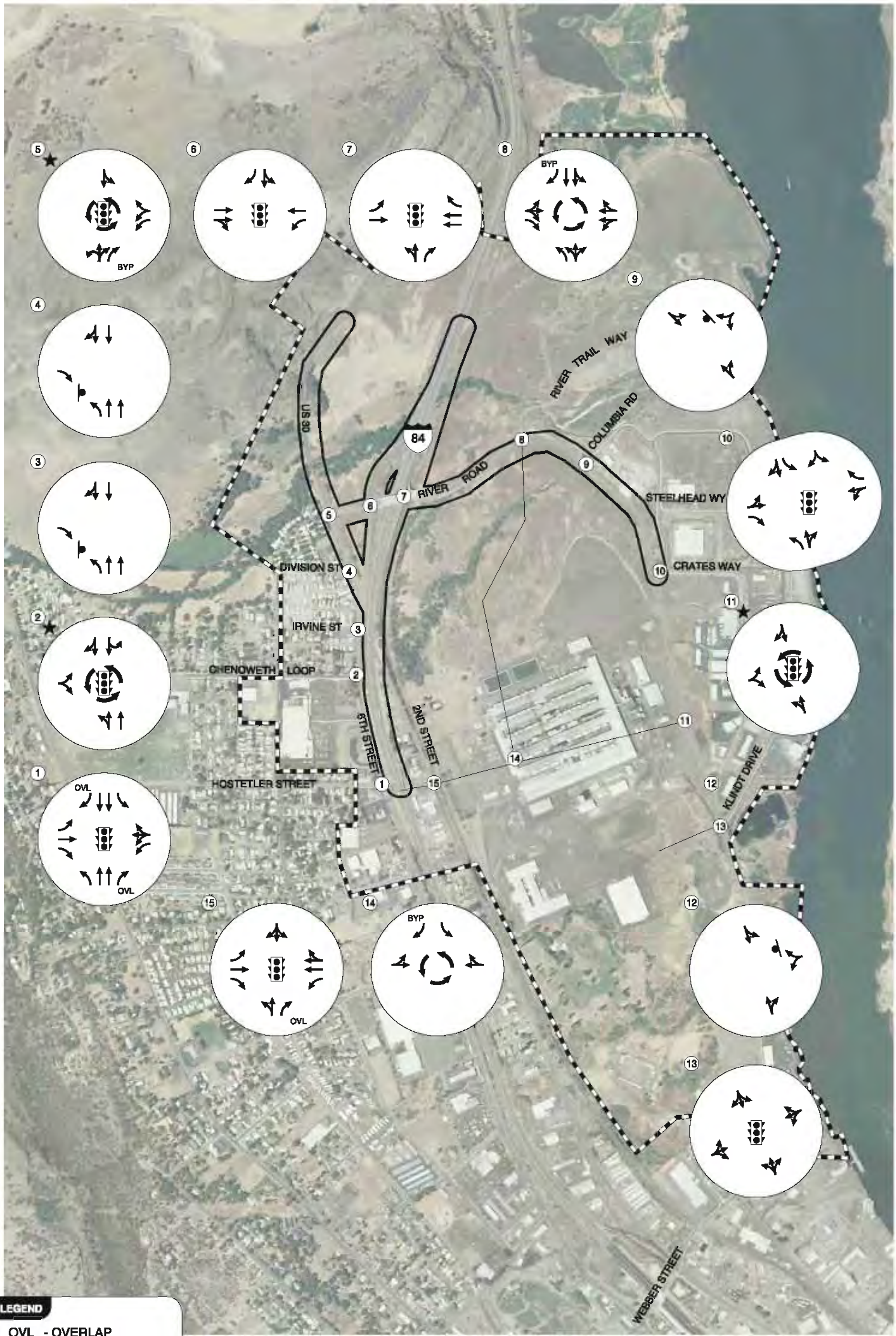

LEGEND

OVL - OVERLAP
BYP - BYPASS
- STOP SIGN
- ROUNDABOUT
- TRAFFIC SIGNAL

★ ROUNDABOUT OR SIGNAL BEING CONSIDERED; ROUNDABOUT LANE CONFIGURATION SHOWN

IAMP LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
THE DALLES, OREGON

FIGURE **7-2**

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TABLE 7-1 IAMP TRANSPORTATION IMPROVEMENTS

Reference	Improvement Type	Description
E1	New Collector Roadway	Extend River Trail Way from River Road to the Hostetler Street Extension
E2B	UP Railroad At-Grade Crossing and Signal (Short-term)	Provides Hostetler Street connection to River Road and intersection control to accommodate traffic at Hostetler Street and 2nd Street (requires approval by ODOT Rail and UPRR)
E3	New Collector Roadway	Extends Hostetler Street from West 2nd Street to River Road
E4	New Local Roadway (Long-term)	Provides local business access
E4B	New Local Roadway (Short-term)	Provides temporary local business access until environmental concerns can be mitigated and project E4 can be constructed.
E5	New Local Roadway	Provides local business access
E6	New Local Roadway	Provides local business access. Alignment is variable depending on parcel access and circulation.
E9	Intersection Improvement (Roundabout)	Intersection control to accommodate future traffic at Hostetler Street/River Trail Way Extension
E10	Intersection Improvement (Roundabout)	Intersection control to accommodate future traffic at reconstructed River Trail Way/River Road
E11	Intersection Improvement (Signals)	Intersection control to accommodate future traffic at River Road/Crates Way (North)/Columbia Road
E12	Intersection Improvement (Roundabout or Signal)	Intersection control to accommodate traffic at future connection of River Road and Hostetler Street
E13	Intersection Improvement (Signal)	Intersection control to accommodate future traffic at River Road/Klindt Drive
I1	Restripe Bridge Lanes (Short-term)	Restripe lanes on bridge to accommodate four lanes (two in each direction, including side-by-side left-turn lanes)
I2	Signalize Intersection	Accommodate weekday a.m. and p.m. peak hour travel demand at Westbound I-84 Ramp Terminal
I3	Signalize Intersection	Accommodate weekday a.m. and p.m. peak hour travel demand at Eastbound I-84 Ramp Terminal
I4	Widen Bridge to 6 Lanes (Long-term)	Accommodate weekday peak hour travel demand beyond the 85-percent development threshold (NOT PART OF 20-YEAR PLAN)
N1	New Local Roadways	Provide a network of local streets
N2	ROW Preservation	Preserve ROW for a potential future overpass of I-84
N3	ROW Preservation	Preserve ROW for a potential future overpass of I-84
W2	Intersection Improvement (Roundabout or Signal)	Intersection control at West 6th Street (US 30)/River Road to accommodate future traffic and provide for u-turns created by the median
W3	Intersection Improvement (Roundabout or Signal)	Intersection control at West 6th Street/Chenoweth Loop to accommodate future traffic and provide for u-turns created by the median
W4	Intersection Improvement (Signal)	Intersection control at West 6th Street/Hostetler Street to accommodate future traffic
W5	Widen West 6th Street to 5 Lanes	Widen West 6th Street from River Road to south of Hostetler Street to accommodate weekday a.m. and p.m. peak hour travel demand
W6	Relocate Driveway/ New Local Roadway	Relocate driveway further from interchange and River Road/West 6th Street intersection to meet access spacing standards
W7	New Local Roadway	Provides local connection between Division Street and Irvine Street

Reference	Improvement Type	Description
W8	New Local Roadway	Provides paved local connection between 6th Street and 7th Street
W9	Cul-de-sac	Supports consolidation of accesses on West 6th Street.

The proposed intersection configurations and roadway cross-sections in this IAMP were developed to serve a maximum amount of new development without requiring a greater cross-section on River Road over I-84 (at the Chenoweth Interchange) or on Hostetler Street under I-84 (at the preferred east-west crossing).

Although still a part of the IAMP, several projects were identified for special consideration at the time that the first IAMP review is triggered. These projects are listed in Table 7-2 and noted in Figure 7-1. Each of these projects are long-term needs and although each project provides benefits to the study area as a whole, they have the potential to negatively impact adjacent property and business owners and therefore, should be reconsidered based on updated forecasts during the first IAMP review.

TABLE 7-2 IAMP TRANSPORTATION IMPROVEMENT PROJECTS TO BE REVIEWED AT FIRST IAMP REVIEW TRIGGER

Reference	Improvement Type	Description
E2	UP Railroad Under-Crossing and Signal (Long-term)	Provides grade-separated Hostetler Street connection to River Road under the UPRR and intersection control to accommodate future traffic at Hostetler Street and 2nd Street
W1	Install median	Install median on 6th Street from River Road to Hostetler Street that limits all turning movements, except northbound left turns to Division Street and Irvine Street.

As shown in Table 7-2, two projects were selected to be reconsidered for implementation within the IAMP study area. These projects may be implemented if operational or safety conditions warrant further measures.

The following sections provide details on the major improvements identified in the Transportation Improvement Plan.

Hostetler Crossing Improvements

Short-term and long-term improvements have been evaluated for providing a crossing of the UPRR at Hostetler Street. The short-term improvement includes an at-grade crossing of the UPRR and the long-term improvement includes a grade-separated crossing. Each improvement is outlined below. The Hostetler Crossing (either grade-separated or at-grade) is expected to be needed in Phase 3, but ultimately will depends on concurrency of local development within the IMSA.

At-Grade Crossing Alternative

The existing UPRR mainline track maintains a private at-grade crossing at the 2nd Street/Hostetler Street intersection that serves the now vacant 67-acre Northwest Aluminum property. Technical Advisory Committee (TAC) and Steering Committee (SC) members provided direction at the

project outset that any public crossing of the UPRR tracks would require grade separation due to the level of train traffic, past practices of the UPRR and ODOT Rail, and federal and state safety initiatives to reduce the number of at-grade crossings. As a result, the four east-west crossing alternatives developed during the IAMP process, and described in Section 6, include grade-separated alternatives only.

In response to concerns expressed by adjacent property owners and the City Council regarding the impacts of the grade-separated crossing at Hostetler Street, and initial discussions between City staff and UPRR staff, the TAC and SC directed the consultant team to conduct an evaluation to assess the feasibility of developing an at-grade crossing in lieu of a grade-separated crossing at Hostetler Street. As documented in the Volume 2 Technical Appendix K, the analysis found that an at- grade crossing could become a viable short-term alternative if written approval can be obtained from ODOT Rail and the UPRR.

If approval is given by ODOT Rail and UPRR further evaluation will be conducted. The benefits to maintaining an at-grade crossing at the Hostetler Street Crossing location are to be weighted against some equivalent disadvantages. The greatest advantage of an at-grade crossing is the reduction in cost and impacts to adjacent property access when compared to constructing an underpass. However, these benefits must be weighted against potential safety and operational disadvantages.

Grade-Separated Crossing Alternative

Figure 7-3 provides a conceptual design layout of the long-term solution for the Hostetler Undercrossing (Projects E2, E3, and W4). The Hostetler Undercrossing conceptual design shown in Figure 7-3 was developed to accommodate traffic volumes assuming that the existing I-84 bridge structure will not be widened to six (6) lanes within the planning horizon.

The future Hostetler Street will include a four-lane cross-section proposed east of the bridge structure. If a design exception is not approved to allow a four-lane cross-section under the I-84 bridge at the intersection of West 6th Street and Hostetler Street, the cross-section under I-84 may be limited to three lanes, two westbound and one eastbound. A multi-use path for bicycles and pedestrians will be provided under the structure on both sides outside of the I-84 overpass piers. Refined cost estimates for improvements shown in Figure 7-3 were prepared and are provided in *Appendix "F" of the I-84 Chenoweth IAMP Technical Appendix.*

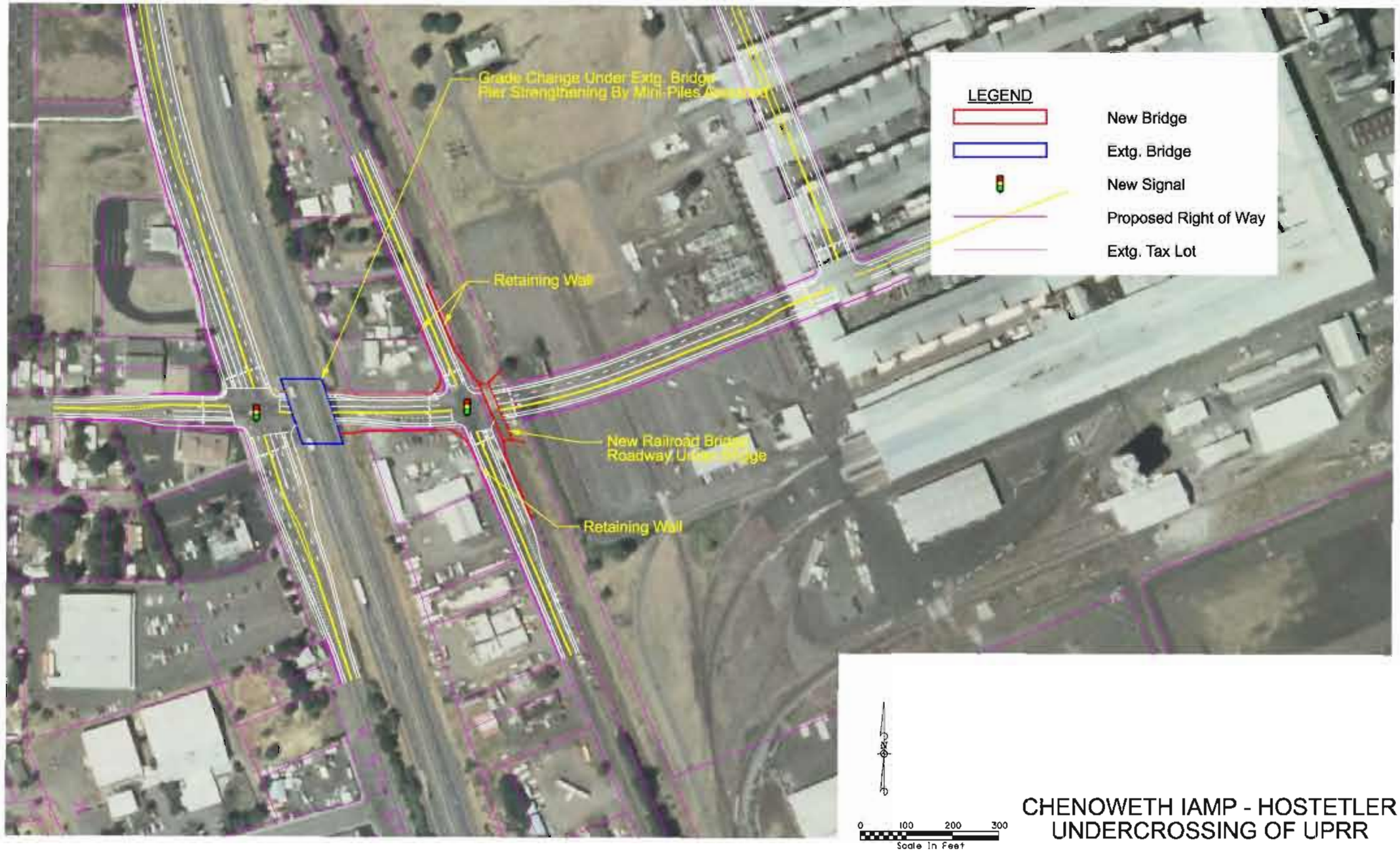
I-84 Chenoweth Interchange Improvements

Figure 7-4 shows a maximum six-lane cross-section at the I-84 Chenoweth Interchange (project I4). In order to provide adequate queue storage, this cross-section will include side-by-side left-turn lanes. To minimize queuing between I-84 ramp terminal intersections, coordinated signal timing will be implemented. Retaining walls are proposed to allow widening on the I-84 westbound ramps. Refined cost estimates for improvements shown in Figure 7-4 were prepared and are provided in *Appendix "F" of the I-84 Chenoweth IAMP Technical Appendix.* Construction of this project depends on local development within the IMSA. This project is not included in the 20-year plan, but

is listed as a potential project that could be completed if additional capacity is required beyond the planning horizon.

West 6th Street Improvements

Projects identified on West 6th Street include a median between Chenoweth Loop and River Road in conjunction with roadway widening from 3-lanes to 5-lanes. As development occurs along West 6th Street and traffic growth occurs over the next 20 years the City will begin to implement access management measures identified in the Access Management Plan and the Transportation Improvement Plan. Such improvements may vary from what is currently shown in the plans, depending on evaluations conducted by the City at the time of need. Likely outcomes include: acquire ROW through acquisition/dedication, implement crossover easements, implement access movement restrictions at driveways (to right-in, right-out or right-in/right-out/left-in).



CHENOWETH IAMP - HOSTETLER UNDERCROSSING OF UPRR

07/17/2009

CH2MHILL

HOSTETLER STREET UNDERCROSSING CONCEPTUAL DESIGN
THE DALLES, OREGON

FIGURE 7-3

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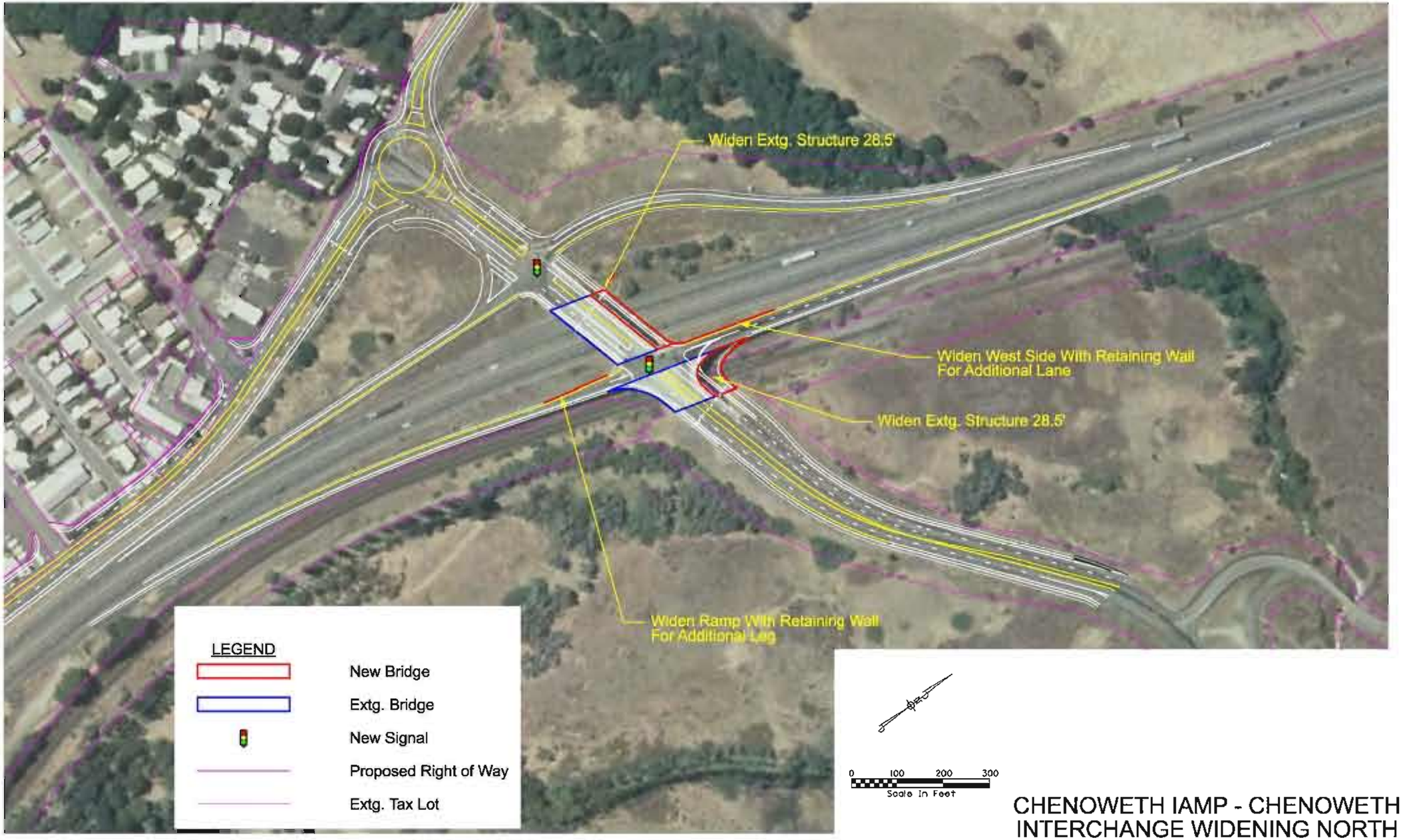

CHENOWETH IAMP - CHENOWETH INTERCHANGE WIDENING NORTH

07/17/2009

CH2MHILL

CHENOWETH INTERCHANGE BRIDGE WIDENING CONCEPTUAL DESIGN
THE DALLES, OREGON

FIGURE 7-4

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Standard ROW Dedication and Roundabout Needs

When development occurs adjacent to or along the length of a project identified in the Transportation Improvement Plan, right-of-way (ROW) dedication will be required. Standard ROW dedications are outlined in Table 7-3 and are consistent with Street Design Standards outlined in the City of The Dalles Transportation System Plan (TSP).

TABLE 7-3 STANDARD ROW DEDICATIONS

Street/Intersection	Dimension (feet)	Measure	Notes
West 6th Street	40	from 5-lane section CL to east	No pedestrian facilities provided on east side due to ROW limitations
	50	from 5-lane section CL to west	
River Road	16	from outside edge of travelled way between River Trail Way and I-84 Ramp Terminal	
	35	from 3-lane section CL	Assumes 50-foot pavement width and 10-foot sidewalk/landscape strip
Hostetler Street Extension	45	from CL west of River Trail Way	
	35	from CL east of River Trail Way	Assumes 50-foot pavement width and 10-foot sidewalk/landscape strip
River Trail Way	35	from 3-lane section CL	Assumes 50-foot pavement width and 10-foot sidewalk/landscape strip
	50	from 5-lane section CL	Assumes 74-foot pavement width and 10- to 15-foot sidewalk/landscape strip
6th Street/Chenoweth Loop	25	from edge of travel way shown in preliminary design	See Figure 6-30
River Road/6th Street	25	from edge of travel way shown in preliminary design	See Figure 6-29
River Road/River Trail Way	25	from edge of travel way shown in preliminary design	See preliminary roundabout design in Appendix "B"
Hostetler Street/ River Trail Way Extension Roundabout	95	radius from point of intersection of roadway CL	25-foot buffer from outside edge of travel way accommodates landscape median strip, multi-use path, and utilities
River Road/Klindt Drive Roundabout	95	radius from point of intersection of roadway CL	25-foot buffer from outside edge of travel way accommodates landscape median strip, multi-use path, and utilities

CL – Centerline of roadway alignment

Phasing Plan

Four roadway improvement phases (near-term, mid-term, long-term, and vision beyond planning horizon) were developed in order to estimate the amount of new development that could occur within the IMSA before implementation of various components of the local access and circulation plan are required. These phases were developed as planning milestones, since improvements will likely be needed incrementally as development occurs. The phases are intended to show the increments of development that can occur before major improvements (e.g., new east-west crossing, Chenoweth Interchange Bridge widening, intersection control treatments, etc.) are needed.

The major components of each improvement phase are summarized below. Figure 7-5 through Figure 7-8 illustrates the lane configurations at the study intersections under each of the following improvement phases:

Phase 1 – Near-term Improvements (Figure 7-5)

- Traffic signal installed at West 6th Street/Hostetler Street intersection (Project #W4)
- Restriping of River Road overpass of I-84 to provide 4-lane cross-section (Project #I1)

Phase 2 – Mid-term Improvements and Actions (Figure 7-6)

- Roundabout constructed at River Road/River Trail Way (Project #E10)
- Traffic signal installed at River Road/I-84 Westbound Ramp Terminal, westbound and off-ramp approach widening (Project #I2)
- Traffic signal installed at River Road/I-84 Eastbound Ramp Terminal and eastbound approach widening (Project #I3)
- Roundabout or signal constructed at River Road/West 6th Street (US 30) (Project #W2)
- Roundabout or signal installed at West 6th Street/Chenoweth Loop (Project #W3)
- At the first triggered IAMP review, reevaluate improvement projects shown in Table 7-2 (W-1: 6th Street Median and E-2: Grade-Separated Crossing of the UP Railroad at Hostetler) based on updated forecasts.
- I-84 Chenoweth IAMP projects, including West 6th Street widening, will be reconsidered during future development of the Webber Street IAMP.

Phase 3 – Long-term Improvements (Figure 7-7)

- Construct new east-west connection at Hostetler Street, either as an at-grade crossing (pending approval by ODOT Rail and UPRR) or a railroad undercrossing of Hostetler Street (Projects #E2, E2B, E3)
- Construct new collector roadway that extends River Trail Way from River Road to the Hostetler Street Extension (Project #E1)
- Provide dual westbound left-turns at River Road/West 6th Street (US 30) roundabout or signal (Project #W2)

- Construct raised median and provide 5-lane section on West 6th Street from River Road to Chenoweth Loop (Project #W1)
- Provide 5-lane section on West 6th Street from Chenoweth Loop south through the Hostetler Street intersection (Project # W5)
- Provide dual westbound left-turns at West 6th Street/Hostetler Street intersection (Project #W4)
- Traffic signal installed at 2nd Street/Hostetler Street (Project #E2)
- Traffic signal installed at River Road/Crates Way (north) and construct exclusive left-turn lanes on River Road approaches (Project #E11)
- Roundabout constructed at River Trail Way/Hostetler Street Extension (Project #E9)
- Roundabout or signal constructed at River Road/Hostetler Street Extension (Project #E12)

Phase 4 – Long-term Vision (Figure 7-8)

- Widen Chenoweth bridge structure to accommodate 6-lane cross-section, including side-by-side left-turn lanes(Project #I4)

Ongoing Phase – Improvements implemented in any phase

Some of the above improvements as well as additional improvements identified below will be implemented in conjunction with adjacent development, including:

- New local roadways to provide access to individual parcels and to provide connectivity to higher-order facilities (Project # E1, E4, E4B, E5, E6, N1, W7, W8, W9)
- Construct exclusive left-turn lanes on northbound, eastbound, and southbound approaches and an exclusive right-turn lane on the northbound approach to the West 6th Street/Hostetler Street intersection (Elements of projects #W4 and #W5)
- ROW preservation for potential long-term crossing of I-84 north of River Road (Project #N2, N3)
- Relocating driveway access on US 30 within 1,320 feet of the interchange ramp terminals to satisfy ODOT access management standard (Project #W6)
- Traffic signal installation at River Road/Klindt Drive (Project #E13)

Figures 7-9 and 7-10 conceptually illustrate the long-term and long-term vision phases, respectively.

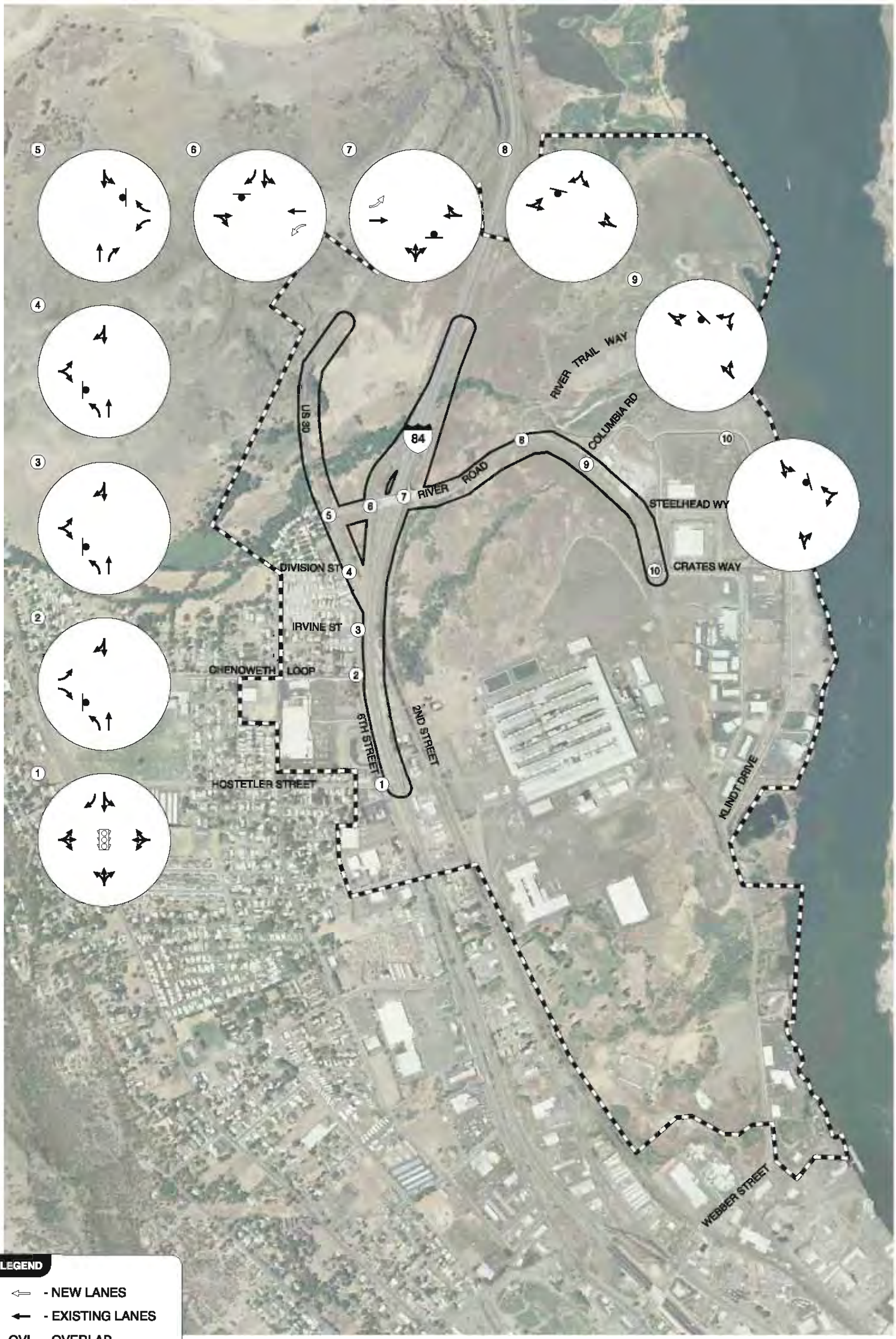
Table 7-4 summarizes the percent of development that is expected to be accommodated under each improvement phase. When all improvements identified in each improvement phase are in place, the development potential listed is expected to be attainable while maintaining adequate operational conditions. For example, if all improvements identified in Phase 2 are in operation, between 11 and 55 percent of full build-out under Land Use Scenario #2 could occur before queuing and intersection operations exceed capacity.

TABLE 7-4 TRANSPORTATION IMPROVEMENT THRESHOLDS

Improvement Phase	Development Threshold (Percent of Full Build-Out)
0 - No-Build	-
1 - Near-term Improvements	<10%
2 - Mid-term Improvements	11-55%
3 - Long-term Improvements	56-75%
4 - Long-term Vision Improvements	76-85%

As shown in Table 7-4, the Long-Term Improvements are expected to provide capacity for up to 75-percent of full build-out of all vacant and redevelopable land within the IMSA.* Implementation actions for managing future development in order to allow up to 85-percent (maximum use) of existing land for development purposes are provided in the following sections as part of the Vision Improvements.

* Assuming 0.25 FAR for commercial and 0.40 FAR for industrial development, as outlined in Table 5-2.



IAMP NEAR-TERM LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
THE DALLES, OREGON

FIGURE **7-5**

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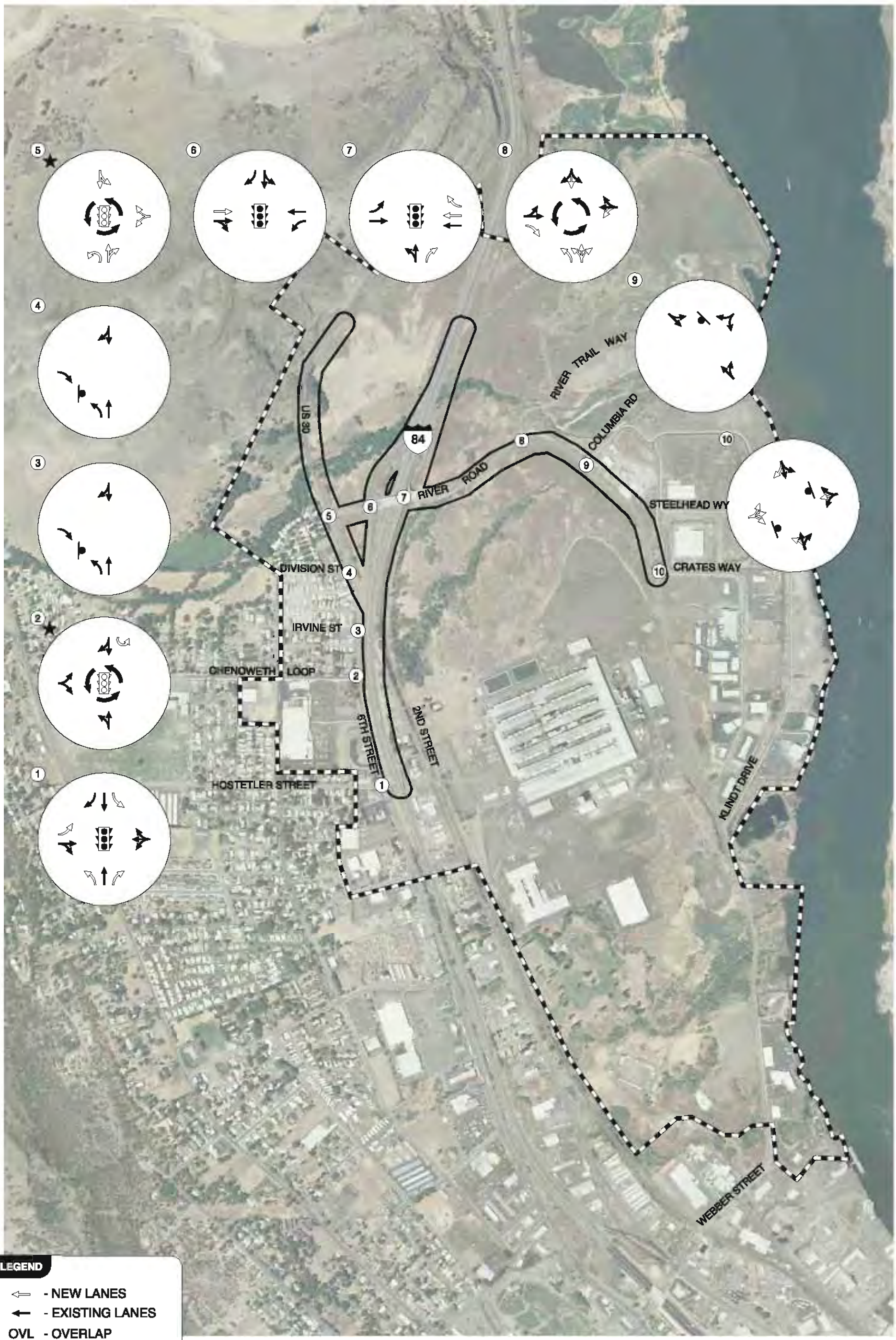

★ ROUNDABOUT OR SIGNAL BEING CONSIDERED; ROUNDABOUT LANE CONFIGURATION SHOWN

IAMP MID-TERM LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
THE DALLES, OREGON

FIGURE **7-6**

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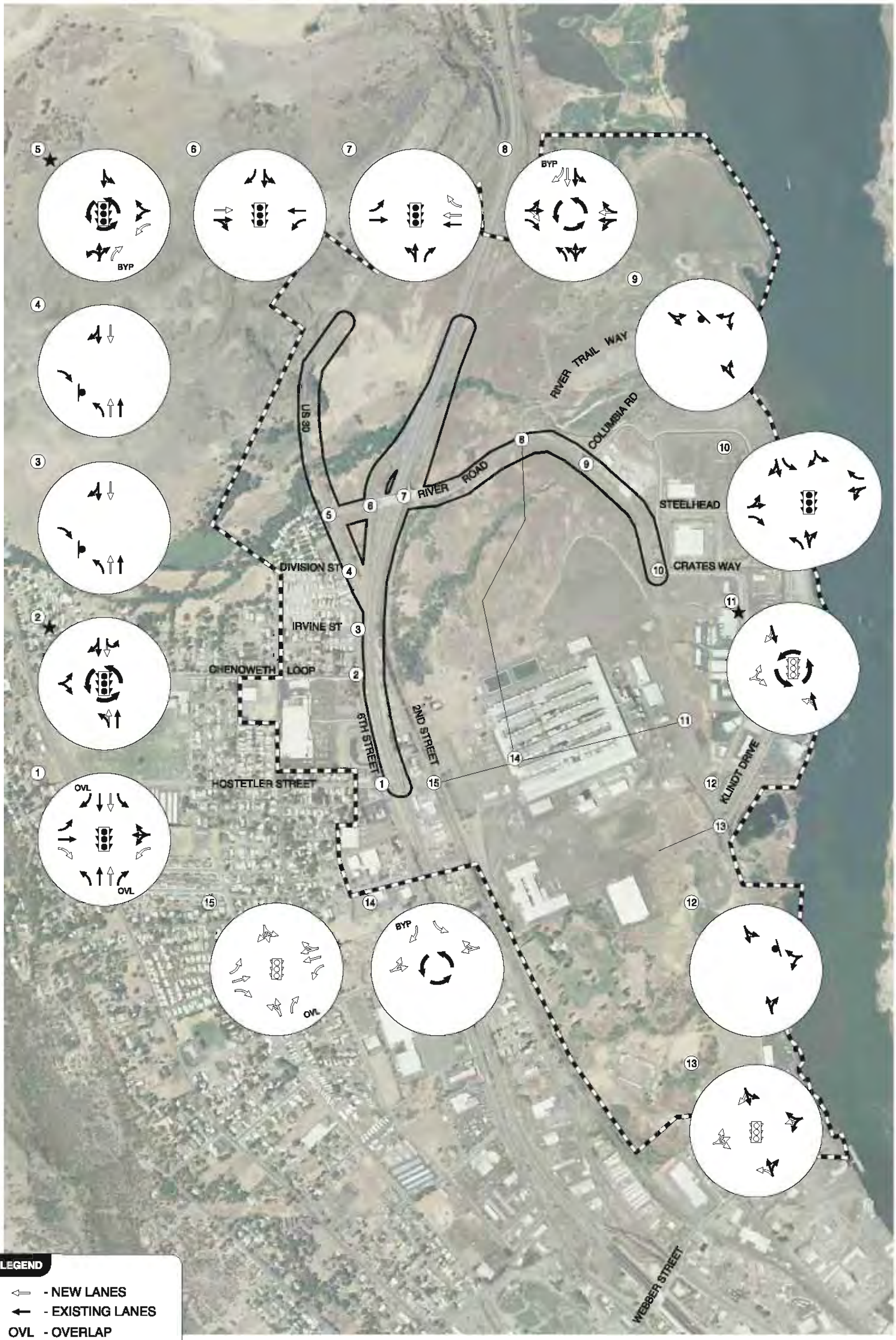
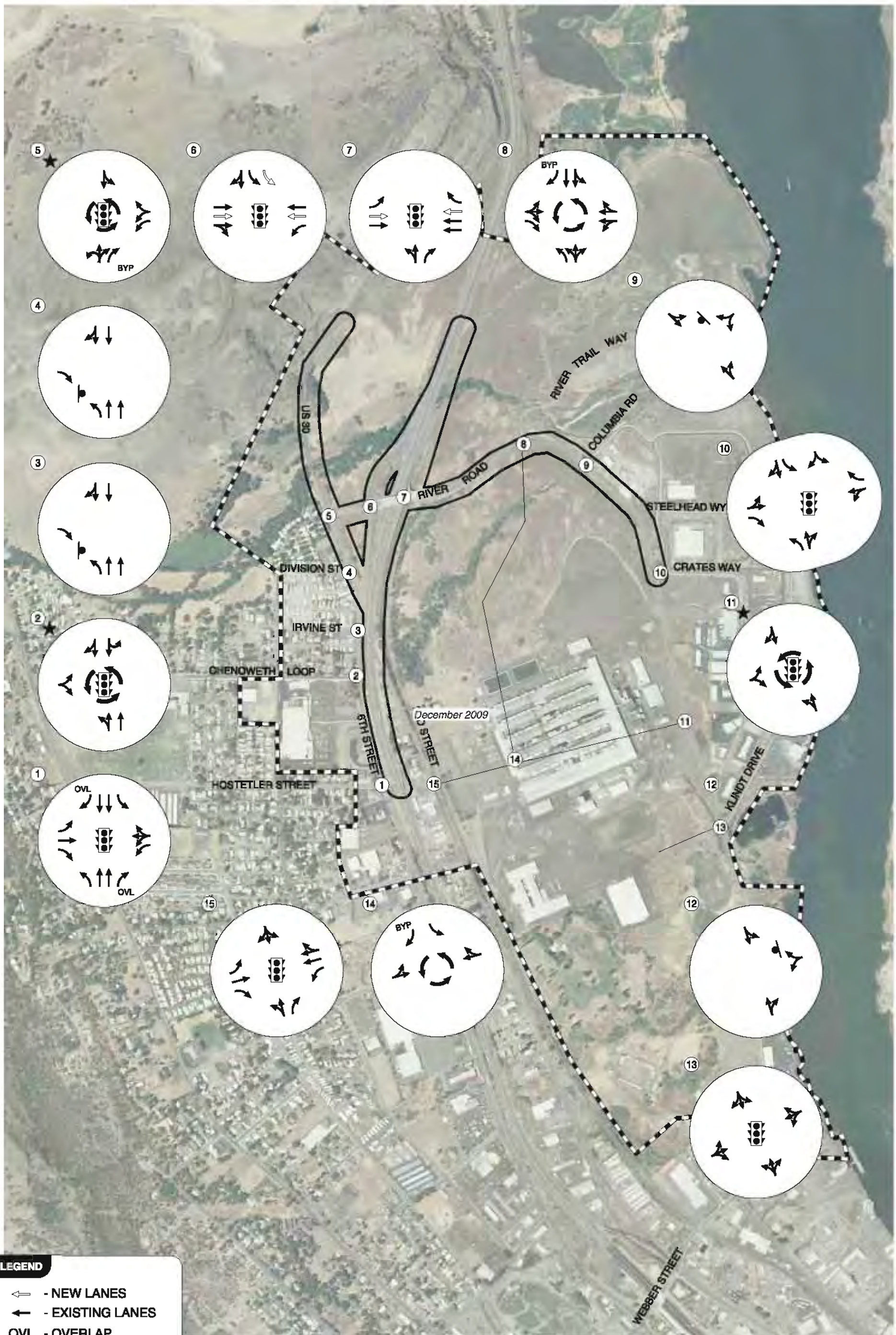


IAMP LONG-TERM LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
THE DALLES, OREGON

FIGURE 7-7



IAMP VISION PLAN LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
THE DALLES, OREGON

FIGURE 7-8

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IAMP LONG-TERM CONCEPTUAL DESIGN
THE DALLES, OREGON

FIGURE 7-9

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IAMP VISION CONCEPTUAL DESIGN
THE DALLES, OREGON

FIGURE 7-10

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Trip Allocation Budget

The Long-term Improvement Plan can accommodate a development threshold of up to 75 percent of the maximum development potential of the IMSA. A Trip Allocation Budget, *provided in Appendix "C"*, was developed that identifies the number of net new weekday p.m. peak hour trips allocated to each developable or redevelopable parcel in the interchange area based on a 75-percent threshold of maximum density. As part of the Implementation Plan in Section 8, a monitoring process has been established to ensure that over time the trip budget is not being exceeded within the entire IMSA area (individual parcels could exceed their budget). If the trip budget for the IMSA is exceeded, the IAMP would need to be amended to identify the Vision Plan (Phase 4) as the planning horizon year improvements and the funding agreement and/or Supplemental Transportation System Development Charge (see Plan Elements in Section 8) would need to be updated. The Vision Plan improvements include reconstructing the I-84 Chenoweth Interchange overpass and ramps to accommodate six traffic lanes.

ACCESS MANAGEMENT PLAN

As part of the I-84 Chenoweth Road IAMP, future access locations and public street connections were evaluated for properties and streets located in the IAMP Access Study Area. Access locations were evaluated based on ODOT's Division 51 Access Management standards, the City of The Dalles access spacing standards, and an assessment of traffic operations and safety as described in Action 3C.3 of the 1999 Oregon Highway Plan. The Access Management Plan was developed to minimize impacts and preserve the operational integrity and safety of primary facilities (i.e., River Road, West 6th Street) serving the interchange area, while maintaining viable access to all parcels in the IMSA.

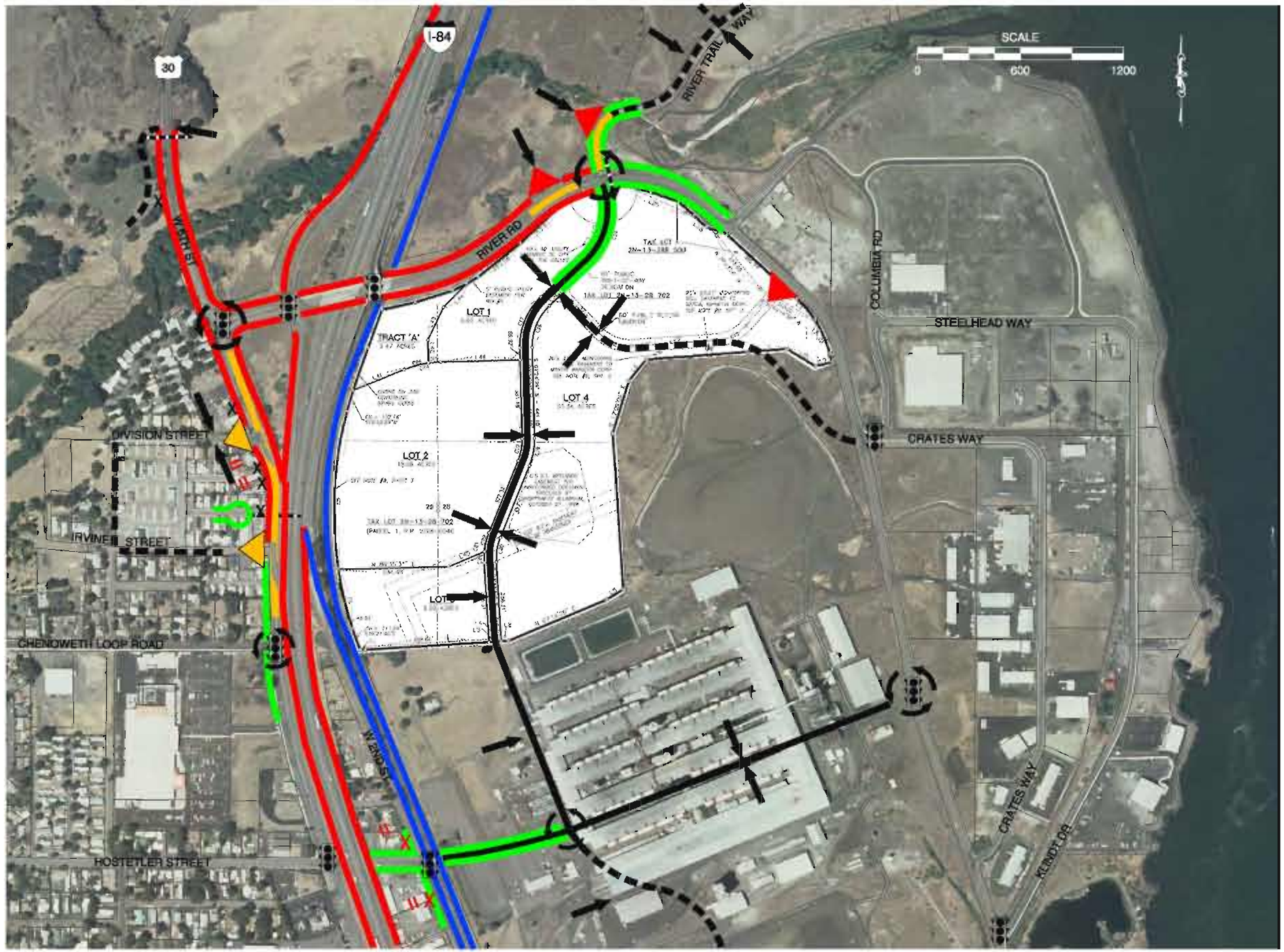
The intent of the Access Management Plan is to identify goals that will guide evaluation of the location of site-access driveways and internal circulation routes for properties located within the IMSA that are likely to develop or redevelop at some point in the future. I-84 Chenoweth IAMP Access Management Plan:

1. identifies future access locations for undeveloped properties in the IMSA
2. identifies goals and policies that will guide evaluation of existing access for properties in the IMSA that might redevelop, and
3. documents the justification for the necessary deviations to ODOT's access management standards.

The plan, as illustrated in Figure 7-11 and described in the following paragraphs, will be implemented as part of future land use changes, or ODOT and City project development and delivery processes, involving the properties located within the IMSA and Interchange Overlay District.

Near- and Mid-Term Access Management Implementation

Under ODOT's current access management policy, the 1999 Oregon Highway Plan stipulates that the desired distance between an interchange ramp terminal and the first major approach (public or private) on the crossroad should be 1,320 feet (¼ mile). Currently there are four private accesses and three public street connections within 1,320 feet of the interchange ramp terminals, as previously documented in Figure 4-7. Public street connections are located on River Road at River Trail Way, River Road at West 6th Street, and West 6th Street at Division Street. Existing private accesses are located on West 6th Street and US 30. Future private access is proposed on River Road.



LEGEND

- MINIMUM 1320-FOOT IAMP LIMITS
- MEDIAN
- LOCAL ROADWAY
- COLLECTOR ROADWAY
- ODOT ACCESS CONTROL
- ODOT RAIL ACCESS CONTROL
- LOCAL AGENCY ACCESS CONTROL
- LEFT-IN/RIGHT-IN/RIGHT-OUT ONLY
- RIGHT-IN/RIGHT-OUT ONLY
- ACCESS CLOSED
- CROSSOVER EASEMENT
- CUL-DE-SAC
- ROUNDABOUT
- TRAFFIC SIGNAL
- REMOVE BARRIER
- GENERAL ACCESS LOCATION

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IAMP ACCESS MANAGEMENT PLAN
THE DALLES, OREGON

FIGURE **7-11**

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TRANSPORTATION ENGINEERING / PLANNING

In the near- and mid-term no access modifications will be made to the four existing private access approaches located on the west side of West 6th Street unless land use changes occur involving the properties served by these accesses or if increases in traffic volumes on West 6th Street warrant a modification for operation and safety reasons. ODOT guarantees Access Permit protection, as allowed within ORS374.305 & 310, to all existing private accesses, notably including access 13. Each will remain a valid access as long as the existing uses remain on property/site (per OAR734.051.0045) and there is no capital improvement project that would trigger review of the access (per OAR734.051.0285). It is ODOT's express intent that, not withstanding any provision herein, no access modifications will be made to the existing private accesses outside the scope of currently applicable law, specifically including OAR734.051.0045 regarding change in use. An access evaluation will be required, but is not limited to, when any of the following land use actions occur within 1,320 feet of the I-84 ramp terminal intersections:

- Modifications to existing land use or zoning,
- Changes to plan amendment designations;
- Construction of new buildings;
- Increases in floor space of existing buildings;
- Division or consolidation of property boundaries;
- Changes in the character of traffic using the driveway/approach;
- Safety or operational improvements;
- Changes to internal site circulation design or inter-parcel circulation;
- Reestablishment of a property's use (after discontinuance for two years or more that trigger a Traffic Impact Assessment as defined below) that occurs on the parcels served by the approaches; or,
- Capital improvement projects.

Long-Term Access Management Implementation

As traffic volumes increase with new development, access management can help maintain the operational integrity and safety of the primary roadways. Access management goals for each access identified in Figure 7-11 are outlined in Table 7-5. In general, the types of improvements identified include:

- Modifying, mitigating or removing existing approaches pursuant to an access management strategy as part of the highway project development and delivery process (OAR 734-051). This may include restricting left-turning egress movements along West 6th Street by constructing a raised median;
- Improving traffic safety and operations by improving the local street network to provide alternate access, better local street connections to the highway, and reducing conflict points. This may include consolidating access on West 6th Street from private approaches and minor public streets where traffic can be rerouted to a major public approach; and,

- Restricting highway access but improving arterial access by introducing shared access, cross-over easements, consolidated access when separate parcels are assembled for redevelopment, and access via collector or local streets. This may include providing crossover easements between adjacent parcels along West 6th Street and near Hostetler/2nd Street intersection.

The time period over which the measures outlined in Table 7-5 will be implemented will depend on the rate of development within the IMSA. As each parcel redevelops, or upon capital improvement, their access will be evaluated to determine how access will be modified to move in the direction of meeting the access spacing standards and long-term vision of driveway consolidation while still providing access as defined in OAR 734-051.The following text supports the actions outlined in Table 7-5 and illustrated in Figure 7-12.

River Road

Properties located east of the I-84 Chenoweth Interchange access River Road from three public approaches within the IAMP Operations/Access Study Area, illustrated in Figure 7-12. One additional access is proposed to be right-in, right-out only for long-term access to a vacant parcel (tax lot 2N 13E 28 701) in the northwest quadrant of the River Road/River Trail Way intersection. The roundabout proposed at the River Road/River Trail Way intersection would provide indirect left-turn movements to this parcel via River Trail Way and River Road. A combination of two right-in, right-out access points can provide access to site traffic; traffic entering from the west must complete a u-turn at the roundabout and make a right-turn to enter the site.

The public access at River Trail Way (#17) and the proposed right-in, right-out access (#16) do not meet the 1,320-foot access spacing requirement identified in OAR Division 51. Access #16 would need to be constructed at least 750 feet from the interchange ramp terminal and at least 550 feet from the roundabout at the River Road/River Trail Way intersection. A deviation is proposed under the provisions of OAR 734-51-0135(3) and will be reviewed by the ODOT Region Access Management Engineer.

West 6th Street

At the time that West 6th Street improvements are made to accommodate future traffic volumes (i.e., widen to five-lane cross-section, intersection control modifications, etc.), and at the first triggered review of the IAMP, ODOT and the City will revisit the need for a raised median to be installed. If appropriate, the raised median will extend from River Road south to Chenoweth Loop Road. The median will restrict left-turn movements to and from private driveways on West 6th Street and left-turn egress movements from public approaches on West 6th Street with Division Street and Irvine Street.

Under the Long-Term Access Management Plan, existing accesses on West 6th Street will be consolidated in order to increase access spacing on West 6th Street. Evaluation of site access and site access modifications that move in the overall direction of the access spacing standards, and long-term vision of driveway consolidation, will be made as development and redevelopment occurs or during a capital improvement project. At each phase of development or redevelopment, access as defined in OAR 734-051 will be provided depending upon the land uses that are being served.

Provisions for future compliance with the long-term access management plan, such as site orientation, access modification and mitigation, and crossover easements will be obtained. Figure 7-13 and the supporting text of Table 7-6 illustrates how this process could, in the long run, facilitate compliance with access management goals.

The public access at Highway 30 and West 6th Street (#14) and the proposed public left-in, right-in, right-out access (#12) do not meet the 1,320-foot access spacing requirement identified in OAR Division 51. Deviations are proposed under the provisions of OAR 734-51-0135(3) and will be reviewed by the Region Access Management Engineer.

Hostetler Street

Existing access to properties that currently access 2nd Street or Hostetler Street from the existing at-grade rail crossing at the Hostetler Street/2nd Street unsignalized intersection will be maintained until the Hostetler Street Extension is constructed. No other development access will be allowed other than those parcels that utilize the at-grade crossing as their primary site access point. At the time that the Hostetler Street Extension is constructed the parcels will have access provided via a local street extension of River Trail Way south of the River Trail Way/Hostetler Street Extension roundabout. The alignment of this street is variable, as shown in Figure 7-1.

2nd Street

In the short-term, if an at-grade crossing of the UPRR is approved, access to the properties located in the northwest and southwest quadrants of the 2nd Street/Hostetler intersection would be restricted to right-in/right-out due to the vehicular queues and level of traffic on 2nd Street and Hostetler Street. Vehicle queues would block additional property accesses along 2nd Street and Hostetler Street during train passage.

At the time that a grade-separated crossing is constructed, access to the properties located in the northwest and southwest quadrants of the 2nd Street/Hostetler intersection would be restricted due to the retaining walls on 2nd Street and Hostetler Street.

LEGEND

- Minimum 1,320-foot IAMP Limits
- IAMP Operation/Access Study Area
- Land Use Study Area
- Tax Lots

Type of Access

- (#) Existing Public Approach
- [#] Existing Private Approach
- [#] Proposed Private Approach

0 330 660 1,320 Feet

LONG-TERM ACCESS MANAGEMENT IMPLEMENTATION PLAN
THE DALLES, OREGON

FIGURE **7-12**

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KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

TABLE 7-5 ULTIMATE ACCESS MANAGEMENT PLAN SUMMARY

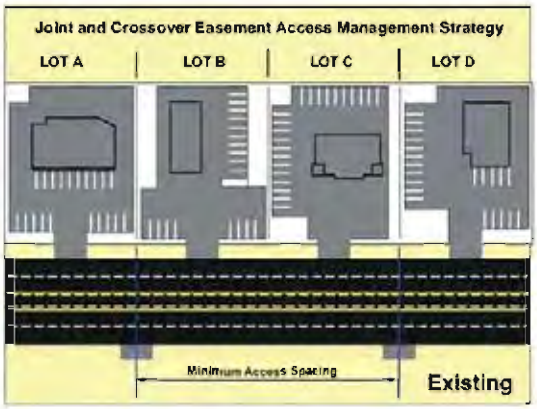
Deviation Required?	Access #	Access Control	Type/Location	Long-Term Access Management Implementation Plan
	1	City	Public (Hostetler Street) – Signalized intersection	Full-access allowing for all movements to/from West 6th Street.
	2		Private – Existing access 275 feet north of Hostetler Street.	Egress (left/right-out) only access to West 6th Street (based on one-way on-site circulation).
	3		Private – Existing access 470 feet north of Hostetler Street.	Ingress (right/left-in)_only access from West 6th Street (based on one-way on-site circulation).
	4		Private – Existing access 400 feet south of Chenoweth Loop.	Left-in/Right-in/Right-out access only to/from West 6th Street.
	5		Public (Chenoweth Loop) – Proposed roundabout location	Full-access allowing for all movements to/from West 6th Street.
	6		Private – Existing access 150 feet north of Chenoweth Loop.	Consolidate access to West 6th Street, relocate access to Chenoweth Loop.
	7		Private – Existing access 300 feet north of Chenoweth Loop.	Consolidate access and improve Lee Street to provide connection to 7th Street and construct cul-de-sac to close access to West 6th Street.
	8		Public (Irvine Street) – Existing access 465 feet north of Chenoweth Loop.	Complete Irvine Street connection from 7th Street to West 6th Street and restrict access at West 6th Street to Left-in/Right-in/Right-out.
	9, 10, 11, 13	ODOT	Private – Existing access within Interchange Access Study Area (1,320ft boundary from the I-84 ramp terminal)	Consolidate access on West 6th Street and provide access to Division Street, Irving Street, and Chenoweth Loop. Follow IAMP Access Management goals by modifying and mitigating access and establishing crossover easements to adjacent parcels. Access modification will be considered at time of redevelopment or capital improvement project.[†].
Yes	12		Public (Division Street) – Existing access 465 feet north of Chenoweth Loop.	Left-in/Right-in/Right-out access only to/from West 6th Street.

[†] Until then, ODOT guarantees Access Permit protection, as allowed within ORS374.305 & 310, to all existing private accesses. Each will remain a valid access as long as the existing uses remain on property/site (per OAR734.051.0045) and there is no capital improvement project that would trigger review of the access (per OAR734.051.0285)

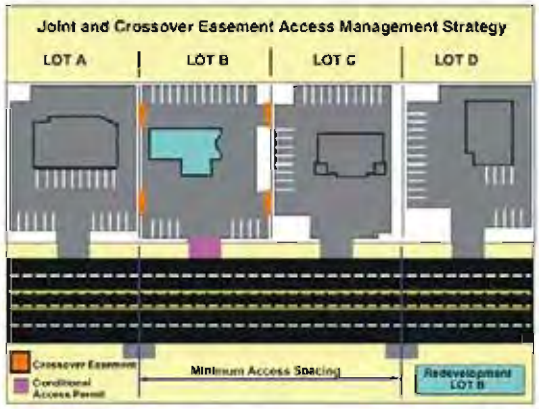
Deviation Required?	Access #	Access Control	Type/Location	Long-Term Access Management Implementation Plan
Yes	14		Public (River Road/West 6th Street and US Highway 30) – Existing full access intersection 350 feet from the I-84 eastbound off-ramp terminal.	Full-access allowing for all movements to/from River Road, West 6th Street, and US Highway 30.
	15		Private – Existing access 525 feet north of River Road.	Relocate access north, outside of the 1,320 foot boundary from the I-84 eastbound ramp terminal.
Yes	16		Private – Future access at least 750 feet from the westbound I-84 ramp terminal and 550 feet from River Trail Way.	Right-in, right-out access only to/from River Road.
Yes	17		Public (River Trail Way) – Existing access 1,300 feet east of I-84 westbound off-ramp terminal.	Full-access allowing for all movements to/from River Road.
	18	County	Public (Columbia Road) – Existing access 650 feet east of River Trail Way.	Full-access allowing for all movements to/from River Road.
	19		Public (Crates Way) – Existing access 1250 feet east of Columbia Road.	Full-access allowing for all movements to/from River Road.

TABLE 7-6 EXAMPLE OF CROSSOVER EASEMENT / INDENTURE / CONSOLIDATION - CONDITIONAL ACCESS PROCESS

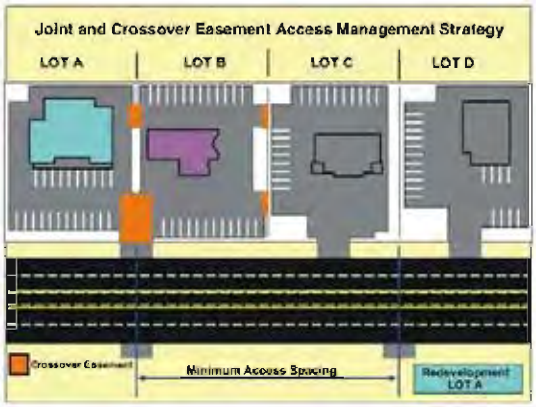
Step	Process
1	EXISTING – Currently Lots A, B, C, and D have site-access driveways that neither meet the access spacing criteria nor align with driveways or access points on the opposite side of the highway. *Under these conditions motorists are put into situations of potential conflict (conflicting left turns) with opposing traffic. Additionally, the number of side-street (or site-access driveway) intersections decreases the operation and safety of the highway.*
2	REDEVELOPMENT OF LOT B – At the time that Lot B redevelops, the local jurisdiction would review the proposed site plan and make recommendations to ensure that the site could promote future crossover or consolidated access. Next, the local jurisdiction would issue conditional permits for the development to provide crossover easements with Lots A and C, and ODOT would grant a conditional access permit to the lot. *After evaluating the land use action, ODOT would determine that LOT B does not have either alternative access, nor can an access point be aligned with an opposing access point, nor can the available lot frontage provide an access point that meets the access spacing criteria for this segment of highway.*
3	REDEVELOPMENT OF LOT A – At the time Lot A redevelops, the local jurisdiction and ODOT would undertake the same review process as with the redevelopment of LOT B (see Step 2); however, under this scenario ODOT and the local jurisdiction would use the previously obtained cross-over easement at Lot B to consolidate the access points of Lots A and B. ODOT would then relocate the conditional access of Lot B to align with the opposing access point and provide safe and efficient access to both Lots A and B. *The consolidation of site-access driveways for Lots A and B will not only reduce the number of driveways accessing the highway, but will also eliminate the conflicting left-turn movements on the highway by the alignment with the opposing access point.*
4	REDEVELOPMENT OF LOT D – The redevelopment of Lot D will be handled in the same manner as the redevelopment of Lot B (see Step 2).
5	REDEVELOPMENT OF LOT C – The redevelopment of Lot C will be reviewed once again to ensure that the site will accommodate crossover and/or consolidated access. Using the crossover agreements with Lots B and D, Lot C would share a consolidated access point with Lot D and will also have alternative frontage access via the shared site-access driveway of Lots A and B. *By using the crossover agreement and conditional access permit process, the local jurisdiction and ODOT will be able to eliminate another access point and provide the alignment with the opposing access points.*
6	COMPLETE – After Lots A, B, C, and D redevelop over time, the number of access points will be reduced and the remaining access points will either meet or move in the direction of the access spacing plan.



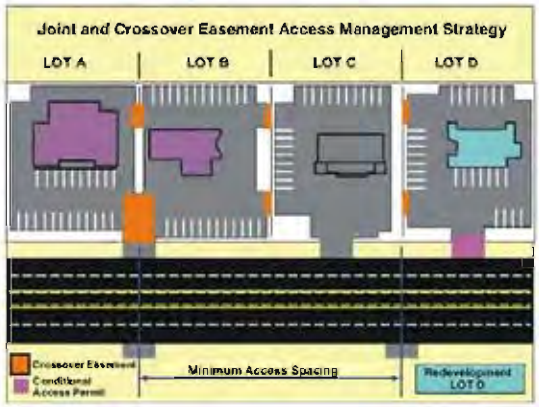
Step 1



Step 2



Step 3



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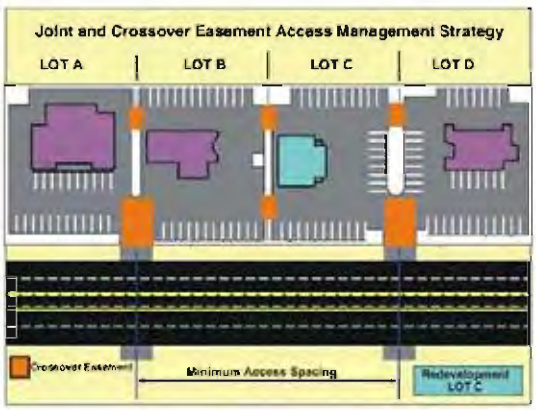
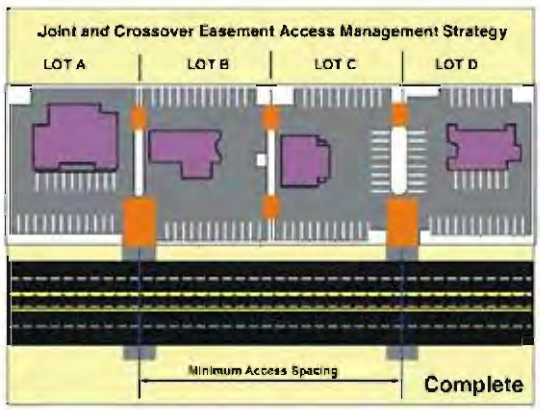


Step 5



Step 6

EXAMPLE OF CROSSOVER EASEMENT / INDENTURE / CONSOLIDATION / CONDITIONAL ACCESS PROCESS THE DALLES, OREGON

FIGURE 7-13

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Deviations to the Division 51 Access Management Standards

The public access at River Trail Way (#17) and the proposed private right-in, right-out access (#16) east of I-84 do not meet the 1,320-foot access spacing requirement identified in OAR Division 51. The public access at Highway 30 and West 6th Street (#14) and the proposed public left-in, right-in, right-out access at Division Street (#12), west of I-84, also do not meet the 1,320-foot access spacing requirement identified in OAR Division 51. Deviations are required under the provisions of OAR 734-51-0135(3) as described below and will be reviewed by the Region Access Management Engineer.

Deviation for Grant of Access #16 (Right-in, Right-out access to River Road)

Deviations to the 1,320-foot access spacing requirement identified in OAR Division 51 are required at Access # 16, proposed 750 feet east of the I-84 Westbound Ramp Terminal intersection, as shown in Figure 7-12. Under the provisions of OAR 734-51-0135(3), the Region Access Management Engineer may approve a deviation if:

(a) Adherence to spacing standards creates safety or traffic operation problems;

> **Response:** Access #16 is proposed to be right-in, right-out only for long-term access to a vacant parcel (tax lot 2N 13E 28 701) in the northwest quadrant of the River Road/River Trail Way intersection. A right-in, right-out access is necessary because the parcel can only have right-in, right-out access on River Trail Way due to the limited site frontage that is between the proposed River Road/River Trail Way roundabout and the Chynoweth Creek bridge. A combination of two right-in, right-out access can provide access to site traffic; traffic entering from the west must complete a u-turn at the River Road/River Trail way roundabout and make a right-turn to enter the site.

(b) The applicant provides a joint approach that serves two or more properties and results in a net reduction of approaches to the highway;

> **Response:** NA

(c) The applicant demonstrates that existing development patterns or land holdings make joint use approaches impossible;

> **Response:** Based on existing land holdings, no joint access can provide full access to tax lot 2N 13E 28 701 due to the proposed location of the River Road/River Trail Way roundabout approach median. Therefore Access #16 (a private right-in, right-out access) is necessary in conjunction with a right-in, right-out access point on the northeastern-most boundary of the subject parcel that fronts River Trail Way.

(d) Adherence to spacing standards will cause the approach to conflict with a significant natural or historic feature including trees and unique vegetation, a bridge, waterway, park, archaeological area, or cemetery;

> **Response:** NA

(e) The highway segment functions as a service road;

Response: NA

(f) On a couplet with directional traffic separated by a city block or more, the request is for an approach at mid-block with no other existing approaches in the block or the proposal consolidates existing approaches at mid-block; or

Response: NA

(g) Based on the Region Access Management Engineer's determination that:

(A) Safety factors and spacing significantly improve as a result of the approach; and

Response: NA

(B) Approval does not compromise the intent of these rules as set forth in OAR 734-051-0020 (Which states: The purpose of Division 51 rules is to provide a safe and efficient transportation system through the preservation of public safety, the improvement and development of transportation facilities, the protection of highway traffic from the hazards of unrestricted and unregulated entry from adjacent property, and the elimination of hazards due to highway grade intersections.)

Response: The proposed access management plan meets the intent of the Division 51 rules as it reduces vehicle turning conflicts within the interchange access management area, and protects the flow of highway traffic traveling to/from the interchange to the Port of The Dalles by incorporating a right-in, right-out movement and restricting left-turns onto River Road from private property.

Deviation to Access #17 (Public Access to River Trail Way)

Deviations to the 1,320-foot access spacing requirement identified in OAR Division 51 are required at Access #17, located approximately 1,300 feet east of the I-84 Westbound Ramp Terminal intersection. Under the provisions of OAR 734-51-0135(3), the Region Access Management Engineer may approve a deviation if:

(a) Adherence to spacing standards creates safety or traffic operation problems;

Response: NA

(b) The applicant provides a joint approach that serves two or more properties and results in a net reduction of approaches to the highway;

Response: Although the joint approach does not consolidate existing approaches, it provides a single access point that will serve multiple parcels that might otherwise require individual access points. Public access #17 (River Road/River Trail Way) currently serves an existing public roadway (River Trail Way) that provides access to multiple Industrial properties to the north of River Road. Additionally, with a proposed extension of River Trail

Way to the south of River Road, Access #17 would allow for future private accesses onto River Trail Way rather than River Road.

(c) The applicant demonstrates that existing development patterns or land holdings make joint use approaches impossible;

Response: NA

(d) Adherence to spacing standards will cause the approach to conflict with a significant natural or historic feature including trees and unique vegetation, a bridge, waterway, park, archaeological area, or cemetery;

Response: Adhering or exceeding the 1,320-foot standard would place the access point for River Trail Way in a location that would not allow use of the Chenoweth Creek Bridge, which was constructed in 2009 in place of an existing one-lane bridge. Additional impacts of moving the intersection include environmental impacts to Chenoweth Creek and impacts to the multi-use path that runs parallel to the Columbia River and has a crossing of Chenoweth Creek near the vehicular bridge.

(e) The highway segment functions as a service road;

Response: NA

(f) On a couplet with directional traffic separated by a city block or more, the request is for an approach at mid-block with no other existing approaches in the block or the proposal consolidates existing approaches at mid-block; or

Response: NA

(g) Based on the Region Access Management Engineer's determination that:

(A) Safety factors and spacing significantly improve as a result of the approach; and

Response: NA

(B) Approval does not compromise the intent of these rules as set forth in OAR 734-051-0020 (Which states: The purpose of Division 51 rules is to provide a safe and efficient transportation system through the preservation of public safety, the improvement and development of transportation facilities, the protection of highway traffic from the hazards of unrestricted and unregulated entry from adjacent property, and the elimination of hazards due to highway grade intersections.)

Response: NA

Deviation to Access #12 (Public access to Division Street)

The proposed Access Management Plan for West 6th Street west of I-84 does not meet the 1,320-foot access spacing requirement identified in OAR Division 51 at Access #12 and requires that the Region Access Management Engineer approve a deviation to the standards for the plan. Under the

provisions of OAR 734-51-0135(3), the Region Access Management Engineer may approve a deviation if:

(a) Adherence to spacing standards creates safety or traffic operation problems;

Response: Access #12 serves as a local street connection to West 6th Street, in accordance with functional classification principles. Closing access to West 6th Street will require that local street traffic (generated by more than 25 homes) will have to reroute to Irvine Street, which is already expected to receive an increase in traffic due to closure of other accesses on West 6th Street (#7 and #9). This is expected to create operational problems as through traffic volumes will increase on a residential street which is not designed to serve that level of demand.

(b) The applicant provides a joint approach that serves two or more properties and results in a net reduction of approaches to the highway;

Response: Access #12 is a public street that provides joint access to West 6th Street and will serve future traffic from four existing private driveways on West 6th Street (#9, #10, #11, and #13) that currently serve individual properties. Crossover easements will be established as redevelopment occurs that will allow for closure of accesses #9, #10, and #11.

(c) The applicant demonstrates that existing development patterns or land holdings make joint use approaches impossible;

Response: Existing access #11 serves two developments (motel and muffler shop), of which the motel backs to the westernmost boundary of the parcel and is aligned with the access. The adjacent driveway (#10) can not be joined due to the presence of the motel structure. Upon redevelopment driveways on 6th Street will be closed and crossover easements will be sought to provide access to Division Street.

(d) Adherence to spacing standards will cause the approach to conflict with a significant natural or historic feature including trees and unique vegetation, a bridge, waterway, park, archaeological area, or cemetery;

Response: NA

(e) The highway segment functions as a service road;

Response: NA

(f) On a couplet with directional traffic separated by a city block or more, the request is for an approach at mid-block with no other existing approaches in the block or the proposal consolidates existing approaches at mid-block; or

Response: NA

(g) Based on the Region Access Management Engineer's determination that:

(A) Safety factors and spacing significantly improve as a result of the approach; and

Response: The proposed access management plan moves all private accesses and associated vehicle movements to outside of the 1,320 foot interchange access spacing standard. Public Access #12 will serve right-in/right-out/left-in movements within the 1,320 foot interchange access spacing standard and is anticipated to operate safely and represent a reduction in conflicting movements given that no left-turns out of the pubic approach will be allowed. A median break to accommodate a left-in movement is proposed to reduce the amount of u-turns required at the West 6th Street/River Road intersection and associated delays for westbound traffic. Adequate storage is available for queued vehicles waiting to complete a left-turn into Division Street.

(B) Approval does not compromise the intent of these rules as set forth in OAR 734-051-0020 (Which states: The purpose of division 51 rules is to provide a safe and efficient transportation system through the preservation of public safety, the improvement and development of transportation facilities, the protection of highway traffic from the hazards of unrestricted and unregulated entry from adjacent property, and the elimination of hazards due to highway grade intersections.)

Response: The proposed access management plan meets the intent of the Division 51 rules as it consolidates access points, reduces vehicle turning conflicts within the interchange access management area, and protects the flow of highway traffic and traffic traveling from the interchange to the commercial and residential areas on the west side of West 6th Street.

Deviation to Access #14 (Public access to West 6th Street)

The proposed Access Management Plan does not meet the 1,320-foot access spacing requirement identified in OAR Division 51 at Access #14 and requires that the Region Access Management Engineer approve a deviation to the standards for the plan. Under the provisions of OAR 734-51-0135(3), the Region Access Management Engineer may approve a deviation if:

(a) Adherence to spacing standards creates safety or traffic operation problems;

Response: Access # 14 (West 6th Street/River Road/Highway 30) is an intersection of three major roadways. Topographic constraints and existing development make relocation of this intersection infeasible. Limiting the access at this intersection would result in operational issues as it is an intersection of three public roadways all of which require full access as there are no alternative routes.

(b) The applicant provides a joint approach that serves two or more properties and results in a net reduction of approaches to the highway;

Response: NA

(c) The applicant demonstrates that existing development patterns or land holdings make joint use approaches impossible;

Response: NA

(d) Adherence to spacing standards will cause the approach to conflict with a significant natural or historic feature including trees and unique vegetation, a bridge, waterway, park, archaeological area, or cemetery;

Response: Chenoweth Creek is located just north of the exiting intersection, which limits any opportunity to relocate the intersection to the north. Also, US 30 is designated an Oregon Scenic Byway, which limits ability to modify alignment.

(e) The highway segment functions as a service road;

Response: NA

(f) On a couplet with directional traffic separated by a city block or more, the request is for an approach at mid-block with no other existing approaches in the block or the proposal consolidates existing approaches at mid-block; or

Response: NA

(g) Based on the Region Access Management Engineer's determination that:

(A) Safety factors and spacing significantly improve as a result of the approach; and

Response: NA

(B) Approval does not compromise the intent of these rules as set forth in OAR 734-051-0020 (Which states: The purpose of division 51 rules is to provide a safe and efficient transportation system through the preservation of public safety, the improvement and development of transportation facilities, the protection of highway traffic from the hazards of unrestricted and unregulated entry from adjacent property, and the elimination of hazards due to highway grade intersections.)

Response: NA

Section 8
Implementation Plan

Implementation Plan

This section describes the IAMP implementation strategy, which includes an I-84 Chenoweth Interchange Function and Policy Definition, Overlay District, Trip Allocation Budget, and Supplemental Transportation System Development Charge. The Implementation Plan also includes adoption and monitoring procedures that will ensure transportation improvements are constructed and funded as development occurs and that the improvement plan, trip budget, and financing mechanisms are updated as needed over time.

To ensure that the IAMP remains dynamic and responsive to changes to the adopted land use and transportation plans, the City of The Dalles, Wasco County, and ODOT should, at a minimum:

- Amend their respective Transportation System Plans and Comprehensive Plans;
- Codify and map an Interchange Area Overlay District that defines the area wherein regulations and requirements associated with the protecting the interchange for its accepted function apply;
- Adopt a Supplemental Transportation System Development Charge (City only);
- Coordinate planning activities per the Transportation Planning Rule (OAR 660-012);
- Review the IAMP and mobility standards for the interchange prior to adopting local plan amendments;
- Regularly revisit transportation funding strategy (see system development charge methodology, Volume 2 Technical Appendix "I".)

PLAN ELEMENTS

In addition to adoption of the IAMP described in Section 7, implementation of the I-84 Chenoweth IAMP requires adoption of an "Interchange Function and Policy Definition", Interchange Management Area Plan Overlay District, and Supplemental Transportation System Development Charge (STSDC).

Interchange Function and Policy Definition

When it was originally designed in 1996, the I-84 Chenoweth Interchange was intended to function as a service level interchange that would safely and efficiently accommodate the traffic demands associated with The Port, industrial property in the vicinity of the I-84, and the Discovery Center. Visitor traffic to the Discovery Center has been lower than originally projected and the function of the interchange today is principally to provide safe and efficient access to the Port and industrial

land in the western part of The Dalles (the area located east of the interchange). In addition to serving the city's industrial center, the I-84 Chenoweth Interchange remains an important facility for accessing the Discovery Center, existing commercial lands in the vicinity of the industrial area, and existing business and residential areas west of I-84.

The City of The Dalles and Wasco County should adopt a clear definition of the I-84 Chenoweth Interchange function into their respective comprehensive plans and TSPs as a policy to provide direction for management of the interchange area and achieve the objectives and goals of the IAMP. This will help to ensure consistency between future policy decisions with the interchange's intended function.

Following is the function and policy definition for the I-84 Chenoweth Interchange:

> *"The transportation function of the I-84 Chenoweth Interchange is principally to provide safe and efficient access to the Port and industrial land in the western part of The Dalles (the area located east of the interchange). In addition to its primary function, the I-84 Chenoweth Interchange remains an important facility for accessing the Discovery Center and existing commercial lands in the vicinity of the city's industrial center. The interchange also serves local residential and commercial traffic circulating from I-84 to Highway 30 and West 6th Street."*

Interchange Area Management Plan Area Overlay District

To ensure the continued operational and safety integrity of the interchange, the City of The Dalles should adopt an Interchange Area Management Plan Overlay District[3]. Future development and land use actions within the Overlay District will be monitored to ensure that within the Interchange Area Management Plan Overlay District volume-to-capacity ratios do not exceed the adopted Oregon Highway Plan mobility standards at the interchange ramp terminals. This can be accomplished through the Trip Allocation Budget and STSDC, IAMP Monitoring, and Development Review Guidelines for the Overlay District included within the proposed amendments to the City's Land Use and Development Ordinances and described in the following sections (*see Appendix "J" of the IAMP Technical Appendix*).

Trip Allocation Budget

As described in Section 7, the Long-Term Improvement Plan can accommodate a development threshold of up to 75 percent of the maximum development potential of the Interchange Management Study Area (IMSA). A Trip Allocation Budget was developed, *provided in Appendix "I" of the IAMP Technical Appendix*, that identifies the number of net new weekday p.m. peak hour trips allocated to each developable parcel in the interchange area based on a 75-percent threshold of maximum density. The City shall monitor the Trip Budget to ensure that over time the trips from new development in the IMSA are not exceeding the budget. Individual parcels may exceed their trip allocations; however, they would pay a higher STSDC per trip for each trip exceeding their

[3] The Interchange Area Management Overlay District coincides and is consistent with the Land Use Study Area, which is a part of the Interchange Management Study Area in the IAMP.

allocation to help pay for the Vision Plan Improvements. The Vision Plan Improvements are described in detail in Section 7 and include reconstructing the I-84 Chenoweth Interchange overpass and ramps to accommodate six traffic lanes. The Trip Budget will be reviewed, at a minimum, during each development review that triggers a STSDC (monitored as described in the sections below).

Supplemental Transportation System Development Charge (STSDC)

Short-, mid-, and long-term transportation improvement plans were developed in order to estimate the amount of new development that could occur within the I-84 Chenoweth IMSA before various improvements are needed. A fourth phase, the "Long-term Vision" or Vision Plan (see Figure 7-8), includes the widening of the Chenoweth bridge structure to accommodate 6-lane cross-section, including side-by-side left-turn lanes. This fourth phase is anticipated to be outside of the 20-year planning horizon.

To provide the necessary funding to develop and construct the first three phases of the Circulation and Access Plan as illustrated in Figure 7-1 and listed in Table 7-1 and Table 7-2, the City of The Dalles should modify the existing system development charge ordinance to include a STSDC, which is assessed on trips generated by new development or redevelopment on property within the IAMP Overlay District, as shown on the amended Comprehensive Plan Map and Zoning Map and defined through a new Development Code Overlay District chapter.

ADOPTION ELEMENTS

Implementation of the I-84 Chenoweth IAMP will occur at several levels of government. As required by OAR 734-051, both the City of The Dalles and Wasco County will be required to amend their Transportation System Plans and Comprehensive Plans to incorporate elements of the I-84 Chenoweth IAMP. In addition, new ordinances or amendments to existing ordinances, resolutions, and Inter-Governmental Agreements (IGA) will be required to insure that the access management, land use management, and coordination elements of the IAMP are achieved. This adoption process will include Planning Commission/City Council hearings at the city level and Planning Commission/County Court hearings at the county level. Following successful adoption at the city and county levels, the I-84 Chenoweth IAMP will be presented to the Oregon Transportation Commission (OTC) for its review and adoption. This should occur prior to transportation improvements as described in this IAMP are constructed and before the covenant described in the ODOT/City of The Dalles/WM3, Inc. IGA (Misc. Contracts & Agreements No. 23886) prohibiting "non-industrial" development on 42-acres of WM3, Inc. property within the Overlay District is lifted.

To implement the I-84 Chenoweth IAMP, the following actions shall occur:

1. The City of The Dalles shall adopt the I-84 Chenoweth IAMP as part of the City of The Dalles Transportation System Plan and Comprehensive Plan. The IAMP shall serve as the long range comprehensive management plan for providing the transportation facilities that are specifically addressed in this plan, as well as the Access Management Plan and the planned local street network for the area.

2. The Wasco County Court shall amend its Transportation System Plan to incorporate the interchange function policy statement and transportation improvements associated with the Preferred Plan.

3. The City of The Dalles shall amend its Comprehensive Plan Map and Zoning Map to include the Interchange Area Management Plan Overlay District boundary. In addition, the City shall amend the Land Use and Development Ordinance to include an Interchange Area Management Plan Overlay District chapter that contains development and land use application requirements pertaining to transportation impact analysis, access management, and agency coordination *(see Appendix "J")*.

4. Subsequent to the local adoption of the IAMP, the City of The Dalles shall adopt a Supplemental Transportation System Development Charge (STSDC) that will finance transportation improvements in the vicinity of the I-84 Chenoweth Interchange *(see proposed methodology in Appendix "I")*.

5. ODOT Regional Access Management Engineer will review access deviation proposed in the IAMP.

6. The Oregon Transportation Commission shall amend the Oregon Highway Plan to include the I-84 Chenoweth IAMP.

7. The City of The Dalles, Wasco County, and ODOT shall enter into an IGA to assign funding responsibility to the respective transportation improvement plan and to establish agreements on how the IAMP and its triggers will be monitored.

8. ODOT and the City shall work together to identify and pursue funding for the Webber Street IAMP which shall also include consideration of I-84 Exit 83 (entrance and exit). The Webber Street IAMP will provide coordinated land use management and financing for both interchange areas upon final adoption.

TSP and Comprehensive Plan Amendments

The following outline discusses the major Transportation System Plan amendments that will need to occur at the city, county, and state levels to support adoption of the I-84 Chenoweth IAMP.

City of The Dalles

- The City shall adopt the Chenoweth Interchange Area Management Plan by reference as an element of the City's Transportation System Plan.
- The following interchange policy statement shall be included in the City of The Dalles Transportation System Plan: *The transportation function of the I-84 Chenoweth Interchange is principally to provide safe and efficient access to the Port and industrial land in the western part of The Dalles (the area located east of the interchange). In addition to its primary function, the Chenoweth Interchange remains an important facility for accessing the Discovery Center and existing commercial lands in the vicinity of the city's industrial center. The interchange also*

serves local residential and commercial traffic circulating from I-84 to Highway 30 and West 6th Street.

- The IAMP Transportation Improvement Plan, as illustrated in Figure 7-1 and listed in Table 7-1, shall be included in the recommended transportation improvements project list of the Transportation System Plan.

Wasco County

- The County shall include the I-84 Chenoweth IAMP in its transportation system plan. The IAMP may be adopted by reference into the TSP.
- For areas within the Interchange Management Study Area (IMSA) that are located outside of the City of The Dalles UGB, Wasco County is the land use regulatory authority. Upon the County's adoption of the IAMP, parcels within the IMSA and outside the UGB will be subject to the IAMP's Access Management Plan.
- The following interchange policy statement should be included in the Wasco County Transportation System Plan: *The transportation function of the I-84 Chenoweth Interchange is principally to provide safe and efficient access to the Port and industrial land in the western part of The Dalles (the area located east of the interchange). In addition to its primary function, the Chenoweth Interchange remains an important facility for accessing the Discovery Center and existing commercial lands in the vicinity of the city's industrial center. The interchange also serves local residential and commercial traffic circulating from I-84 to Highway 30 and West 6th Street.*
- The IAMP transportation improvement plan elements located on County facilities, as illustrated in Figure 7-1 and listed in Table 7-1, shall be included in the recommended transportation improvements project list of the Wasco County Transportation System Plan.

Oregon Transportation Commission

- The I-84 Chenoweth IAMP shall be adopted by the Oregon Transportation Commission as part of the Oregon Highway Plan.

Other City Amendments

The following outlines other major amendments that will need to occur at the city level to support adoption of the I-84 Chenoweth IAMP.

- The City shall adopt an Interchange Area Management Plan Overlay District that includes the submittal requirements, review standards, and administration fees for IAMP monitoring and updates for land use amendment and design review applications within the district.
- The City will adopt a Supplemental Transportation System Development Charge (STSDC) that will finance transportation improvements in the vicinity of the I-84 Chenoweth Interchange (*see proposed methodology in Appendix "I"*). This new STSDC will

be administered through the City's existing System Development Charge (SDC) program but will have its own methodology for assessing fees (*See Appendix "I").* Because the STSDC involves a new fee, state law and City regulation requires that it be adopted through a formal amendment process that includes a public review and comment period and approval of the new methodology by ordinance [ORD 3-8.4(B)]. Pursuant to the existing City ordinance, the procedure to enact an STSDC improvement fee includes adopting a plan that contains the list of projects needed to serve growth in the fee area (in this case, adoption of the IAMP) and providing written notice at least 30 days prior to adoption of the proposed fee to those who have requested notice [ORD 3-8.8].

MONITORING ELEMENTS

The purpose of the IAMP is to ensure that capacity at the interchange is preserved for its intended function. The IAMP needs to remain dynamic and responsive to development and changes to the adopted land use and transportation plans. To accomplish this goal, monitoring should be agreed upon by the City of The Dalles, Wasco County, and ODOT in an Intergovernmental Agreement (IGA) identifying triggers for reviewing the IAMP and how development within the Overlay District will be reviewed and coordinated with all parties.

Intergovernmental Agreement (IGA)

To ensure that the Chenoweth IAMP continues to preserve operational integrity and safety of the I-84 Chenoweth Interchange, the City of The Dalles, Wasco County, and ODOT will develop an Inter-Governmental Agreement (IGA) stipulating each agency's funding obligations to the transportation improvements in the Plan and to the following monitoring and update program:

- The agencies will review the IAMP pursuant to the "triggers" described below to ensure that the original assumptions and recommendations regarding the interchange, local circulation system, funding obligations, access management, land use management, and coordination efforts are still appropriate and effective given the current and projected future conditions inside the interchange management area. This review should be conducted through a meeting initiated by the City of The Dalles or ODOT and should include all affected agencies.
- In addition to the established triggers for IAMP review, the agencies can request a review of the IAMP at any time if, in their determination, specific land use or transportation changes warrant a review of the underlying assumptions and/or recommendations within the IAMP.
- If the participants in the IAMP review meeting agree that, once the impacts of the "trigger" that necessitated the review are examined, an IAMP amendment is not warranted, a recommendation of "no action" may be documented and submitted in the form of a letter to the City of The Dalles City Council, Wasco County Court, and the Oregon Transportation Commission.
- If the findings and conclusions from the IAMP review meeting demonstrate the need for an update to the plan, review participants will initiate an IAMP update process. Initial steps in

updating the IAMP will include scoping the planning process, identifying funding, and outlining a schedule for plan completion. Once the review process has been completed at the staff level, as described above, any proposed IAMP updates will be required to go through a legislative process, requiring public hearings before the Planning Commission and City Council, and adoption of the update by the City Council as an amendment to the City of The Dalles Transportation System Plan, which update would need to be adopted by the Wasco County Board of Commissioners (if affected) and the Oregon Transportation Commission as an update to the Oregon Highway Plan.

IAMP Review Triggers

Periodically, the IAMP implementation program will need to be evaluated to ensure it is accomplishing this goal. Events that will trigger an IAMP review include:

- Every fifth year from the date of IAMP adoption or latest update.
- Every cumulative addition of 250,000 sq. ft. of floor area within the IMSA.
- Cumulative trips from approved development within the IMSA exceed the combined trip budget for the subject parcels by more than 200 trips.
- Plan map and zone changes that have a "significant affect" per the Transportation Planning Rule[4] and impact the I-84 Chenoweth Interchange.[5]
- Mobility measures at the River Road/I-84 Ramp Terminal intersections or River Road/West 6th Street/US 30 intersection exceed the forecasted mobility measures presented in Section 7.

It is recommended that the IAMP monitoring program be linked to a review of the system development charge methodology and fees associated with the Overlay District. Examining the STSDC program as part of an IAMP update will ensure that sufficient revenue is being generated to finance necessary improvements. During an IAMP review, trips may be reallocated, provided that the overall area total for the Overlay District is not exceeded.

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[4] Plan map or zone changes that result in equal to or less trips than included in the Trip Allocation Budget *(see Appendix "C")* would not have a "significant affect".

[5] A City amendment of the UGB in the vicinity of the interchange would also require an IAMP update, as land would be re-designated to allow urban uses. The Dalles Growth Management Report (2007) documents the City's intent to amend the Urban Growth Boundary and designate URA areas to the north/northwest of the city, including lands in the vicinity of the interchange. While the City has not adopted the report in its entirety through a legislative process, supportive source reports and analyses, such as the population forecast, have been adopted. Due to uncertainty as to when, or if, the UGB may be expanded within the National Scenic Area, the IAMP assumes that areas outside of the current UGB will not generate new trips within the 20-year planning horizon. The IAMP should be amended to reflect a revised future growth scenario when the UGB is updated.

Development Review within the Overlay District

The following outlines the transportation requirements for development and zone change applications within the Chenoweth Interchange Overlay District and describes how The City of The Dalles and Wasco County should coordinate with ODOT. The intent of the overlay district and associated transportation requirements is to allow the City and development within the District to rely upon the planning work completed for the IAMP that identifies the transportation needs in the area and utilize a streamlined development review process requiring limited additional transportation analysis if the development is consistent with the Plan.

Transportation Assessment Report

For all development applications located within the Chenoweth Interchange Overlay District, the applicant shall prepare and submit to the City a Transportation Assessment Report that documents the following:

a) Expected weekday p.m. peak hour trip generation.
b) Documents whether or not the expected weekday p.m. peak hour generation is equal to or less than the trip allocation for each parcel documented in the SDC Methodology Memorandum *(see Appendix "I" of the I-84 Chenoweth IAMP Technical Appendix)*.
c) Calculates the STSDC for the proposed development.
d) Identifies any SDC Discount Options being requested and documents what actions/activities will be included to achieve such discount.
e) If applicable, recalculates the weekday p.m. peak hour trip generation and STSDC based on the requested SDC Discount Option.
f) Identifies how they comply with the IAMP, what off-site improvements will be constructed as part of the development, and which improvements are STSDC creditable.
g) Reviews proposed site-access driveways and streets to ensure compliance with the IAMP Access Management Plan and that adequate intersection sight distance and traffic control will be provided.
h) Reviews on-site parking and circulation plan to ensure safe and efficient travel for all modes of travel and includes AutoTurn analyses for anticipated trucks and emergency service vehicles.

Traffic Impact Analysis

All development applications located within the Chenoweth Interchange Overlay District that meet the following conditions are required to prepare and submit a Transportation Impact Analysis (TIA) to demonstrate the level of impact of the proposed development on the surrounding street system:

a) a zone change and/or comprehensive amendment that results in an increase in trips as compared to the Trip Allocation Budget *(see Appendix "C")*,
b) proposed use exceeds the Trip Allocation Budget by 25 percent, or
c) proposed use exceeds the number of allocated weekday p.m. peak hour trips in the Trip Allocation Budget by 25 or more.

The determination of impact or effect, and the scope of the TIA, shall be coordinated with the City of The Dalles, Wasco County, and ODOT. The TIA shall also document all elements required as part of the Transportation Assessment Report (see above). The developer shall be required to mitigate impacts attributable to the project.

Trip Budget and STSDC Monitoring

- The City shall account for projected weekday p.m. peak hour trips generated by all new development and redevelopment within the I-84 Chenoweth Interchange Area Management Plan Overlay District and track how the projected trips compare with the trip budget included in the STSDC Methodology Memorandum *(see Appendix "I" of the IAMP Technical Appendix)*.
- The City shall document all STSDCs received and credits provided and provide current accounting of all funds.
- The City shall provide an Annual IAMP Report to ODOT documenting the status of the Overlay District Trip Budget and STSDC funds. This could include collecting actual trip generation to compare to projected trip generation from new development.
    - If the report indicates that the Trip Budget is being exceeded and/or there are not enough funds being collected by the STSDC to construct the necessary transportation improvements, the following remedies should be considered:
        - Increase the "threshold" and/or "surcharge" STSDC trip rate;
        - Implement more aggressive TDM measures within the Overlay District; and,
        - Adopt the Vision Plan improvements into the IAMP and incorporate them into the STSDC.

ODOT Coordination

- The City shall not deem the land use application complete unless it includes a Traffic Assessment Report or, if required, a Transportation Impact Study prepared in accordance with the requirements as described above.
- The City shall provide written notification to ODOT when the application is deemed complete. This notice shall include an invitation to ODOT to participate in the City's site team review meeting (Pursuant to the city's Pre-Application Requirements).
- ODOT shall have at least 20 days, measured from the date completion notice was mailed, to provide written comments to the City. If ODOT does not provide written comments during this 20-day period, the City staff report will be issued without consideration of ODOT comments.

Administration Fee

The City of The Dalles should set and require an administration fee for IAMP monitoring and updates for all site plan review applications within the Overlay District.

Section 9
OAR and OHP
Compliance

OAR and OHP Compliance

The following section discusses the Oregon Administrative Rule (OAR) and 1999 Oregon Highway Plan (OHP) policy based compliance issues that pertain to the development of the I-84 Chenoweth IAMP.

OAR COMPLIANCE

The I-84 Chenoweth IAMP was developed in collaboration with the City of The Dalles, Wasco County, and ODOT and was developed in accordance with the guidelines set forth in the State of Oregon's Oregon Administrative Rules for Interchange Access Management Planning and Interchange Area Management Planning. Table 9-1 identifies the required planning elements from OAR 734-051 and documents how the I-84 Chenoweth IAMP satisfies the requirements.

TABLE 9-1 OAR 734-051 ISSUES ADDRESSED

OAR 734-0051-0155 Requirement	How Addressed	Report Reference
Should be developed no later than the time the interchange is being developed or redeveloped -0155(7)(a)	This plan was developed in order to determine the future impacts of recent land use decisions on the function of the interchange. The plan was completed before any of the identified improvements to the interchange are necessary.	Section 1
Should identify opportunities to improve operations and safety in conjunction with roadway projects and property development or redevelopment and adopt strategies and development standards to capture those opportunities -0155(7)(b)	The access and land use management elements identified in this plan, as well as incorporated into the proposed land development ordinance amendments and a proposed ordinance for a new Supplemental Transportation System Development Charge, will result in operational and capacity improvements.	Section 1 Section 6 Section 7 Section 8
Should include short, medium, and long-term actions to improve operations and safety in the interchange area -0155(7)(c)	The IAMP includes a phasing plan for the transportation system improvements, which includes a threshold analysis for determining how much development can be accommodated by each phase of improvements. Phase 1 (intersection improvements) includes short-term actions necessary to accommodate 10% of full build-out of the area. Phase 2 mid-term improvements include signalizing the interchange ramp terminals and a series of roundabouts on the local street system, will accommodate 55% of full build-out of the area. The Hostetler Street Connection is the major component of Phase 3, long-term improvements, which will allow for 75% build-out. The final phase is the long-term "Vision Improvements. This Phase 4 will likely occur beyond the 20-year time horizon and involves bridge widening to accommodate a 6-lane cross-section. The proposed Access Management Plan can be developed concurrently with improvements at all locations with the exception of along West 6th Street where it cannot be fully implemented until both proposed roundabouts on West 6th Street are operational (Phase 3).	Section 7 Section 8

OAR 734-0051-0155 Requirement	How Addressed	Report Reference
Should consider current and future traffic volumes and flows, roadway geometry, traffic control devices, current and planned land uses and zoning, and the location of all current and planned approaches -0155(7)(d)	A full analysis of existing and forecast (2030) operational, geometric, and safety conditions was conducted for this planning effort. All surrounding land use was also identified, as were all affected accesses.	Section 4 Section 5 Section 6
Should provide adequate assurance of the safe operation of the facility through the design traffic forecast period, typically 20 years -0155(7)(e)	The forecast analysis shows that safe operations will be achieved for the interchange through 2030.	Section 6
Should consider existing and proposed uses of all property in the interchange area consistent with its comprehensive plan designations and zoning -155(7)(f)	A thorough analysis of surrounding land uses and land use potentials was performed, including modeling of alternate land use scenarios for the 67 acres zoned Commercial/Light Industrial. This analysis resulted in trip assignments for each parcel in the study (overlay) area, based on accommodating 85% of full build-out development and funding the necessary Phase 1, Phase 2, and Phase 3 (near-, mid-, and long-term improvements).	Section 4 Section 5 Section 6 Section 7
Is consistent with any applicable Access Management Plan, corridor plan or other facility plan adopted by the Oregon Transportation Commission-0155(7)(g)	The I-84 Chenoweth Interchange Area Management Plan is consistent with the 1999 OHP. (See following table). No other applicable plans adopted by the OTC were identified.	Section 3 Section 8
Includes polices, provisions and standards from local comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied upon to implement the Interchange Area Management Plan. -155(7)(h)	Implementation of the IAMP is reliant upon the City of The Dalles and Wasco County amending their respective Transportation System Plans to incorporate the transportation improvements associated with the Preferred Plan. In addition, implementation of the IAMP will occur through the City of The Dalles amending the Land Use and Development Ordinance to include an IAMP overlay district. The Chenoweth Interchange Overlay District (CIOD) contains the submittal requirements and review standards for land use amendment and development proposals within the district; access management standards and local street connectivity requirements will be based on the IAMP. The City will also adopt a Supplemental Transportation System Development Charge (STSDC) that will finance transportation improvements in the vicinity of the I-84 Chenoweth Interchange (Appendix I). Amendments will ensure that future development and land use actions within the interchange management area do not degrade the interchange terminal volume to capacity ratios below the adopted Oregon Highway Plan mobility standards. These amendments include coordination between agencies, traffic impact analysis requirements, monitoring of traffic operations, and access management requirements. The locally amended TSPs (City of The Dalles and Wasco County) and the two proposed City ordinances (CIOD and STSDC), are the documents that will be relied upon to implement the IAMP.	Section 3 Section 7 Section 8

THE PLAN WILL DETERMINE		
OAR 734-051-0155 Requirement	**Determination**	**Report Reference**
Driveway and roadway spacing and connections	The operational analysis considered all access points and intersections within approximately ½ mile from the existing I-84 Chenoweth Interchange, including all key intersections that have potential to affect traffic operations in the interchange area over the planning period. The resulting Access Management Plan implements the ¼ mile spacing requirements with the exception of public street access points on River Road at River Trail Way and on 6th Street at Division Street and Irvine Street.	Section 7
Local street connections to ensure adequate access to properties and off-highway circulation	The IAMP includes a proposed local street circulation pattern (Figure 7-1, Transportation Improvement Plan, and Table 7-1).	Section 7 Section 8
Median treatments	Median treatments are proposed for West 6th Street to meet ODOT access management standards (Figure 7-1, Transportation Improvement Plan).	Section 7
Location and type of traffic control devices needed to ensure safe and efficient operations in the operational area of the interchange	Signalizing the ramp terminals is included in Phase 2 improvements. Roundabouts at River Road/River Trail Way, River Road/West 6th Street (US 30), and West 6th Street/Chenoweth Loop are also planned as part of Phase 2. Signals at the Hostetler under-crossing are included in Phase 3 improvements. Figure 7-7 shows all necessary traffic control within the IMSA.	Section 7
Location of sidewalks and bicycle lanes	Sidewalks and bicycle lanes will be constructed on the local street system consistent with City standards. Bridge widening in Phase 4 (expected sometime beyond the IAMP planning horizon) will include sidewalks and bicycle lanes.	Section 7
Sidewalk and bicycle lane crossings (highway and ramp crossings)	NA – See above.	NA
Location of potential transit facilities (turnouts, shelters, park and ride areas)	Transit facilities were not considered as part of the IAMP because fixed route transit service does not exist nor is planned within the study area.	NA
Is new policy language needed in the City of The Dalles and/or Wasco County Comprehensive Plan to support adequate long-term interchange operations?	The City of The Dalles and Wasco County will amend their respective Transportation System Plans to incorporate the interchange policy statement (see Section 8). In addition, the City will amend its zoning ordinance to implement transportation demand management measures and development review standards.	Section 8

THE PLAN WILL DETERMINE		
OAR 734-051-0155 Requirement	**Determination**	**Report Reference**
Are any land use changes/comprehensive plan (including TSP) amendments needed to implement the Interchange Area Management Plan?	The City of The Dalles and Wasco County will amend their respective Transportation System Plans to incorporate the transportation improvements associated with the Preferred Plan. The City of The Dalles will amend the Land Use and Development Ordinance to include an Interchange Area Management Plan Overlay District that contains the submittal requirements and review standards for land use amendment and development proposals within the district. The City will also adopt a Supplemental Transportation System Development Charge (STSDC) that will finance transportation improvements in the vicinity of the I-84 Chenoweth Interchange (Appendix I). Amendments will ensure that future development and land use actions within the interchange management area do not degrade the interchange terminal volume to capacity ratios below the adopted Oregon Highway Plan mobility standards. These amendments include coordination between agencies, traffic impact analysis requirements, monitoring of traffic operations, and access management requirements.	Section 8
Are any deviations from OHP and OAR 731-051 standards and requirements needed?	Deviations to the OHP access spacing standards are required on 6th Street and River Road. The Access Management Plan and the OHP Compliance section describe how each of the necessary deviations meets the requirements of Division 51. The IAMP and Implementation Plan define all the necessary standards and requirements.	Section 7 Section 8

OREGON HIGHWAY PLAN COMPLIANCE

The I-84 Chenoweth IAMP was developed in accordance with the policies set forth in the Oregon Highway Plan (OHP). The following identifies the OHP policies that pertain to the I-84 Chenoweth IAMP and how the IAMP satisfies the requirements.

Policy 1A: State Highway Classification System. The state highway classification system includes five classifications: Interstate, Statewide, Regional, District, and Local Interest Roads. In addition, there are four special purpose categories that overlay the basic classifications: special land use areas, statewide freight route, scenic byways, and lifeline routes. Interstate-84 is an Interstate Highway and is part of the National Highway System (NHS). The Policy 1A definition states: "Interstate Highways provide connections to major cities, regions of the state, and other states. A secondary function in urban areas is to provide connections for regional trips within the metropolitan area. The Interstate Highways are major freight routes and their objective is to provide mobility. The management objective is to provide for safe and efficient high-speed continuous-flow operation in urban and rural areas."

> *How Addressed:* The I-84 Chenoweth IAMP recognized I-84 as an Interstate Highway, complies with the mobility standards of the interchange in the 20-year horizon, and along with a transportation improvement plan that provides for new and improved local facilities that will reduce travel on I-84 for local trips.

Policy 1B: Land Use and Transportation. This policy recognizes the role of both the State and local governments related to the state highway system and calls for a coordinated approach to land use and transportation planning.

> *How Addressed:* The IAMP was developed through a cooperative planning effort between the City of The Dalles, Wasco County, and DLCD. The IAMP will be implemented by the City of The Dalles and Wasco County through an Interchange Management Overlay District which will require coordinated agency review on all future development or land use actions within the District.

Policy 1C: State Highway Freight System. This policy recognizes the need for the efficient movement of freight through the state. Interstate-84 is a designated freight route.

> *How Addressed:* The transportation improvement plan improves local connectivity to and within an industrial area adjacent to the I-84 Chenoweth Interchange for the purpose of reducing traffic volume demand at the interchange and improving accessibility for heavy vehicles to the area.

Policy 1F: Highway Mobility Standards Access Management Policy. This policy addresses state highway performance expectations, providing guidance for managing access and traffic control systems related to interchanges.

> *How Addressed:* The I-84 Chenoweth IAMP demonstrates that the interchange will meet ODOT mobility standards through the 20-year horizon. It also provides an access management plan that improves access management within the study area.

Policy 1G: Major Improvements. This policy requires maintaining performance and improving safety by improving efficiency and management before adding capacity.

> *How Addressed:* The I-84 Chenoweth IAMP provides measures to increase efficiency through access management and provides improvements to the local street system that reduces the need to widen the Chenoweth Interchange bridge structure within the planning horizon.

Policy 2B: Off-System Improvements. This policy recognizes that the state may provide financial assistance to local jurisdictions to make improvements to local transportation systems if the improvements would provide a cost-effective means of improving the operations of the state highway system.

> *How Addressed:* As part of the I-84 Chenoweth IAMP process, ODOT is providing in kind project management to the City of The Dalles. The transportation improvement funding plan also includes a financial commitment from ODOT to participate in improvements on West 6th Street (a city facility) to help achieve ODOT's access spacing requirements.

Policy 2F: Traffic Safety. This policy emphasizes the state's efforts to improve safety of all uses of the highway system. Action 2F.4 addresses the development and implementation of the Safety Management System to target resources to sites with the most significant safety issues.

How Addressed: No existing safety deficiencies were identified within the study area, with the exception of limited sight distance at the interchange ramp terminals. However, an Access Management Plan was developed to ensure the long-term safety of the interchange area.

Policy 3A: Classification and Spacing Standards. This policy addresses the location, spacing and type of road and street intersections and approach roads on state highways. The adopted standards can be found in Appendix C of the Oregon Highway Plan. It includes standards for each highway classification; the I-84 Chenoweth Interchange is a urban interchange on an Interstate Highway with an existing two-lane crossroad. There are currently no plans for improvements to the interchange. Generally, the access spacing distance increases as either the highway's importance or posted speed increases. The current adopted spacing standard from the end of the Chenoweth Interchange entrance/exit ramps to the first major intersection is 1,320 feet.

How Addressed: See Policy 3C.

Policy 3C: Interchange Access Management Areas. This policy addresses management of grade-separated interchange areas to ensure safe and efficient operation between connecting roadways. Action items include developing interchange area management plans to protect the function of the interchange to provide safe and efficient operations between connecting roadways and to minimize the need for major improvements of existing interchanges. The local jurisdiction's role in access management is stated in Policy 3C as follows: "necessary supporting improvements, such as road networks, channelization, medians and access control in the interchange management area must be identified in the local comprehensive plan and committed with an identified funding source, or must be in place (Action 3C.2)."

Access management standards are detailed in Policy 3C and include the distance required between an interchange and approaches and intersections. The most stringent standards apply in interchange areas. Table 17 of the OHP[6] contains the minimum spacing standards applicable to the I-84 Chenoweth Interchange, a freeway interchange that will have a multi-lane crossroad. The spacing standards in an urban area for this type of interchange are:

1 miles (3.2 km) Distance between the start and end of tapers of adjacent interchanges.

1,320 feet (400 m) Distance to the first approach on the right (right in/right out only)

1,320 feet (400 m) Distance to the first major intersection or approach (no left turns allowed).

1,320 feet (400 m) Distance between the last right in/right out approach road and the start of the taper for the on-ramp.

[6] Although the IMSA is not fully developed, the IAMP is planning for full development for the IMSA and the existing access locations that do not meet ODOT's standards are along West 6th Street which is currently fully developed within 1,320-feet from the interchange.

How Addressed: The I-84 Chenoweth IAMP includes an Access Management Plan that consolidates access points and improves access spacing over the existing conditions. Ultimately, upon land redevelopment, access on the west side of the interchange will provide 350 feet of access spacing from the I-84 eastbound ramp terminal to the first full access to accommodate an existing intersection with Highway 30 and approximately 850 feet to the first right-in/right-out/left-in access point to a local public street approach through a deviation process. The east side of the interchange will require a deviation from the standard to 1,300 feet to the first full access due to topographic constraints and 750 feet to the first right-in/right-out in order to provide reasonable site access to developable parcel.

Policy 4A: Efficiency of Freight Movement. This policy emphasizes the need to maintain and improve the efficiency of freight movement on the state highway system. Interstate-84 is a designated Freight Route.

How Addressed: The transportation improvement plan improves local connectivity to and within an industrial area adjacent to the I-84 Chenoweth Interchange for the purpose of reducing traffic volume demand at the interchange while also improving the efficiency of freight movement on the local roadway system.

Policy 5B: Scenic Resources. This policy applies to all state highways and commits the State to using best management practices to protect and enhance scenic resources in all phases of highway project planning, development, construction, and maintenance.

How Addressed: This policy was considered as part of the plan development.

Section 10
References

References

1. Oregon Department of Transportation. 1999 Oregon Highway Plan. 1999
2. Oregon Department of Transportation. Analysis Procedures Manual. 2006.
3. Transportation Research Board. Highway Capacity Manual. 2000.
4. Institute of Traffic Engineers. Trip Generation, 7th Edition. 2003.

I-84 Chenoweth IAMP Findings of Compliance

PLAN AND POLICY REVIEW

One of the project objectives of the IAMP is to ensure that the plan is consistent with local and state transportation policies and standards. To meet this objective, a review and evaluation of existing plans, policies, standards, and laws that are relevant to the IAMP study area was conducted. A summary of the documents reviewed is provided below. Detailed information from this review can be found in the Technical Appendix.

DOCUMENTS REVIEWED

The following transportation and land use plans were reviewed for policies and regulations applicable to the I-84 Chenoweth Interchange.

Federal

- Columbia River Gorge National Scenic Area Management Plan

State/ODOT

- Statewide Planning Goal 1 (Public Involvement), Goal 2 (Land Use Planning), Goal 5 (Natural Resources, Scenic and Historic Areas, and Open Spaces), Goal 6 (Air, Water and Land Resources Quality), Goal 7 (Areas Subject to Natural Hazards), Goal 8 (Recreational Needs), Goal 9 (Economic Development), Goal 12 (Transportation) and Transportation Planning Rule (TPR) Oregon Administrative Rule 660 Division 12, and Goal 14 (Urbanization)
- Oregon Administrative Rule 731, Division 15, Department of Transportation Coordination Rules
- Oregon Transportation Plan (1992)
- Oregon Highway Plan (1999)
- Oregon Administrative Rule 734, Division 51 (Highway Approaches, Access Control, Spacing Standards and Medians)
- Highway Design Manual
- Port of The Dalles Chenoweth Interchange, Columbia River/Interstate 84, Final Environmental Impact Statement (1995)
- Intergovernmental Agreement/Settlement Agreement (No. 23886) – ODOT, City of The Dalles, and WM3, Inc. (2007)

Local

- Wasco County Comprehensive Plan (1983)
- Wasco County Land Use and Development Ordinance (1985, Updated 1999)
- City of The Dalles Comprehensive Plan (2006)
- City of The Dalles Growth Management Report (2007)
- City of The Dalles Land Use and Development Ordinance (1998, Updated 2008)
- City of The Dalles Transportation System Plan (1999, Updated 2006)
- City of The Dalles Capital Improvement Program, 2007-2012 (CIP)

FEDERAL

Columbia River Gorge National Scenic Area Management Plan (1992, Updated 2007)

Land in the Chenoweth IAMP study area includes two Columbia River Gorge National Scenic Area (CRGNSA) designations: Urban Area and General Management Area (GMA) A-1 (160).

As stated in the Introduction to the CRGNSA Management Plan: "Urban Areas are exempt from the Management Plan, but are eligible to receive federal funds authorized to implement it. The Urban Areas will be the primary focus for future growth and economic development." The CRGNSA Management Plan regulates General Management Areas and Special Management Areas with land use policies, use standards, and development standards (e.g. setbacks). Uses and development on county land in the IAMP study area must comply with both County and CRGNSA Management Plan regulations according to applicable land use designations.

Provisions from Part II, Chapters 1 (Agriculture) and 7 (General Provisions and Guidelines) of the CRGNSA Management Plan apply to the portion of the IAMP study area zoned GMA A-1 (160). Uses permitted outright are specified in Chapter 7 ("Uses Allowed Outright, All Land Use Designations, Except Open Space and Agriculture-Special"). These uses include:

- Existing agricultural uses
- Small accessory structures not inside a wetland, riparian, or water body buffer area
- Fences, with additional special conditions
- Transportation facilities, with additional special conditions including Historic Columbia River Highway Master Plan provisions
- Specified utilities
- Specified signs

Uses that are allowed on land zoned for large-scale agriculture that are subject to compliance with special review use criteria in Chapter 1 and resource protection guidelines in Part I of the Management Plan include:

- Agricultural uses
- Structures related to agricultural uses
- A single-family dwelling not related to agricultural use, with additional special conditions
- Roads
- Resource enhancement projects
- Hunting and fishing structures
- Docks and boathouses
- Commercial events
- Utilities
- Home occupations
- Produce stands
- Wineries and associated facilities
- Mineral and geothermal exploration, development, and production
- Research facilities
- Bed and breakfasts, with additional special conditions

Chapter 1 also specifies minimum lot sizes for agricultural land and buffers or setbacks for agricultural uses.

Findings: Land uses in I-84 Chenoweth IAMP are consistent with Columbia River Gorge National Scenic Area Management Plan. No rezones are proposed as part of the plan. Transportation uses suggested by the plan are allowed within CRGNSA and most of the IAMP improvement measures are within the urban area. Project members met with the Columbia Scenic Highway Committee on September 10, 2009. The Committee comments included 1. consideration for reconstruction of the Chenoweth Creek Bridge located on US30 near the proposed US30/River Road roundabout, and 2. consideration for a scenic 'gateway' treatment at the US30/River Road roundabout.

STATE OF OREGON

Statewide Planning Goals

Statewide Planning Goal 1: Citizen Involvement

Goal 1, Citizen Involvement, requires jurisdictions that prepare, adopt, and maintain comprehensive plans to provide the "opportunity for citizens to be involved in all phases of the planning process." According to the goal, the planning process includes the preparation of plans and implementation measures, plan and implementation measure adoption, and minor and major amendments to adopted plans. Technical information associated with the planning process must be available to citizens in an understandable form, and accessible ways of feedback must be available.

Findings: Developing and adopting the I-84 Chenoweth IAMP involved stakeholder interviews as well as meetings of a Technical Advisory Committee and Steering Committee, public workshops, and public hearings. These public involvement activities were guided by Goal 1. All project documentation is available on the project website and at The Dalles Community Development office. Comments were taken in person (during hearings, presentations, and workshops), via email, and via the project website.

Statewide Planning Goal 2: Land Use Planning

Goal 2, Land Use Planning, requires that a land use planning process and policy framework be established as a basis for all decisions and actions relating to the use of land. Goal 2 is important for four reasons. First, Goal 2 requires planning coordination between those local governments and state agencies "which have programs, land ownerships, or responsibilities within the area included in the plan." Here, Goal 2 will require that ODOT coordinate with the City of The Dalles and Wasco County, which has planning authority over the area in the vicinity of the interchange. Coordination is particularly important because land use decisions in the vicinity of the interchange could affect its future use and operation.

A second important element of Goal 2 is its provision that land use decisions and actions be supported by an "adequate factual base." This requirement applies to both legislative and quasijudicial land use actions and requires that such actions be supported by "substantial evidence." In essence, it requires that there be evidence that a reasonable person would find to be adequate to support findings of fact that a land use action complies with the applicable review standards.

Third, Goal 2 requires that city, county, and state and federal agency and special district plans and actions related to land use be "consistent with the comprehensive plans of cities and counties and regional plans adopted under ORS Chapter 268." This provision is important because elements of the IAMP developed for the I-84 Chenoweth Interchange will need to be adopted by the both City and County as elements of their respective transportation system plans (TSP).

In the case of resource land north of the proposed interchange, Goal 2 also provides a framework for allowing additional growth outside The Dalles city limits, in the vicinity of the interchange. Goal 2 includes standards for taking an "exception" to one or more statewide planning goals. Exception standards would need to be met before a more intensive land use designation could be adopted on parcels currently designated as A-1 (160), Exclusive Farm Use[1]. The Goal 2 exception standards apply when a local government or property owner proposes to use property in a manner otherwise prohibited by one or more statewide planning goals. The Goal 2 exception standards require the individual or local government taking the exception to demonstrate how the following standards are met:

- Reasons to justify why the state policy embodied in the applicable goals should not apply;
- Areas which do not require a new exception cannot reasonably accommodate the use;

[1] The designation of General Management Area A-1 (160) is consistent with "large-scale agriculture," which is how the designation is shown on Figure 1, Interchange Management Study Area.

- The long term environmental, economic, social and energy consequences resulting from the use at the proposed site with measures designed to reduce adverse impacts are not significantly more adverse than would typically result from the same proposal being located in areas requiring a goal exception other than the proposed site; and
- The proposed uses are compatible with other adjacent land uses or will be so rendered through measures designed to reduce adverse impacts.

The Goal 2 exceptions standards are interpreted in significant detail in **OAR 660, Division 4**. Rule sections particularly relevant to developing an IAMP for the I-84 Chenoweth Interchange are:

- OAR 660-004-0022, which establishes standards under which uses such as residential or industrial development may be justified on rural lands; and
- OAR 660-004-0020(2)(b), which requires demonstration why a proposed use cannot reasonably be accommodated on nonresource land or inside a UGB.

The Goal 2 exceptions criteria provide resource lands with a very high level of protection from higher intensity rural non-farm uses. See page 21 of this memorandum for the County's ordinance regulating farm land (Exclusive Farm Use/A-1 zone).

Findings: ODOT coordinated with the City of The Dalles and Wasco County – public agencies which have planning authority over the area in the vicinity of the interchange. Members of these agencies, as well as DLCD, were part of the project's Technical Advisory Committee. Analysis prepared for the IAMP includes current and future condition studies and evaluation of alternatives. Requirements of Goal 2 applicable at this time have been met. The IAMP has not triggered a need for an 'exception' to state goals. At this time, no local government or property owner proposes to use property within the IMSA in a manner otherwise prohibited by one or more statewide planning goals.

Statewide Planning Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces

The purpose of Goal 5, Natural Resources, Scenic and Historic Areas, and Open Spaces, is to "protect natural resources and conserve scenic and historic areas and open spaces." This goal requires local governments to inventory natural and cultural resources in their jurisdictions and to develop and adopt programs to conserve and protect them. Amongst the resources to be inventoried are: riparian corridors, wetlands, federal Wild and Scenic Rivers, state Scenic Waterways, groundwater resources, wildlife habitat (e.g. upland habitat in addition to riparian habitat), natural areas, wilderness areas, open spaces, scenic views and sites, mineral and aggregate resource areas, energy sources, and historic and cultural areas. Suggestions for implementing conservation and protection of these resources include fee acquisition, development rights acquisition, easements, preferential tax assessment, and clustered development.

Findings: Two significant natural resources in or adjacent to the study area include Chenoweth Creek and the Columbia River. Goal 5 resources on land in the County or City were identified in the I-84 Chenoweth IAMP study area. Improvements proposed in the IAMP do not impact identified natural resources at the planning level. All wetland reports available to date have been incorporated into the IAMP, and as they become available, future updates will be shared with local agencies. IAMP notes that these resources will require

further study and possible mitigation during project implementation. Thus, IAMP complies with this goal and The Dalles Goal 5 policies and programs.

Statewide Planning Goal 6: Air, Water and Land Use Resources Quality

Jurisdictions must comply with state and federal environmental agency regulations. Goal 6, Air, Water and Land Resources Quality, calls for jurisdictions to "maintain and improve the quality of the air, water and land resources of the state." Waste and process discharges within a jurisdiction may not exceed the carrying capacity of the local air shed and watershed in the long-term, nor degrade the quality or otherwise threaten the availability of the air shed and water shed services.

Findings: This goal and corresponding policies in the County's and City's Comprehensive plans were taken into account in developing and selecting alternatives for the I-84 Chenoweth IAMP. The chosen alternative focuses on local street connectivity and aims to provide efficient land use, thus increasing air and water quality in the area.

Statewide Planning Goal 7: Areas Subject to Natural Hazards

Goal 7, Areas Subject to Natural Hazards, was adopted to "protect people and property from natural hazards." The goal requires local jurisdictions to adopt comprehensive plans, including inventories, policies, and implementation measures, for identifying natural hazard areas and prohibiting or limiting development in these areas. Although local jurisdictions may define others, the goal defines natural hazard areas as those subject to floods (both coastal and riparian), tsunamis, landslides, coastal erosion, earthquakes and related activities, and wildfires.

Findings: Similar to Goal 5 resources, natural hazards were searched for in the I-84 Chenoweth IAMP study area. In conversations with City staff, no Goal 7 hazards in the city portion of the study area were identified. Nevertheless, improvements proposed in the IAMP comply with this goal and the local jurisdictions' Goal 7 policies and programs accordingly.

Statewide Planning Goal 8: Recreational Needs

Goal 8, Recreational Needs, was adopted to "satisfy the recreational needs of the citizens of the state and visitors, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts." The goal requires that local government conduct comprehensive recreational planning by identifying recreational needs, planning for facilities in sufficient quantities and locations to meet these needs, and working with private companies and other partners in meeting these needs. The goal provides specific guidance on destination resort siting.

Findings: While destination resort siting may not necessarily be relevant to the IAMP study area, there is existing Commercial Recreational (CR) zoning on the west side of the Chenoweth Interchange and between the Columbia River and Klindt Drive on the east side of the study area. Other land zoned Industrial (I) in the study area around the terminus of River Trail Way is the site of the Gorge Discovery Center, which includes an interpretive visitor center as well as trails and river access. The study area also includes a portion of the Columbia River Gorge Historic Highway, which invites recreational driving and cycling and is subject to its own design standards. These issues have been documented in the IAMP.

Project members met with the Columbia Scenic Highway Committee on September 10, 2009. The Committee comments included 1. consideration for reconstruction of the Chenoweth Creek Bridge located on US30 near the proposed US30/River Road roundabout, and 2. consideration for a scenic 'gateway' treatment at the US30/River Road roundabout.

Statewide Planning Goal 9: Economic Development

The intent of Goal 9, Economic Development, is to "provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens." Local comprehensive plans and policies must support this goal and should include an assessment of the jurisdiction's existing economic conditions and comparative advantages, policies generally and specifically addressing economic development and development opportunities, provide an adequate supply of sites with characteristics suitable for a variety of employment and economic development, and limit development around identified industrial sites to that which is compatible with uses allowed on the sites. The goal suggests implementation measures such as tax incentives and disincentives, preferential assessments, land use regulations, capital improvement planning and programming, and fee or partial fee acquisition.

The IAMP must demonstrate the ways in which the preferred alternative selected for future interchange improvements supports this goal and the economic development policies adopted in the City and County's Comprehensive Plans.

Findings: This IAMP was necessitated by pressure to rezone and develop the interchange area with more commercial and higher traffic-generating uses than those allowed by the underlying existing Industrial zoning. Because of the topographical constraints of their location, City of The Dalles has emphasized the need to safeguard future employment lands in the Chenoweth IAMP area. As a result, the IAMP was developed to encourage employment development of land within the study area while coordinating needed transportation improvements with this development.

Proposed IAMP measures protect the capacity and safe function of the interchange, plan and protect future state and local transportation investments, focus on developing local street connectivity. All of these measures balance employment development in the area with transportation development. The allowance of future development will depend on the level of implementation of transportation and land use measures adopted as part of this IAMP.

Statewide Planning Goal 12: Transportation

Statewide Planning Goal 12, Transportation, requires cities, counties, metropolitan planning organizations, and ODOT to provide and encourage a safe, convenient, and economic transportation system. This is accomplished through development of transportation system plans (TSPs) based on inventories of local, regional, and state transportation needs.

Goal 12 is implemented through OAR 660, Division 12, the Transportation Planning Rule (TPR). The TPR contains numerous requirements governing transportation planning and project development, several of which are relevant to planning a new interchange. The TPR requires local governments to adopt land use regulations consistent with state and federal requirements "to

protect transportation facilities, corridors and sites for their identified functions OAR 660-012-0045(2)." This policy is achieved through a variety of measures, including:

- Access control measures which are consistent with the functional classification of roads and consistent with limiting development on rural lands to rural uses and densities;
- Standards to protect future operations of roads;
- A process for coordinated review of future land use decisions affecting transportation facilities, corridors or sites;
- A process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities, corridors or sites;
- Regulations to provide notice to ODOT of land use applications that require public hearings, involve land divisions, or affect private access to roads; and
- Regulations assuring that amendments to land use designations, densities and design standards are consistent with the functions, capacities and performance standards of facilities identified in the TSP. (See also OAR 660-012-0060.)

LCDC's rules implementing Goal 12 do not regulate access management. ODOT adopted OAR 734, Chapter 51, to address access management and it is expected that ODOT, as part of this project, will engage in access management consistent with its Access Management Rule. This could involve the purchase of access rights within at least one-quarter mile of the interchange ramps. See OAR 734, Division 51 on page 15 for a review of these access management rules.

The TPR requires local governments to adopt land use regulations consistent with state and federal requirements "to protect transportation facilities, corridors, and sites for their identified functions OAR 660-012-0045(2)."

Findings: Access control measures, standards, coordinated review processes, and other TPR requirements described above were specifically focused on during the development of the IAMP. The IAMP improvement measures comply with Goal 12 and the Transportation Planning Rule (TPR) because they protect the capacity and safe function of the interchange and any future state transportation investments.

Section 7 of the IAMP outlines a future access management plan, including goals for all private driveways and public streets that might be influenced by IAMP improvement measures and public access deviations that might be necessary to establish good local street connectivity. The IAMP also describes an alternative review process the City can implement in order to fast track employment and industrial development in the area. This development review process focuses on protective measures put in place by the IAMP. Included are trip budget calculations, supplemental transportation SDC calculation for the IAMP overlay area, processes to determine additional SDCs for land uses that go over their trip budget allotment, TDM measures, and ongoing monitoring of the interchange capacity and trip budget by City and ODOT.

Statewide Planning Goal 14: Urbanization

Goal 14 regulates urban growth boundaries. The goal provides that establishment and change of a UGB shall be based upon consideration of the following four factors:

1. Efficient accommodation of identified land needs;

2. Orderly and economic provision of public facilities and services;
3. Comparative environmental, energy, economic, and social consequences;
4. Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.

Additionally, ORS 197.298 establishes priorities for including land inside urban growth boundaries. The first (highest) priority for inclusion is land that is designated "urban reserve" land. The second priority is land adjacent to a UGB that is identified as "an exception area or nonresource land." The third priority is land that is designated as "marginal land" pursuant to ORS 197.247. The final (lowest) priority is land that is designated for agriculture, forestry, or both.

Findings: In the I-84 Chenoweth IAMP, all but one of the improvement measures proposed are within the City of The Dalles UGB (one project in Wasco County jurisdiction is a simple access point realignment to meet TPR spacing standards). Review has found that the I-84 Chenoweth IAMP does not infringe any Goal 14 requirements.

Oregon Administrative Rule 731, Division 15, Department of Transportation Coordination Rules

ODOT's Division 15, Coordination Rules, (OAR 731-015) ensures that the procedures used in developing highway improvement projects and other ODOT actions affecting land use comply with Oregon's Statewide Planning Goals and are consistent with applicable acknowledged comprehensive plans, as required by ORS 197.180. This administrative rule provides coordination procedures to be used when adopting Final Facility Plans, such as an interchange area management plan (OAR-731-015-0065).

Findings: The public process utilized in preparation of the I-84 Chenoweth IAMP meets Division 15 Coordination Rules. The process included open and ongoing public and agency involvement between City of The Dalles, Wasco County, Department of Land Conservation and Development, ODOT, and numerous citizens. Public involvement and information sharing were project priorities, as evidenced by public meetings, advisory meeting, and interviews with property owners, planning commissioners, and City and County council members.

Draft of the proposed IAMP was presented and/or submitted to all affected local agencies (City of The Dalles, Wasco County, Columbia River Historic Highway Committee), for review and comments. Local agencies provided comments and changes and/or adopted the plan.

Through review, the Technical Advisory Committee (TAC) assured the IAMP is compatible with applicable comprehensive plans. No statewide goal or comprehensive plan conflicts have been identified with the IAMP. These findings address compliance with applicable statewide planning goals and the comprehensive plan of the affected local jurisdictions. As such, Findings and Draft IAMP are submitted for the Commission's consideration.

Upon final adoption, ODOT will provide copies of the Adopted IAMP, including all required findings, to DLCD, the affected local jurisdictions, and any others who request a copy.

Oregon Transportation Plan (2006)

Originally adopted in 1992, the Oregon Transportation Plan (OTP) is a policy document developed by ODOT in response to federal and state mandates for systematic planning for the future of Oregon's transportation system. The OTP is intended to meet statutory requirements (ORS 184.618(1)) to develop a state transportation policy and comprehensive long-range plan for a multi-modal transportation system that addresses economic efficiency, orderly economic development, safety, and environmental quality. The 2006 OTP expands on the policy objectives of the 1992 plan, with an emphasis on maintaining assets in place[2], optimizing existing system performance through technology and better system integration, creating sustainable funding, and investing in strategic capacity enhancements.

The OTP's goals, policies, and strategies guide the development of state multimodal, modal/topic[3] and facility plans and regional and local transportation system plans. The OTP provides the framework for prioritizing transportation improvements and funding, but it does not identify specific projects for development[4]. As required by Oregon and federal statutes, the OTP guides development and investment in the transportation system through:

- Transportation goals and policies,
- Transportation investment scenarios and an implementation framework, and
- Key initiatives to implement the vision and policies.

Goals in the OTP include: Mobility and Accessibility; Management of the System; Economic Vitality; Sustainability; Safety and Security; Funding the Transportation System; and Coordination, Communication and Cooperation. Policies and strategies under many of these goals emphasize increasing coordination and cooperation among federal and state agencies, regional and local governments and private entities to achieve these goals.

The Implementation Framework section of the OTP describes the implementation process and how state multimodal, modal/topic plans, regional and local transportation system plans and master plans will further refine the OTP's broad policies and investment levels. Local transportation system

[2] The OTP defines "asset management" as a "systematic process of maintaining, upgrading and operating physical assets cost-effectively. It combines engineering principles with sound business practices and economic theory, and it provides tools to facilitate a more organized, logical approach to decision-making. Asset management provides a framework for handling both short- and long-range planning."

[3] Modal or topic plans, as developed by ODOT and other state agencies, include plans for aviation, bicycle and pedestrian facilities, highways, marine ports and waterways, public transportation and rail.

[4] Projects are identified through facility plans and regional and local transportation system plans, and sometimes through modal plans.

plans can further OTP implementation by defining standards, instituting performance measures, and requiring that operational strategies be developed[5].

The Implementation section also describes three investment levels, examples of the investment priorities for each level of investment, and their impacts on the transportation system. These levels are described as "flat funding" (Level 1), "maintaining and improving existing infrastructure" (Level 2), and "expanding facilities and services and services" (Level 3). The recommendation in the OTP is for the State to invest at levels closer to Level 3 "in order to be competitive economically and to have the transportation infrastructure and services that allow communities to function well."

Finally, a list of "key initiatives" describes the OTP's implementation priorities. The key initiatives are intended to help frame plan implementation and reflect the directions of the OTP including system optimization, integration of transportation modes, integration of transportation, land use, the environment and the economy, and the need to make strategic investments using a sustainable funding structure. The key initiatives envision creating the sustainable funding plan using both traditional and new revenue sources. The I-84 Chenoweth IAMP will likely draw on traditional and innovative revenue sources to fund its proposed improvements. Project funding will be addressed in the IAMP.

Findings: Using the review above, members of the TAC and the public involved in the IAMP process, were asked to follow OTP goals, policies and strategies as principle guidance. The IAMP means to address traffic congestion and safety problems that will affect the interchange area during the planning horizon. Implementation measures focus on local connectivity and identify new local streets that will increase access to local business, industrial areas, and recreational activities. New east-west connection is proposed in order to minimize local trips on the statewide facility. Because the new connection will utilize an existing railroad crossing, the IAMP has initiated coordination between affected landowners, City of The Dalles, ODOT's Rail Division and UP Rail Company. This coordination will need to continue as the new east-west connection nears design and construction phases.

The IAMP contains access management goals that protect the integrity of the interchange and its long-term function while also addressing the needs of local businesses, residents, the City and the County. Access management intends to limit and provide reasonable alternative access when safety and operational warrants are met within the interchange spacing standard.

The IAMP has been developed to be consistent with the Oregon Highway Plan, which is an element of the OTP (see section below).

[5] As stated in the Implementation section of the OTP, requirements for regional and local transportation system plans (TSPs) are found in the Transportation Planning Rule (OAR 660-012). Regional and local TSPs must be consistent with the state TSP (the OTP), state multimodal, modal/topic and transportation facility plans.

Oregon Highway Plan (1999)

The 1999 Oregon Highway Plan (OHP), an element and modal plan of the state's comprehensive transportation plan, guides the planning, operations, and financing of ODOT's Highway Division. Policies in the OHP emphasize the efficient management of the highway system to increase safety and to extend highway capacity, partnerships with other agencies and local governments, and the use of new techniques to improve road safety and capacity. These policies also link land use and transportation, set standards for highway performance and access management, and emphasize the relationship between state highways and local road, bicycle, pedestrian, transit, rail, and air systems.

The policies found within the OHP that are relevant to the I-84 Chenoweth IAMP include:

- Policy 1A: State Highway Classification System;
- Policy 1B: Land Use and Transportation;
- Policy 1C: State Highway Freight System;
- Policy 1F: Highway Mobility Standards;
- Policy 1G: Major Improvements;
- Policy 2B: Off-System Improvements;
- Policy 2F: Traffic Safety;
- Policy 3A: Classification and Spacing Standards;
- Policy 3B: Medians;
- Policy 3C: Interchange Access Management Areas;
- Policy 4A: Efficiency of Freight Movement;
- Policy 5B: Scenic Resources

Findings: The I-84 Chenoweth IAMP was developed in accordance with the policies set forth in the Oregon Highway Plan (OHP). The following identifies the OHP policies that pertain to the I-84 Chenoweth IAMP and how the IAMP satisfies the requirements.

<u>Policy 1A: State Highway Classification System</u>. The state highway classification system includes five classifications: Interstate, Statewide, Regional, District, and Local Interest Roads. In addition, there are four special purpose categories that overlay the basic classifications: special land use areas, statewide freight route, scenic byways, and lifeline routes. Interstate-84 is an Interstate Highway and is part of the National Highway System (NHS). The Policy 1A definition states:

> "Interstate Highways provide connections to major cities, regions of the state, and other states. A secondary function in urban areas is to provide connections for regional trips within the metropolitan area. The Interstate Highways are major freight routes and their objective is to provide mobility. The management objective is to provide for safe and efficient high-speed continuous-flow operation in urban and rural areas."

Findings: The I-84 Chenoweth IAMP recognized I-84 as an Interstate Highway, complies with the mobility standards of the interchange in the 20-year horizon, and along with a transportation improvement plan that provides for new and improved local facilities that will reduce travel on I-84 for local trips.

Policy 1B: Land Use and Transportation. This policy recognizes the role of both the State and local governments related to the state highway system and calls for a coordinated approach to land use and transportation planning.

Findings: The IAMP was developed through a cooperative planning effort between the City of The Dalles, Wasco County, and DLCD. The IAMP will be implemented by the City of The Dalles and Wasco County through an Interchange Management Overlay District which will require coordinated agency review on all future development or land use actions within the District.

Policy 1C: State Highway Freight System. This policy recognizes the need for the efficient movement of freight through the state. Interstate-84 is a designated freight route.

Findings: The transportation improvement plan improves local connectivity to and within an industrial area adjacent to the I-84 Chenoweth Interchange for the purpose of reducing traffic volume demand at the interchange and improving accessibility for heavy vehicles to the area.

Policy 1F: Highway Mobility Standards Access Management Policy. This policy addresses state highway performance expectations, providing guidance for managing access and traffic control systems related to interchanges.

Findings: The I-84 Chenoweth IAMP demonstrates that the interchange will meet ODOT mobility standards through the 20-year horizon. It also provides an access management plan that improves access management within the study area.

Policy 1G: Major Improvements. This policy requires maintaining performance and improving safety by improving efficiency and management before adding capacity.

Findings: The I-84 Chenoweth IAMP provides measures to increase efficiency through access management and provides improvements to the local street system that reduces the need to widen the Chenoweth Interchange bridge structure within the planning horizon.

Policy 2B: Off-System Improvements. This policy recognizes that the state may provide financial assistance to local jurisdictions to make improvements to local transportation systems if the improvements would provide a cost-effective means of improving the operations of the state highway system.

Findings: As part of the I-84 Chenoweth IAMP process, ODOT is providing in kind project management to the City of The Dalles. The transportation improvement funding plan also includes a financial commitment from ODOT to participate in improvements on West 6th Street (a city facility) to help achieve ODOT's access spacing requirements.

Policy 2F: Traffic Safety. This policy emphasizes the state's efforts to improve safety of all uses of the highway system. Action 2F.4 addresses the development and implementation of the Safety Management System to target resources to sites with the most significant safety issues.

Findings: No existing safety deficiencies were identified within the study area, with the exception of limited sight distance at the interchange ramp terminals. However, an Access Management Plan was developed to ensure the long-term safety of the interchange area.

Policy 3A: Classification and Spacing Standards. This policy addresses the location, spacing and type of road and street intersections and approach roads on state highways. The adopted standards can be found in Appendix C of the Oregon Highway Plan. It includes standards for each highway classification; the I-84 Chenoweth Interchange is a urban interchange on an Interstate Highway with an existing two-lane crossroad. There are currently no plans for improvements to the interchange. Generally, the access spacing distance increases as either the highway's importance or posted speed increases. The current adopted spacing standard from the end of the Chenoweth Interchange entrance/exit ramps to the first major intersection is 1,320 feet.

Findings: See Policy 3C.

Policy 3C: Interchange Access Management Areas. This policy addresses management of grade-separated interchange areas to ensure safe and efficient operation between connecting roadways. Action items include developing interchange area management plans to protect the function of the interchange to provide safe and efficient operations between connecting roadways and to minimize the need for major improvements of existing interchanges. The local jurisdiction's role in access management is stated in Policy 3C as follows: "necessary supporting improvements, such as road networks, channelization, medians and access control in the interchange management area must be identified in the local comprehensive plan and committed with an identified funding source, or must be in place (Action 3C.2)."

Access management standards are detailed in Policy 3C and include the distance required between an interchange and approaches and intersections. The most stringent standards apply in interchange areas. Table 17 of the OHP[6] contains the minimum spacing standards applicable to the I-84 Chenoweth Interchange, a freeway interchange that will have a multi-lane crossroad. The spacing standards in an urban area for this type of interchange are:

1 miles (3.2 km) Distance between the start and end of tapers of adjacent interchanges.

1,320 feet (400 m) Distance to the first approach on the right (right in/right out only)

1,320 feet (400 m) Distance to the first major intersection or approach (no left turns allowed).

1,320 feet (400 m) Distance between the last right in/right out approach road and the start of the taper for the on-ramp.

[6] Although the IMSA is not fully developed, the IAMP is planning for full development for the IMSA and the existing access locations that do not meet ODOT's standards are along West 6th Street which is currently fully developed within 1,320-feet from the interchange.

Findings: The I-84 Chenoweth IAMP includes an Access Management Plan that consolidates access points and improves access spacing over the existing conditions. Ultimately, upon land redevelopment, access on the west side of the interchange will provide 350 feet of access spacing from the I-84 eastbound ramp terminal to the first full access to accommodate an existing intersection with Highway 30 and approximately 850 feet to the first right-in/right-out/left-in access point to a local public street approach through a deviation process. The east side of the interchange will require a deviation from the standard to 1,300 feet to the first full access due to topographic constraints and 750 feet to the first right-in/right-out in order to provide reasonable site access to developable parcel.

Policy 4A: Efficiency of Freight Movement. This policy emphasizes the need to maintain and improve the efficiency of freight movement on the state highway system. I-84 is a designated Freight Route.

Findings: The transportation improvement plan improves local connectivity to and within an industrial area adjacent to the I-84 Chenoweth Interchange for the purpose of reducing traffic volume demand at the interchange while also improving the efficiency of freight movement on the local roadway system.

Policy 5B: Scenic Resources. This policy applies to all state highways and commits the State to using best management practices to protect and enhance scenic resources in all phases of highway project planning, development, construction, and maintenance.

Findings: This policy was considered as part of the plan development.

Access Management Rule (OAR 734-051)

This Administrative Rule defines the State's role in managing access to highway facilities in order to maintain functional use, safety and preserve public investment.

The purpose of division 51 rules is to provide a safe and efficient transportation system through the preservation of public safety, the improvement and development of transportation facilities, the protection of highway traffic from the hazards of unrestricted and unregulated entry from adjacent property, and the elimination of hazards due to highway grade intersections. These rules establish procedures and criteria used by the Department to govern highway approaches, access control, spacing standards, medians and restriction of turning movements in compliance with statewide planning goals and in a manner compatible with acknowledged comprehensive plans and consistent with Oregon Revised Statutes (ORS), Oregon Administrative Rules (OAR), and the 1999 Oregon Highway Plan (OHP).

Section, Access Management Spacing Standards for Approaches in an Interchange Area, outlines how the State will manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways. Pursuant to 734-051-0125(1), spacing standards for approaches in the area of an interchange:

a) Are based on classification of highway and highway segment designation, type of area, and posted speed;

b) Apply to properties abutting state highways, highway or interchange construction and modernization projects, planning processes involving state highways, or other projects determined by the Region Manager; and

c) Do not apply to approaches in existence prior to April 1, 2000 except where any of the following occur:

   A) These standards will apply to private approaches at the time of a change of use.

   B) If infill development or redevelopment occurs, spacing and safety factors will improve by moving in the direction of the access management spacing standards, with the goal of meeting or improving compliance with the access management spacing standards.

   C) For a highway or interchange construction or modernization project or other roadway or interchange project determined by the Region Manager, the project will improve spacing and safety factors by moving in the direction of the access management spacing standards, with the goal of meeting or improving compliance with the access management spacing standards.

In order for ODOT to approve an application, the requirements of 734-051-0125(2) must be met:

a) Access spacing standards for approaches in the area of an interchange shown in Figures 1, 2, 3 and 4 must be met or approaches must be combined or eliminated to result in a net reduction of approaches to the state highway and improve compliance with spacing standards; and

b) The approach must be consistent with any applicable Access Management Plan or Interchange Area Management Plan.

Additional Section -0125 standards applicable to interchange areas include:

8) Deviations must meet the criteria in OAR 734-051-0135.

9) Location of traffic signals within an interchange area illustrated in Figures 1, 2, 3 and 4 must meet the criteria of OAR 734-020-0400 through 734-020- 0500.

10) The Department should acquire access control on crossroads around interchanges for a distance of 1320 feet. In some cases it may be appropriate to acquire access control beyond 1320 feet.

11) Spacing standards in Tables 5, 6, 7, and 8 and Figures 1, 2, 3, and 4, adopted and made a part of this rule, identify the spacing standards for approaches in an interchange area.

12) When the Department approves an application:

   a) Access management spacing standards for approaches in an interchange area must be met or approaches must be combined or eliminated resulting in a net reduction of approaches to the state highway and an improvement of existing interchange management areas spacing standards; and

   b) The approach must be consistent with any applicable access management plan for an interchange.

13) Deviations must meet the criteria in OAR 734-051-0135 .

14) Location of traffic signals within an interchange management area must meet the criteria of OAR 734-020-0400 through 734-020-0500.

15) The Department should acquire access control on crossroads around interchanges for a distance of 1320 feet. In some cases it may be appropriate to acquire access control beyond 1320 feet.

Section –0155 identifies when, how and why ODOT will develop access management plans and interchange area management plans for particular sections of a highway. The Rules states that:

1) The Department encourages the development of Access Management Plans and Interchange Area Management Plans to maintain and improve highway performance and safety by improving system efficiency and management before adding capacity. Access Management Plans and Interchange Area Management Plans:
   a) Must be consistent with Oregon Highway Plan;
   b) Must be used to evaluate development proposals; and
   c) May be used to determine mitigation for development proposals.
2) Access Management Plans and Interchange Area Management Plans must be adopted by the Oregon Transportation Commission as a transportation facility plan consistent with the provisions of OAR 731-015-0065. Prior to adoption by the Oregon Transportation Commission, the Department will work with local governments on any amendments to local comprehensive plans and transportation system plans and local land use and subdivision codes to ensure the proposed Access Management Plan and Interchange Area Management Plan is consistent with the local plan and codes.
3) The priority for developing Access Management Plans should be placed on facilities with high traffic volumes or facilities that provide important statewide or regional connectivity where:
   a) Existing developments do not meet spacing standards;
   b) Existing development patterns, land ownership patterns, and land use plans are likely to result in a need for deviations; or
   c) An Access Management Plan would preserve or enhance the safe and efficient operation of a state highway or interchange.
4) An Access Management Plan may be developed:
   a) By the Department;
   b) By local jurisdictions; or
   c) By consultants.
5) An Access Management Plan must comply with all of the following criteria, unless the Plan documents why a criterion is not applicable:
   a) Include sufficient area to address highway operation and safety issues and development of adjoining properties including local access and circulation.
   b) Describe the roadway network, right-of-way, access control, and land parcels in the analysis area.

c) Be developed in coordination with local governments and property owners in the affected area.

d) Be consistent with any applicable Interchange Area Management Plan, corridor plan, or other facility plan adopted by the Oregon Transportation Commission.

e) Include polices, provisions and standards from local comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied upon to implement the Access Management Plan.

f) Contain short, medium, and long-range actions to improve operations and safety and preserve the functional integrity of the highway system.

g) Consider whether improvements to local street networks are feasible.

h) Promote safe and efficient operation of the state highway consistent with the highway classification and the highway segment designation.

i) Consider the use of the adjoining property consistent with the comprehensive plan designation and zoning of the area.

j) Provide a comprehensive, area-wide solution for local access and circulation that minimizes use of the state highway for local access and circulation.

6) The Department encourages the development of an Interchange Area Management Plan to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways:

a) Interchange Area Management Plans are developed by the Department and local governmental agencies to protect the function of interchanges by maximizing the capacity of the interchanges for safe movement from the mainline facility, to provide safe and efficient operations between connecting roadways, and to minimize the need for major improvements of existing interchanges;

b) The Department will work with local governments to prioritize the development of Interchange Area Management Plans to maximize the operational life and preserve and improve safety of existing interchanges not scheduled for significant improvements; and

c) Priority should be placed on those facilities on the Interstate system with cross roads carrying high volumes or providing important statewide or regional connectivity.

7) An Interchange Area Management Plan is required for new interchanges and should be developed for significant modifications to existing interchanges. An Interchange Area Management Plan must comply with the following criteria, unless the Plan documents why compliance with a criterion is not applicable:

a) Be developed no later than the time an interchange is designed or is being redesigned.

b) Identify opportunities to improve operations and safety in conjunction with roadway projects and property development or redevelopment and adopt policies, provisions, and development standards to capture those opportunities.

c) Include short, medium, and long-range actions to improve operations and safety within the designated study area.

d) Consider current and future traffic volumes and flows, roadway geometry, traffic control devices, current and planned land uses and zoning, and the location of all current and planned approaches.

e) Provide adequate assurance of the safe operation of the facility through the design traffic forecast period, typically 20 years.

f) Consider existing and proposed uses of all the property within the designated study area consistent with its comprehensive plan designations and zoning.

g) Be consistent with any applicable Access Management Plan, corridor plan or other facility plan adopted by the Oregon Transportation Commission.

h) Include polices, provisions and standards from local comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied upon to implement the Interchange Area Management Plan.

Findings: The above policy review was considered as part of the plan development. The I-84 Chenoweth IAMP was developed in collaboration with the City of The Dalles, Wasco County, and ODOT and was developed in accordance with the guidelines set forth in the State of Oregon's Oregon Administrative Rules for Interchange Access Management Planning and Interchange Area Management Planning. Table 9-1 below identifies the required planning elements from OAR 734-051 and documents how the I-84 Chenoweth IAMP satisfies the requirements.

TABLE 9-1 OAR 734-051 ISSUES ADDRESSED

OAR 734-0051-0155 Requirement	How Addressed	Report Reference
Should be developed no later than the time the interchange is being developed or redeveloped -0155(7)(a)	This plan was developed in order to determine the future impacts of recent land use decisions on the function of the interchange. The plan was completed before any of the identified improvements to the interchange are necessary.	Section 1
Should identify opportunities to improve operations and safety in conjunction with roadway projects and property development or redevelopment and adopt strategies and development standards to capture those opportunities -0155(7)(b)	The access and land use management elements identified in this plan, as well as incorporated into the proposed land development ordinance amendments and a proposed ordinance for a new Supplemental Transportation System Development Charge, will result in operational and capacity improvements.	Section 1 Section 6 Section 7 Section 8

OAR 734-0051-0155 Requirement	How Addressed	Report Reference
Should include short, medium, and long-term actions to improve operations and safety in the interchange area -0155(7)(c)	The IAMP includes a phasing plan for the transportation system improvements, which includes a threshold analysis for determining how much development can be accommodated by each phase of improvements. Phase 1 (intersection improvements) includes short-term actions necessary to accommodate 10% of full build-out of the area. Phase 2 mid-term improvements include signalizing the interchange ramp terminals and a series of roundabouts on the local street system, will accommodate 55% of full build-out of the area. The Hostetler Street Connection is the major component of Phase 3, long-term improvements, which will allow for 75% build-out. The final phase is the long-term "Vision Improvements. This Phase 4 will likely occur beyond the 20-year time horizon and involves bridge widening to accommodate a 6-lane cross-section. The proposed Access Management Plan can be developed concurrently with improvements at all locations with the exception of along West 6th Street where it cannot be fully implemented until both proposed roundabouts on West 6th Street are operational (Phase 3).	Section 7 Section 8
Should consider current and future traffic volumes and flows, roadway geometry, traffic control devices, current and planned land uses and zoning, and the location of all current and planned approaches -0155(7)(d)	A full analysis of existing and forecast (2030) operational, geometric, and safety conditions was conducted for this planning effort. All surrounding land use was also identified, as were all affected accesses.	Section 4 Section 5 Section 6
Should provide adequate assurance of the safe operation of the facility through the design traffic forecast period, typically 20 years -0155(7)(e)	The forecast analysis shows that safe operations will be achieved for the interchange through 2030.	Section 6
Should consider existing and proposed uses of all property in the interchange area consistent with its comprehensive plan designations and zoning -155(7)(f)	A thorough analysis of surrounding land uses and land use potentials was performed, including modeling of alternate land use scenarios for the 67 acres zoned Commercial/Light Industrial. This analysis resulted in trip assignments for each parcel in the study (overlay) area, based on accommodating 85% of full build-out development and funding the necessary Phase 1, Phase 2, and Phase 3 (near-, mid-, and long-term improvements).	Section 4 Section 5 Section 6 Section 7
Is consistent with any applicable Access Management Plan, corridor plan or other facility plan adopted by the Oregon Transportation Commission-0155(7)(g)	The I-84 Chenoweth Interchange Area Management Plan is consistent with the 1999 OHP. (See following table). No other applicable plans adopted by the OTC were identified.	Section 3 Section 8

OAR 734-0051-0155 Requirement	How Addressed	Report Reference
Includes polices, provisions and standards from local comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied upon to implement the Interchange Area Management Plan. -155(7)(h)	Implementation of the IAMP is reliant upon the City of The Dalles and Wasco County amending their respective Transportation System Plans to incorporate the transportation improvements associated with the Preferred Plan. In addition, implementation of the IAMP will occur through the City of The Dalles amending the Land Use and Development Ordinance to include an IAMP overlay district. The Chenoweth Interchange Overlay District (CIOD) contains the submittal requirements and review standards for land use amendment and development proposals within the district; access management standards and local street connectivity requirements will be based on the IAMP. The City will also adopt a Supplemental Transportation System Development Charge (STSDC) that will finance transportation improvements in the vicinity of the I-84 Chenoweth Interchange (Appendix I). Amendments will ensure that future development and land use actions within the interchange management area do not degrade the interchange terminal volume to capacity ratios below the adopted Oregon Highway Plan mobility standards. These amendments include coordination between agencies, traffic impact analysis requirements, monitoring of traffic operations, and access management requirements. The locally amended TSPs (City of The Dalles and Wasco County) and the two proposed City ordinances (CIOD and STSDC), are the documents that will be relied upon to implement the IAMP.	Section 3 Section 7 Section 8

THE PLAN WILL DETERMINE		
OAR 734-051-0155 Requirement	**Determination**	**Report Reference**
Driveway and roadway spacing and connections	The operational analysis considered all access points and intersections within approximately ½ mile from the existing I-84 Chenoweth Interchange, including all key intersections that have potential to affect traffic operations in the interchange area over the planning period. The resulting Access Management Plan implements the ¼ mile spacing requirements with the exception of public street access points on River Road at River Trail Way and on 6th Street at Division Street and Irvine Street.	Section 7
Local street connections to ensure adequate access to properties and off-highway circulation	The IAMP includes a proposed local street circulation pattern (Figure 7-1, Local Circulation and Access Plan, and Table 7-1).	Section 7 Section 8
Median treatments	Median treatments are proposed for West 6th Street to meet ODOT access management standards (Figure 7-1, Local Circulation and Access Plan).	Section 7
Location and type of traffic control devices needed to ensure safe and efficient operations in the operational area of the interchange	Signalizing the ramp terminals is included in Phase 2 improvements. Roundabouts at River Road/River Trail Way, River Road/West 6th Street (US 30), and West 6th Street/Chenoweth Loop are also planned as part of Phase 2. Signals at the Hostetler under-crossing are included in Phase 3 improvements. **Error! Reference source not found.** shows all necessary traffic control within the IMSA.	Section 7
Location of sidewalks and bicycle lanes	Sidewalks and bicycle lanes will be constructed on the local street system consistent with City standards. Bridge widening in Phase 4 (expected sometime beyond the IAMP planning horizon) will include sidewalks and bicycle lanes.	Section 7

THE PLAN WILL DETERMINE		
OAR 734-051-0155 Requirement	**Determination**	**Report Reference**
Sidewalk and bicycle lane crossings (highway and ramp crossings)	NA – See above.	NA
Location of potential transit facilities (turnouts, shelters, park and ride areas)	Transit facilities were not considered as part of the IAMP because fixed route transit service does not exist nor is planned within the study area.	NA
Is new policy language needed in the City of The Dalles and/or Wasco County Comprehensive Plan to support adequate long-term interchange operations?	The City of The Dalles and Wasco County will amend their respective Transportation System Plans to incorporate the interchange policy statement (see Section 8). In addition, the City will amend its zoning ordinance to implement transportation demand management measures and development review standards.	Section 8
Are any land use changes/comprehensive plan (including TSP) amendments needed to implement the Interchange Area Management Plan?	The City of The Dalles and Wasco County will amend their respective Transportation System Plans to incorporate the transportation improvements associated with the Preferred Plan. The City of The Dalles will amend the Land Use and Development Ordinance to include an Interchange Area Management Plan Overlay District that contains the submittal requirements and review standards for land use amendment and development proposals within the district. The City will also adopt a Supplemental Transportation System Development Charge (STSDC) that will finance transportation improvements in the vicinity of the I-84 Chenoweth Interchange (Appendix I). Amendments will ensure that future development and land use actions within the interchange management area do not degrade the interchange terminal volume to capacity ratios below the adopted Oregon Highway Plan mobility standards. These amendments include coordination between agencies, traffic impact analysis requirements, monitoring of traffic operations, and access management requirements.	Section 8
Are any deviations from OHP and OAR 731-051 standards and requirements needed?	Deviations to the OHP access spacing standards are required on 6th Street and River Road. The Access Management Plan and the OHP Compliance section describe how each of the necessary deviations meets the requirements of Division 51. The IAMP and Implementation Plan define all the necessary standards and requirements.	Section 7 Section 8

Highway Design Manual

The Highway Design Manual includes ODOT standards and procedures for the location and design of new construction, major reconstruction, and resurfacing, restoration or rehabilitation (3R) projects. The Highway Design Manual is used for all projects that are located on state highways. Section 9.6, Interchange Design, includes the design standards, guidelines, and processes for designing interchanges for State Highways. ODOT, through the Engineering Services Unit, and FHWA must approve the reconstruction of an interchange on the Interstate system. The proposed interchange design must be prepared on the Standard Interchange Layout Sheet by the Engineering Services Unit or authorized representative. The approved design is then used for contract plans. Modifications to the I-84 Chenoweth Interchange would be subject to the standards in 9.6.1, Freeway Interchange Design.

Findings: The above policy review was considered as part of the plan development. The I-84 Chenoweth IAMP was developed in collaboration with the City of The Dalles, Wasco County, and ODOT because state, county, and city facilities are all included in the IAMP area. Design standards appropriate for each type of facility are included in the IAMP. The I-84 Chenoweth IAMP was developed in accordance with the guidelines and standards set forth in the Highway Design Manual.

Port of The Dalles Chenoweth Interchange, Columbia River/Interstate 84, Final Environmental Impact Statement (1995)

The stated purpose and need of the Final Environmental Impact Statement (EIS) is to improve access to the northern part of The Dalles, the proposed Gorge Discovery Center (700,000 visitors annually expected), and the Port of The Dalles. Access to the area was limited before the construction of the Chenoweth I-84 interchange because of the partial interchange that existed there previously, the lack of freeway crossings north of Hostetler Street, and railroad crossings north of Webber Street.

The preferred alternative evaluated in the Final EIS includes the construction of a full-diamond interchange south of where I-84 crosses Chenoweth Creek, widening US 30, and reconstruction of railings on the Chenoweth Creek Bridge. The bridge of the new interchange was expected to accommodate two 14-foot travel lanes, two 14-foot center turn lanes, two six-foot shoulders/bikeways, and two 7-foot sidewalks. The preferred alternative includes widening US 30 to accommodate a center turn lane for traffic accessing the interchange and travelers going eastbound on I-84.

The preferred alternative improvements described in the Final EIS are located entirely within The Dalles' Urban Growth Boundary (UGB) and outside of the Columbia River Gorge National Scenic Area (CRGNSA). Improvements include mitigation for minimal wetland impacts. It was found that the preferred alternative would not substantially affect wildlife or aquatic species and would not displace homes or businesses. About 10 acres of land would need to be acquired from Northwest Aluminum Company, however, for right-of-way. At the time of adoption of the Final EIS, there were 0.19 acres within existing interchange right-of-way in the General Management Area of the CRGNSA Plan, which would continue to be subject to applicable CRGNSA provisions.

Findings: N/A. This Environmental Impact Statement was used for review and background information only.

Intergovernmental Agreement/Settlement Agreement (No. 23886) – ODOT, the City of The Dalles, and WM3, Inc.

This agreement, signed by ODOT, the City of The Dalles, and WM3, Inc., in February and March, 2007, is described in the background section of this memorandum. The City of The Dalles adopted a zoning change for approximately 67 acres of land southeast of the I-84 Chenoweth Interchange in 2006 (Ordinance No 06-1269). Because the City found that the proposed comprehensive plan designation and zone change would have a significant effect under OAR 660-012-0060, the zone change was approved with conditions. ODOT appealed the decision to LUBA (Case No. 2006-136), and both ODOT and the City agreed to suspend the appeal proceedings in order to pursue a settlement agreement. The parties reached an agreement that was presented to the OTC at its

meeting in November, 2006, the result of which amended the OHP to lower the volume-to-capacity (V/C) ratio from .85 to .75 for the Chenoweth Interchange ramp intersections with River Road.

The terms of the agreement specify that interchange capacity will be protected in the short-term by changing the V/C ratio standard from .85 to .75. The terms also specify that needed improvements to the Chenoweth Interchange and funding for these improvements will be identified in an IAMP for the interchange. The IAMP is to include policy and code amendments and any other necessary provisions that will be adopted in the City's adopted plans and ordinances and a facility plan that will be adopted by the OTC.

Until the IAMP and its provisions are adopted, the City agreed not to adopt Comprehensive Plan designation or zoning changes in the IAMP study area, and WM3 would not be permitted to challenge the revised v/c ratio standard. Of the 67 acres of land whose zoning was changed from industrial to commercial/light industrial, 42 acres of the land would be required to include covenants prohibiting non-industrial development on the land – even though allowed by the underlying commercial zoning – until the IAMP is adopted or until July 1, 2010, whichever occurs first. The V/C ratio standard would also not be re-considered or revised until the IAMP is completed and adopted.

Findings: N/A. This agreement was used for review and background information only.

LOCAL PLANNING DOCUMENTS

Wasco County Comprehensive Plan (1983)

Goals and policies for planning in Wasco County are found in Section XV of the County's Comprehensive Plan. Policies and implementation provisions related to land use include the following:

GOAL #2: LAND USE

B. Inventories and other forms of data used in the development of the Comprehensive Plan shall be the most factual and current data available.

C. The Comprehensive Plan shall be coordinated with all other plans and programs affected by, or having effect on, land use within the County.

POLICY 3 The Comprehensive Plan shall be reviewed periodically for necessary revisions to keep pace with changes in the physical, environmental, social and economic character of the County.

Implementation

B. Plan review and amendment shall take place every two years or whenever significant changes in the social, economic, physical, or environmental character of the County are evident.

C. Plan review, evaluation, and amendment shall be carried out utilizing the revisions process as set forth in the Comprehensive Plan.

GOAL #14: URBANIZATION

POLICY 1 Conversion of rural agricultural land to urbanizable land shall be based upon consideration of each of the following factors:

A. environmental, energy, social and economic consequences;

B. demonstrated need consistent with other goals;

C. availability of alternative suitable locations for the requested use;

D. compatibility of the proposed use with related agricultural land; and

E. the retention of Class I, II, III, IV, V, and VI soils in farm use.

POLICY 2 Preserve community identity by encouraging concentration of residential development in and near existing communities.

Existing land use policies and implementation provisions address the factual basis for the Comprehensive Plan, its coordination with other plans and programs, its update, the conditions for urban expansion, and concentrating residential development. There are not explicit policies or other provisions directing the type and location of land uses being planned for the County, for public facilities criteria in selecting urban reserve and UGB expansion areas being considered for The Dalles and the IAMP study area, or for managing these areas. These urbanization-related issues will need to be considered in the development of the I-84 Chenoweth IAMP.

The County has not yet adopted a Transportation System Plan (TSP) so the Transportation Element of the Comprehensive Plan is left to serve as the guide for transportation planning and programming in the County until a TSP is adopted. The Transportation section in the Comprehensive Plan (Section VI) generally describes existing facilities and services and does not propose policies or future projects. The plan refers to the six-year County road plan (maintained by Wasco County Advance Road Planning Program and Roadmaster) for an inventory of road conditions and priority for improvements.

The following transportation policies in Section XV represent the extent of roadway policy in the existing County Comprehensive Plan:

POLICY 1 Develop and maintain an adequate County road system.

Implementation

B. The development of alternative modes of transportation within the Wasco County six-year road plan shall be encouraged.

D. The safety features of County roads shall be improved to reduce congestion, adverse turns and impaired visibility.

G. Controlled access along highways and major arterials should enhance traffic flow and promote safety.

H. Standards for development along highways and roads shall take into consideration setbacks to reduce traffic hazards and congestion.

The one public road in the county portion of the IAMP study area is US Highway 30. This is the Historic Columbia River Highway and is subject to provisions in the Historic Columbia River Highway Master Plan.

Findings: The above policy review was considered as part of the plan development. The I-84 Chenoweth IAMP was developed in collaboration with the City of The Dalles, Wasco County, DLCD and ODOT. The IAMP was developed in accordance with the guidelines set forth in local plans, policies and ordinances.

Prior to the IAMP, local regulatory tools did not adequately address the future transportation needs in this area. New ordinances adopted by the City of The Dalles and Wasco County address access management, local street connectivity, and transportation financing and will become part of local comprehensive plans. These will allow an improved transportation system to support future planned growth in The Dalles.

Wasco County Land Use and Development Ordinance (1985, Updated 1999)

The Wasco County Land Use and Development Ordinance implements the general land use policies provided in the County's long-range Comprehensive Plan. The only county zone found in the IAMP study area is A-1 (160), which corresponds to Exclusive Farm Use zoning with a 160-acre minimum. As part of the Columbia River Gorge National Scenic Area outside of an Urban Area, the county portion of the IAMP study area is also designated as General Management Area (GMA) and applicable provisions of the CRGNSA Management Plan are described in the earlier section of this memorandum.

According to Sections 3.210(B) and (C), permitted uses in the A-1 zone include the following:

- Uses permitted outright – agricultural uses and structures related to agricultural uses; replacement of dwelling; wetland and wildlife habitat creation, restoration, or enhancement; climbing and passing lanes within existing highway right-of-way; reconstruction, modification, or minor improvements of public roads not including additional travel lanes; schools; places of worship; mineral and geothermal operations; subdivisions and partitions subject to special conditions; utilities.
- Uses permitted conditionally – park and community centers; solid waste disposal sites; home occupations; facilities related to public roads; reconstruction or modification of public roads involving removal or displacement of structures but not involving creation of new parcels.

Future modifications to the interchange that are located outside of the UGB may require a county conditional use permit. Section 3.210(D) provides criteria for approving conditional uses. Proposed projects must not:

1. Force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; or
2. Significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use.

Dimensional standards and setbacks for uses in the A-1 zone are presented in Section 3.210(I).

Findings: The above policy review was considered as part of the plan development. The I-84 Chenoweth IAMP was developed in collaboration with the City of The Dalles, Wasco County, DLCD and ODOT. The IAMP was developed in accordance with the guidelines set forth in local plans, policies and ordinances.

Prior to the IAMP, local regulatory tools did not adequately address the future transportation needs in this area. New ordinances adopted by the City of The Dalles and Wasco County address access management, local street connectivity, and transportation financing and will become part of local comprehensive plans. These will allow an improved transportation system to support future planned growth in The Dalles.

City of the Dalles Comprehensive Plan (2006)

This document presents the adopted goals and policies that guide land use in The Dalles. The Comprehensive Plan is a statement of public policy for the guidance of growth, development, and conservation of resources within the city.[7]

Existing policies related to land use in the city include the following:

Goal #2: Land Use Planning

Policies

2. Establish Plan review and revision procedures which include provisions for participation by citizens and affected governments and special districts.
3. Assure an adequate factual base for decisions and action.
6. Implement this Plan through appropriate ordinances and action. Implementing measures shall be developed to allow administrative review and approval authority.

The I-84 Chenoweth IAMP will be adopted as an amendment to the City's TSP, which is part of the City's Comprehensive Plan. It will be developed with citizen participation in stakeholder interviews and at general public meetings and committee meetings and will require coordination between the City, County, and ODOT. The plan will be implemented through any necessary amendments to the City's Comprehensive Plan policies and the Land Use and Development Ordinance.

Confirmed Goal 5 resources in the IAMP study area will be subject to state and either County or City Goal 5 policies and programs. City Goal 5 policies include the policies below. Trails in the IAMP study area are addressed in adopted city policy and should be reflected in the IAMP and amended City TSP.

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[7] Sections of the Comprehensive Plan will be superseded by information in the city's Growth Management Report (2007), once this document is adopted. The Growth Management Report (also reviewed in this memorandum) provides updated information for existing conditions and project land needs related to economic development (Goal #9), housing (Goal #10), and public uses (Goal #11). Although the city has not legislatively adopted the report in its entirety, certain source reports and analyses, such as the coordinated population forecast, have been adopted.

Goal #5: Open Spaces, Scenic and Historic Areas, and Natural Resources

1. Link and integrate the protection and enhancement of Open Space into Goal 8, Recreation.
2. Develop and maintain a current map and inventory areas of significant environmental concern…
3. Promote and provide incentives to protect and enhance Mill Creek, Chenoweth Creek, Fifteen Mile Creek and Three Mile Creek for their natural and recreational values, consistent with The Dalles Riverfront Plan. See Goal 8, Recreation.
4. Promote the development of a linear park system and nature trail along Mill and Chenoweth Creeks and a multipurpose trail along the Columbia River consistent with Goals 8 and 12 and The Dalles Riverfront Plan.

Economic development – and commercial development in particular – is largely driving the need for the I-84 Chenoweth IAMP. The following Goal #9 policies and implementation measures are pertinent to development in the vicinity of the IAMP, and transportation-related policy amendments proposed as part of IAMP implementation may modify or update them.

Goal #9: Economic Development

Policies

1. Provide appropriately designated vacant buildable land in adequate quantities to meet the forecast needs of The Dalles to the year 2010
3. Plan for and make prudent public investments to meet the future demands of industrial, commercial, and residential growth in The Dalles.
11. Reserve industrial zones for industrial uses and uses compatible with industry.
12. Review and revise administrative policies and procedures to streamline the planning process, and reduce delays in obtaining development approvals.
16. Encourage cooperation between public and private sectors to support economic growth.

Implementation Measures

3. The Dalles Industrial Area

a) Provide for industrial development located with good access to I-84, arterial streets and rail facilities. Encourage the development of a full I- 84 West Interchange to serve the industrial area as well as the Gorge Discovery Center.

4. Service/Recreation Areas

a) Provide for mixed-use business and service commercial areas in locations with good access to I-84, Columbia River access, and proximity to recreation and/or visitor attractions.

In terms of transportation, the goals and policies in the Comprehensive Plan are updated by those in the City's 2006 Transportation System Plan (TSP) (see City of the Dalles Transportation System Plan section of this memorandum).

City urban expansion is guided by the goals and policies of Goal #14 (Urbanization). City goals and policies guiding urbanization include those below:

Policies

4. Changes to the Urban Growth Boundary shall be based upon consideration of the following factors:

a) Demonstrated need to accommodate long-range urban population growth requirements consistent LCDC [statewide planning] goals;

b) Need for housing, employment opportunities, and livability;

c) Orderly and economic provision for public facilities and services

d) Maximum efficiency of land uses within and on the fringe of the existing urban area

5. Encourage the orderly annexation of land within the Urban Growth Boundary to the City of The Dalles.

a) Adequate public utilities shall be planned or provided for, per local and State statutes, to service an area when annexation is considered. This includes, but is not limited to, storm sewers, sanitary sewer and water service.

b) Public facilities such as roads, street lights, parks, and fire hydrants may be required for development of the area in question and shall be subject to review prior to annexation.

These goals and policies apply to urban growth areas inside the City's UGB but not yet annexed to the City. They also apply to areas of future urban expansion adjacent to the City's existing UGB.

Findings: The above policy review was considered as part of the plan development. The I-84 Chenoweth IAMP was developed in collaboration with the City of The Dalles, Wasco County, DLCD and ODOT. The IAMP was developed in accordance with the guidelines set forth in local plans, policies and ordinances.

Prior to the IAMP, local regulatory tools did not adequately address the future transportation needs in this area. New ordinances adopted by the City of The Dalles and Wasco County address access management, local street connectivity, and transportation financing and will become part of local comprehensive plans. These will allow an improved transportation system to support future planned growth in The Dalles.

The Dalles Growth Management Report (2007)

The Growth Management Report was prepared by Winterbrook Planning and released in June 2007. The report provides findings to support a proposed expansion of the 2026 UGB, the expansion of The Dalles "Urban Area" consistent with the Columbia River Gorge National Scenic Area Act, and the establishment of the 2056 The Dalles Urban Reserve Area (URA).

The report relies on findings from the following reports and analyses:

- Land Use Needs and Locational Analysis (Erik C. Rundell, City of The Dalles, 2005)
- Population Forecast for The Dalles (ECONorthwest, 2006)
- City of The Dalles Economic Opportunities Analysis (ECONorthwest, 2007)

- City of The Dalles Residential Land Needs Report (Winterbrook Planning, 2007)
- City of The Dalles Recommended Zoning District Amendments (Winterbrook Planning, 2006)
- City of The Dalles Demographic Trends Analysis (Winterbrook Planning, 2006)
- Buildable Lands Inventory Methods and Maps for The Dalles UGB and URA (Winterbrook Planning and the City of The Dalles, 2006)\
- Goal 13 Energy and Land Use Analysis (ECONorthwest, 2006)
- Public Facilities Findings for 2026 UGB and 2056 URA (City of The Dalles Public Works Department, 2007)
- Rural Residential Area Capacity Analysis (City of The Dalles Community Development Department, 2007)

While the City has not adopted the report in its entirety through a legislative process, supportive source reports and analyses, such as the population forecast, have been adopted.

According to the Growth Management Report, the twenty-year land need (to 2026, and in addition to land already inside the UGB) is approximately 540 gross buildable acres of residential land and approximately 85-120 buildable acres for employment. This is the amount of land that is being proposed for inclusion in the UGB. The fifty-year land need (to 2056) is estimated to be about 1,065 acres for residential uses and about 560 acres for employment uses. The proposed URA does not satisfy this fifty-year need: it is approximately 1,180 acres and short of the target by about 445 acres due to topographical and regulatory constraints.

According to Map 6, Generalized Comprehensive Plan, in the report, the UGB expansion and designation of URA areas to the north/northwest of the city, including lands in the vicinity of the Chenoweth Interchange, are intended primarily for residential use. However, according to City staff, all of this land is also designated as part of the Columbia River Gorge National Scenic Area (CRGNSA). The current NSA designation must be converted to Urban Area in order to accommodate the adoption of the UGB expansion and the establishment of a URA. A rules committee convened by the Columbia River Gorge Commission must determine whether this conversion constitutes a "minor" or "major" amendment to the NSA management plan (see

Columbia River Gorge National Scenic Area Management Plan/National Scenic Area Act section in this memorandum). A minor amendment could be decided by the Columbia River Gorge Commission while a major amendment would need to be decided by Congress. It is possible that the rules committee decision and subsequent action – including potential appeals – will take several years. Regardless, consideration of the long-term urbanization of this area – even if for low-density residential uses – may be factored into the transportation analysis performed in developing this IAMP.

Findings: N/A. This report was used for review and background information only.

City of the Dalles Land Use and Development Ordinance (1998, Updated 2008)

The City's Land Use and Development Ordinance (LUDO) implements policies established in the City's Comprehensive Plan and regulates development through zoning designations and provisions that apply generally to all development and particularly to land divisions within the city.

Land inside the IAMP study area is zoned with the following designations, shown in Figure 1:

- Mobile Home Residential District (RMH)
- Recreational Commercial District (CR)
- General Commercial District (CG)
- Commercial/Light Industrial District (CLI)
- Industrial District (I).

There are also two areas of Community Facilities Overlay District (CFO) zoning applied in the IAMP study area: at the intersection of River Road and Columbia Road and at the end of River Trail Way. The City has not adopted overlay zoning districts for floodplains or steep slopes, but any of these natural hazard areas within the IAMP study area will be subject to provisions in Chapter 8 (Physical and Environmental Constraints).

Each zoning district in Chapter 5 (Zoning District Regulations) of the City's LUDO regulates permitted uses and development and design elements, including lot area and dimensions, setbacks, lot coverage, pedestrian walkways, and parking areas, and drives. Some of the uses permitted outright in the zoning districts in the IAMP study area include the following:

- Mobile Home Residential District (RMH) – singe-family dwelling units, including attached units, and multi-family dwelling units, subject to site plan review provisions (Section 3.030); manufactured dwelling units in parks subject to special manufactured dwelling park provisions (Chapter 11); parks and open space; child care, family care, and residential care facilities; wireless towers, subject to special provisions (Section 6.140); accessory dwelling units and structures, subject to accessory development provisions (Section 6.030); bed and breakfast and vacation rentals, subject to special provisions (Section 6.040); home occupations, subject to home business provisions (Section 6.2020).

- Recreational Commercial District (CR) – all permitted uses subject to site plan review provisions (Section 3.030); retail services, except shopping centers and uses with floor areas over 15,000 square feet; conference and convention centers; lodging and campgrounds, subject to recreational vehicle park provisions (Section 5.080.030); recreational facilities; dwelling units above permitted commercial uses; restaurants; administrative offices; light industrial uses (compatible with commercial and recreational uses); parking lots, subject to parking standards (Chapter 7); parks and open space; wireless towers, subject to special provisions (Section 6.140); accessory buildings, subject to accessory development provisions (Section 6.030); dwelling unit for on-site personnel (one unit/site).

- General Commercial District (CG) – all permitted uses subject to site plan review provisions (Section 3.030); retail and wholesale services; personal and professional services; conference

and convention centers; lodging; equipment sales and services; light manufacturing; restaurants and bars; parking lots, subject to parking standards (Chapter 7); parks, open space, and indoor recreational facilities; dwelling units above permitted commercial uses; residential care and family day care facilities; accessory buildings, subject to accessory development provisions (Section 6.030); bed and breakfast and vacation rentals, subject to special provisions (Section 6.040); home occupations, subject to home business provisions (Section 6.2020); wireless towers, subject to special provisions (Section 6.140); bus shelters, bike racks, and other pedestrian, bicyclist, and transit amenities.

- Commercial/Light Industrial District (CLI) – all permitted uses subject to site plan review provisions (Section 3.030); retail and wholesale services; personal and professional services; engineering, research and development; restaurants and bars; lodging; light manufacturing and warehousing; parks, open space, and indoor recreational facilities; parking lots, subject to parking standards (Chapter 7); transportation depots; wireless towers, subject to special provisions (Section 6.140); accessory buildings, subject to accessory development provisions (Section 6.030); dwelling unit for on-site personnel (one unit/site); bed and breakfast and vacation rentals, subject to special provisions (Section 6.040); home occupations, subject to home business provisions (Section 6.2020); bus shelters, bike racks, and other pedestrian, bicyclist, and transit amenities.

- Industrial District (I) - all permitted uses subject to site plan review provisions (Section 3.030); community facilities, subject to special overlay district provisions (Section 5.100); feed, seed, and fuel stores; food production and food services; heavy equipment sales and services; manufacturing and storage services; supporting personal and professional services; parking lots; fueling stations; parks and open space; rail yards, shipyards, and commercial docking facilities; rock and mineral processing; rodeo and circus grounds; transportation facilities; truck stop facilities; warehousing; wireless towers, subject to special provisions (Section 6.140); accessory buildings, subject to accessory development provisions (Section 6.030); dwelling unit for on-site personnel (one unit/site); bus shelters, bike racks, and other pedestrian, bicyclist, and transit amenities.

The Industrial District is the only zoning district that lists transportation facilities as a permitted use. The recommendations of the I-84 Chenoweth IAMP may include improvements to the existing interchange and the local transportation system in the vicinity. These improvements may require a city land use approval process.

The zoning districts in Chapter 5 also refer to regulations in Section 6.010 (Landscaping Standards), Section 6.030 (Accessory Development), Chapter 7 (Parking Requirements), and Section 6.050 (Access Management). The CFO District regulates permitted uses and development standards in the overlay district, and requires conditional use review and master planning for development in the district (Section 5.100).

Chapter 6 (General Provisions) of the City's LUDO addresses access management, driveway and entrance standards, and vision clearance standards among other provisions. Access management provisions (Section 6.050) include requirements for unified access and circulation, connectivity, joint and cross access, and non-conforming access as well as allowances for shared parking. Table 1

provides access spacing standards in ranges based on the road classification. The section clearly defers to ODOT access spacing standards for ODOT roadways (Section 6.050.040(C)). Chapter 6 also provides standards for the number, widths, and other design elements of driveways (Section 6.060). Vision clearance regulations (Section 6.100) provide different standards depending on the road classification.

Chapter 9 (Land Divisions) establishes requirements for block size, lot access, street connectivity, and redevelopment plans for land divisions (Section 9.020). Partition application criteria require that the location of all existing and proposed streets, curbs, and sidewalks be shown in the plans as well as all areas proposed for public dedication including street rights-of-way, trails, and easements (Section 9.030.030). Subdivision and Planned Development application criteria similarly require that existing and proposed circulation systems be shown in site plans and conceptual development plans, including bikeways, off-street parking, service and loading areas, major access points to public rights-of-way, pedestrian pathways, and their interaction with the vehicular circulation system (Section 9.040.030 and 9.050.040). As part of final plat approval, the applicant must guarantee that transportation improvements shown in site plans will be constructed and constructed to City standards established in Chapter 10 (Improvements Required with Development).

Chapter 10 (Improvements Required with Development) establishes requirements for the timing and standards for constructing improvements. Timing regulations require that full improvements (including street, curb, sidewalk, and storm sewer) be provided with the construction or addition of a new dwelling unit on a lot, with exceptions for replacing units after a natural disaster and additional regulations for providing sidewalks (Section 10.030). Pedestrian improvement requirements (Section 10.040) address location and minimum widths as well as connectivity within a site and to adjacent sites, linkages to trails, and potential off-site improvements. Similarly, bicycle improvement requirements (Section 10.050) specify location of bike lanes (on new and reconstructed arterial and major collector streets), connectivity within and between sites, and minimum widths for bicycle/pedestrian paths.

Street improvement requirements (Section 10.060) establish the threshold and procedures for traffic studies as well as strategies for discouraging pass-through traffic on local streets, regulations for half-street improvements and streets adjacent to streets not improved to City standards, rules for connectivity, alley provisions, and conditions for providing private streets. The section includes a table of standards (including widths of right-of-way, roadway, bike lanes, sidewalks and planter strips) based on street classification.

Chapter 10 also addresses extensions of public utilities (Section 10.070) and dedications and easements (Section 10.110).

Findings: The above policy review was considered as part of the plan development. The I-84 Chenoweth IAMP was developed in collaboration with the City of The Dalles, Wasco County, DLCD and ODOT. The IAMP was developed in accordance with the guidelines set forth in local plans, policies and ordinances.

Prior to the IAMP, local regulatory tools did not adequately address the future transportation needs in this area. New ordinances adopted by the City of The Dalles and Wasco County address access management, local

street connectivity, and transportation financing and will become part of local comprehensive plans. These will allow an improved transportation system to support future planned growth in The Dalles.

City of The Dalles Transportation System Plan (1999, Updated 2006)

The City of The Dalles TSP was adopted in 1999 to address transportation needs associated with anticipated future growth in the city's urban area for a 20-year period (1995-2015). A 2006 update addressed street functional classifications and the city's capital improvement program.

The TSP presents goals, policies, and objectives to guide transportation planning in the City, and includes road standards and access management guidelines for local roads, as well recommended projects for each modal element and a financing plan. It is expected that the City of The Dalles will amend the TSP by reference by adopting the IAMP document, and that this local action will occur prior to the OTC formally adopting the IAMP.

Among the goals in the adopted TSP that are most relevant to the I-84 Chenoweth IAMP are those that address transportation mobility, access, and the relationship between transportation and planned land uses (Chapter 1). There are no policies or objectives specific to interchanges in the existing TSP.

Goal 2: Enhance transportation mobility

Objectives

2.4 Develop a street system plan that maintains The Dalles as a hub by providing access for development in outlying areas.

2.5 Evaluate the need for additional traffic signals in the city, including at the I- 84 interchanges.

2.6 Improve intersection operations through downtown by measures including, but not limited to, coordinating traffic signals along the highway.

Goal 4: Develop a transportation system that supports planned land uses.

Objectives

Identify roadway system needs to serve undeveloped areas so that steps can be taken to preserve rights-of-way and maintain adequate traffic circulation.

4.1 Integrate new arterial and collector routes into the existing city grid system.

4.2 Identify improvements to existing policies and standards that address street connectivity and spacing.

The land use and transportation objectives call for improving existing policies and standards for spacing and connectivity. Little guidance is provided related to the road system classifications and transportation improvements that would be appropriate for specified land uses. Also absent from city transportation policy is coordination of the review of land use applications and/or plan and code amendments with affected agencies like Wasco County and ODOT.

Chapter 6 (Transportation System Plan) of the City's TSP includes street standards and guidelines for access management on local roads. Street standards are presented by road classification in Figures 12 and 13 and Table 5. The road classifications reflect surrounding land uses. These include standards for industrial collectors and industrial/commercial local roads that apply in the IAMP study area. General access management guidelines, not standards, for local roads are presented in Table 6. The section refers to state and OHP access management standards for freeway interchanges, and regional and district highways.

Chapter 6 also addresses transportation improvements according to mode. The IAMP study area includes sites for roadway, bicycle and pedestrian projects shown in Figures 14 and 15. Figure 16 shows a truck route on River Road and Highway 30 north to the border of the UGB. Existing and planned transit facilities and services in the city are limited to long distance Greyhound service and demand responsive service from senior centers and through the Mid Columbia Council of Governments; there is no fixed-route system.

The following roadway and bicycle/pedestrian projects are recommended in the study area:

- Project 1 – construction of Riverfront bicycle/pedestrian trail, short-term project, $500,000, the City of the Dalles and other "financial partners"; note: would use the River Road bridge to cross Chenoweth Creek and connect to Columbia River Historic Highway.
- Project 6 – re-stripe and provide bike lanes, sidewalks, and curbs on Hostetler Street from 6th Street to 10th Street, short-term project, $2 million, Wasco County "financial partner"
- Project 22 – widen bridge on River Road over Chenoweth Creek, long-term project, $1.5 million, ODOT, Wasco County, and the City of The Dalles "financial partners"
- Project 23 – Construct bikeway and pedestrian trail along Chenoweth Creek, long-term project, $750,000, the City of The Dalles and other "financial partners"
- Proposed bike lanes on River Road and Chenoweth Loop Road.

Although it is dated at this point, the City's Bicycle Master Plan (1993) also recommended a bike path as part of Chenoweth Creek Trail from W 6th to W 10th (1.1 miles, $180,000, low priority) and the Riverfront Trail (7.0 miles, $980,000, high priority) and bike lanes on W 6th Street (US 30) from Chenoweth Creek to Cherry Heights (1.9 miles, cost $1,300, high priority) in the study area.

Standards for traffic impact studies are not established in the City's TSP but in the City's code. Section 10.060 (Street Requirements) requires traffic studies for all proposed development of 16 dwelling units or more, all development projected to generate more than 400 average daily vehicle trips, or potentially for development near an intersection that is already operating at or below level of service "D."

Financing transportation improvements is addressed in Chapter 7 (Funding Options and Financial Plan). Financing needs for State and County projects in the IAMP study area include the following projects. It is to be noted for the County projects that there was more land in the urban growth area (inside the City UGB but outside its city limits) at the time the TSP was prepared.

- State project – Chenoweth Interchange, estimated cost $10.8 (Table 21)

- County projects – Short-term (2005-2010), widen Chenoweth Loop Road ($288,000) and re-stripe Hostetler Street ($156,000); long-term (2016+), widen River Road Bridge ($412,000).

Approximately $19 million is needed to fund all short-, medium-, and long-range projects. The TSP identifies a combination of State, County, City, and other funding sources (Table 20). Table 24 reports a funding deficit of $1.8 million or a cumulative deficit of $881,000 for local projects only. Projections for revenue from a potential utility fee or transportation System Development Charge (SDC) are made in the TSP as ways to make up for the deficit.

Findings: The above policy review was considered as part of the plan development. The I-84 Chenoweth IAMP was developed in collaboration with the City of The Dalles, Wasco County, DLCD and ODOT. The IAMP was developed in accordance with the guidelines set forth in local plans, policies and ordinances.

Prior to the IAMP, local regulatory tools did not adequately address the future transportation needs in this area. New ordinances adopted by the City of The Dalles and Wasco County address access management, local street connectivity, and transportation financing and will become part of local comprehensive plans. These will allow an improved transportation system to support future planned growth in The Dalles.

City of The Dalles Capital Improvement Program, 2007-2012 (CIP)

The City's Capital Improvement Program (CIP) document schedules infrastructure improvements for construction over the short term (five years), including transportation improvements. The CIP document specifies the source of funding for these projects. There are no projects in the IAMP study area listed in the 2007-2012 CIP.

Findings: The above policy review was considered as part of the plan development. The I-84 Chenoweth IAMP was developed in collaboration with the City of The Dalles, Wasco County, DLCD and ODOT. The IAMP was developed in accordance with the guidelines set forth in local plans, policies and ordinances.

Prior to the IAMP, local regulatory tools did not adequately address the future transportation needs in this area. New ordinances adopted by the City of The Dalles and Wasco County address access management, local street connectivity, and transportation financing and will become part of local comprehensive plans. These will allow an improved transportation system to support future planned growth in The Dalles.

Appendix A

Technical Memorandum #1: Definition & Background

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TECHNICAL MEMORANDUM #1

I-84 Chenoweth Interchange Access Management Plan

Definition & Background

Date: January 14, 2009

To: Ana Jovanovic, ODOT Region 4

From: Susan Wright, P.E.

cc: Brad DeHart, ODOT District 9
Dick Gassman, City of The Dalles
Marc Butorac, Kittelson & Associates, Inc.
Casey Bergh, Kittelson & Associates, Inc.

The purpose of this technical memorandum is to define the intent of the Interchange Area Management Plan (IAMP), define the interchange function, the project goals and objectives, and the proposed study area.

PURPOSE AND INTENT

The IAMP is intended to protect the function of the Interstate 84 (I-84) Chenoweth interchange and ensure that the interchange will continue to provide safe and efficient connections between I-84 and all roadways within the vicinity of the interchange. The IAMP will identify land use management strategies, short-term and long-term transportation improvements, access management goals, and strategies to fund identified improvements.

The intent is that the IAMP planning efforts will result in policies, ordinances, and other provisions that will be adopted into the City of The Dalles Transportation System Plan (TSP), Comprehensive Plan that support and implement the IAMP. The IAMP will be adopted by the Oregon Transportation Commission (OTC) as an amendment to the Oregon Highway Plan.

PROBLEM STATEMENT

In 1997 the State of Oregon invested $12 million into construction of the Chenoweth Interchange. The improvements serve to meet ODOT's priorities to provide access from I-84 to the west side of the City of the Dalles (The City), the Port of the Dalles (The Port), and the Columbia Gorge

Discovery Center (Discovery Center). In 2006, WM3, Inc. (WM3) proposed a zone change from industrial to commercial use for an approximately 67 acre parcel adjacent to the Chenoweth Interchange. The zone change was adopted by The City and subsequently appealed by the Oregon Department of Transportation (ODOT). An Intergovernmental Agreement (IGA) between ODOT, The City of The Dalles, ,and WM3 was drafted in which WM3 was approved to develop 25 acres with commercial land uses but agreed not to develop any 'non-industrial' uses on the remaining 42 acres until an IAMP is adopted by ODOT and The City. The City and ODOT have initiated the IAMP process to ensure that the original priorities for the interchange continue to be met, and to identify what changes to the interchange may be needed for the current land uses and for future intensification of use. The IAMP will identify long-term transportation improvements and potential funding strategies. The IAMP will satisfy requirements of the IGA and Oregon Administration Rule (OAR) 734-051. The IAMP will be developed according to the ODOT IAMP Guidelines.

INTERCHANGE FUNCTION

The I-84 Chenoweth Interchange is an urban interchange that connects I-84 with Highway 30 on the west side of the interchange and River Road on the east side of the interchange. The interchange is located near the city's northwestern boundary. Highway 30 is a District Highway that runs parallel to I-84 west of the study area and ends just south of River Road at Division Street. Highway 30 then turns into W. 6th Street which runs through much of the City and has several interchanges connecting it to I-84. River Road is a Wasco County facility from the Chenoweth Interchange to Bargeway Road at which point it becomes Webber Street, a City of The Dalles facility. These roadways provide a loop connection through the city's industrial area - mainly the Port of The Dalles - from the Chenoweth Interchange to the Webber Street Interchange. The land uses served by the Chenoweth Interchange primarily include industrial with some commercial on the east side of the interchange and commercial and residential on the west side of the interchange.

When it was originally designed in 1996, the I-84 Chenoweth Interchange was intended to function as a service level interchange that would safely and efficiently accommodate the traffic demands associated with The Port, industrial property in the vicinity of the I-84 and the Discovery Center. Visitor traffic to the Discovery Center has been lower than originally projected and the function of the interchange today is principally to provide safe and efficient access to the Port and industrial land in the western part of The Dalles (the area located east of the interchange). In addition to its primary function, the Chenoweth Interchange remains an important facility for accessing the Discovery Center and existing commercial lands in the vicinity of the city's industrial center. The interchange also serves local residential and commercial traffic circulating from I-84 to Highway 30 and W 6th Street.

The City of The Dalles is currently considering designating land northwest of the I-84 Chenoweth Interchange for residential development to meet the City's 20-year projected population needs. This requires amending the Columbia River Gorge National Scenic Area boundary in order to expand the City Urban Growth Boundary (UGB). If both of these changes happen, then the I-84 Chenoweth Interchange would provide a link from new residential development northwest of the

interchange to I-84 and to the employment area southeast of the interchange. No decision has been made regarding future UGB expansion in this area; therefore, the interchange function for I-84 Chenoweth IAMP does not assume it is intended to serve future growth outside of the current UGB.

GOALS AND OBJECTIVES

The IAMP process is intended to protect the function of the interchange for the next 20 years while accounting for changes in land use and traffic patterns. Potential capacity for development of existing industrial land within The Port, expansion of the Discovery Center, and redevelopment of land adjacent to the interchange will impact the traffic patterns over this period. As stated in Policy 3C of the 1999 Oregon Highway Plan, "it is the policy of the State of Oregon to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways." From this definition, the goals and objectives of the I-84 Chenoweth IAMP are to:

- Protect the function and operation of the Chenoweth Interchange as a local service facility and Interstate-84 as a facility of statewide significance.
- Protect the function and operation of the existing local street network within the IAMP study area.
- Ensure changes to the planned land use are consistent with protecting the long-term function of the interchange and the local street system.
- Ensure that the interchange will function to support future local economic development.
- Identify the existing and potential land use designations, intensities, conditions, and actions that could have a *favorable* effect on the facility, or an *adverse* effect on the facility.
- Manage the allowed land uses within the vicinity of the interchange to provide for future economic growth over the next 20 years.
- Identify and prioritize transportation improvements needed to maintain acceptable traffic operations at the proposed interchange while providing safe access to adjacent land uses.
- Apply access management techniques and develop a planned local-roadway infrastructure.
- Collaborate throughout the planning process with design professionals, jurisdictional representatives, developers, and local property owners.
- Comply with the intent of Statewide Planning Goal 1: Public Involvement, 2: Land Use Planning, 5: Natural Resources, 6: Air, Water and Land Resources Quality, 7: Areas Subject to Natural hazards, 8: Recreation Needs, 9: Economic Development, 12: Transportation, and 14: Urban Growth Boundaries.
- Develop implementation policies to be adopted into the City and County comprehensive plans, transportation system plans, interchange access standards, and zoning ordinances, as appropriate.

Evaluation Criteria

Based on the above objectives, the following evaluation criteria were assembled to ensure that each concept would be evaluated for consistency with the overall intent of the community and the project. The five evaluation criteria are as outlined below:

- Transportation Operations: This category consists of those criteria that assess the ability for vehicles to travel through and within the study area. Special considerations within this category include safety, local connectivity and mobility, including freight mobility.
- Land Use: This category consists of those criteria that assess right-of-way impacts, consistency with adopted land use and economic development plans, transportation capacity impacts of changes in land use intensity, impacts to utilities, and impacts to existing and proposed developments.
- Economic Development: This category consists of those criteria that assess the potential for near-term growth (1-5 years), mid-term growth (5-15 years), and long-term growth (15-25 years)
- Cost: This category consists of those criteria that assess the practicality of a design concept from a construction cost and feasibility perspective.
- Environmental, Social, and Equity factors: This category consists of those criteria that assess the degree to which an alternative is compatible with the natural and built environment including environmental impacts (i.e., storm water drainage and hazardous waste) and socio-economic impacts (i.e., stakeholders' needs).
- Accessibility: This category consists of those criteria that assess the ability to access properties and businesses within the study area to/from the regional infrastructure network including the balance between local access and roadway function, future access for undeveloped properties, and adherence to the access spacing standards.

INTERCHANGE MANAGEMENT STUDY AREA (IMSA)

To provide a comprehensive study and to achieve effective results, the IMSA needs to include developable and re-developable properties and major roadways that would significantly affect the interchange function over the next 20 years. At a minimum, the IMSA should include properties within ½ mile from the existing I-84 Chenoweth interchange as defined by the IAMP Guidelines. The study area should also take into account facilities and properties that will impact the operations of the interchange and any natural (e.g., Columbia River) or cultural resources in the vicinity of the interchange.

A draft Interchange Management Study Area (IMSA) map is shown in Figure 1. Figure 1 identifies key features and boundaries of the area to be included in the IAMP. As shown on the IMSA map, two study boundaries are identified: the IAMP Operations and Access Study area and the Land Use Study Area. The following describes the criteria used to create the IMSA map.

Operations and Access Study Area

The Operations and Access Study Area includes all access points and intersections within approximately ½ mile from the existing I-84 Chenoweth interchange and encompass key intersections that have potential to affect traffic operations in the interchange area over the planning period. This study boundary identifies the area for which operational analysis will be completed and the area that will be considered for the Access Management Plan (although access spacing requirements from the interchange are only ¼ mile, as identified in Figure 1). The proposed study intersections include:

- I-84 Eastbound Ramps/River Road
- I-84 Westbound Ramps/River Road
- Historic Columbia River Hwy (US 30)/River Road
- Historic Columbia River Hwy (US 30)/Division Street
- Historic Columbia River Hwy (US 30)/Chenoweth Loop
- Historic Columbia River Hwy (US 30)/Hostetler Street
- River Road/Columbia Road
- River Road/Crates Way
- River Road/River Way Trail

Land Use Study Area

The Land Use Study Area includes all properties located roughly within a ½ mile of the interchange. The Land Use Study Area extends beyond a ½ mile in places to incorporate developable and re-developable properties that are expected to significantly affect the interchange function over the next 20 years. Properties identified with potential to affect the interchange include those that are expected to utilize the Chenoweth Interchange as the primary connection to I-84 or those that may be necessary to improve local circulation. Developments to the east of I-84 were included if their primary access to the Chenoweth Interchange is provided via River Road, including those located on Klindt Drive, Crates Way, and Steelhead Way. To the west of I-84 properties included in the Land Use Study Area primarily include those properties with potential access need within the access spacing standards.

TABLE OF CONTENTS

The IAMP will be documented in several technical memorandums throughout the course of the project. The draft and final IAMP document will include a compilation of all material presented in the following order (subject to change):

1) Definition and Background
    a. IAMP Purpose and Background Purpose and Intent

   b. Problem Statement
   c. Interchange Function
   d. Goals and Objectives
   e. IAMP Study Area Map
2) Review of Adopted Plans and Regulations
3) Existing Conditions Analysis
   a. Land Use
   b. Transportation Facilities and Traffic Operations
   c. Natural and Cultural Resources
4) Future Conditions Analysis
   a. Land Use
   b. Transportation Facilities and Traffic Operations
   c. Natural and Cultural Resources
5) Geometric Alternatives Development and Analysis
6) Interchange Area Management Plan
   a. Selected Alternative and Findings
   b. Access Management Plan
7) Adoption and Implementation Tools
8) IAMP Monitoring and Updates

The above project definition, interchange function, project goals, objectives and evaluation criteria, and study area were reviewed and commented on by the project Technical Advisory Committee and Steering Committee and will serve as a guide throughout the remainder of the project.

LEGEND

- Minimum 1,320-foot IAMP Limits
- IAMP Operation/Access Study Area
- Land Use Study Area
- The Dalles Town Boundary
- Tax Lots
- The Dalles UGB
- Lakes and Rivers
- Railroads
- Right of Way (ROW)
- General Commercial (CG)
- Commercial/Light Industrial (CLI)
- Recreational Commercial (CR)
- Industrial (I)
- Mobile Home Residential (RMH)
- Large-Scale Agriculture (LSA)

0 650 1,300 2,600 Feet

INTERCHANGE MANAGEMENT STUDY AREA
THE DALLES, OREGON

FIGURE **1**

H:\projfile\9600 - I-84 Chenoweth IAMP\GIS\Fig1_IAMP.mxd

Appendix B

Technical Memorandum #2: Review of Adopted Plans and Regulations

Angelo planning group

LAND USE PLANNING • TRANSPORTATION PLANNING • PROJECT MANAGEMENT

Memorandum

TO: Project Management Team

FROM: Darci Rudzinski, AICP
Shayna Rehberg, AICP

DATE: December 26, 2008

CC: Frank Angelo, Angelo Planning Group
Susan Wright, Casey Bergh, Kittelson & Associates, Inc.

FILE #:

RE: I-84 Chenoweth Interchange Area Management Plan
Technical Memo #2: Review of Adopted Plans and Regulations

INTRODUCTION

This memorandum provides an overview of the regulatory framework pertaining to the land use and transportation systems in the vicinity of the I-84 Chenoweth Interchange in the City of The Dalles. The following sections define the study area, explore the land uses allowed in the study area, and summarize the plans, policies, and other pertinent existing background data that govern the area. The regulatory context involves state and local levels of governance that directly impact transportation planning associated with the I-84 Chenoweth Interchange Area Management Plan (IAMP). This memorandum provides a policy framework for the IAMP planning process.

Background

In 2006, the City of The Dalles adopted a zoning change from industrial land to commercial/industrial land for approximately 67 acres southeast of the existing Chenoweth Interchange (Ordinance No 06-1269). The City found that the proposed comprehensive plan designation and zone change would have a significant effect under OAR 660-012-0060 and approved the request to change the zone and comprehensive plan designations with conditions. ODOT appealed the decision to the Land Use Board of Appeals (LUBA case No. 2006-136). Both ODOT and the City agreed to suspend the proceedings in order to reach a settlement. The parties agreed to settle the LUBA case and reached a settlement agreement which was presented to the OTC on November 15, 2006. At that meeting the OTC held a public hearing and took action to amend the Oregon Highway Plan (OHP) to lower the volume-to-capacity (V/C) ratio from .85 to .75 for the Chenoweth Interchange ramp intersections with River Road at Interstate 84.

The city zoned the entire 67-acre site Commercial/Light Industrial, but covenants were placed on 42 acres of the parcel as part of the settlement agreement. The covenants prohibit non-industrial development from occurring on the 42 acres of the parcel until an IAMP is completed and adopted.[1] Once the IAMP is adopted, non-industrial land use applications can be considered within the 42 acres. Soon after the covenants were put in place, the local land developer of the rezoned property, WM3, submitted a development site plan for the 25 acres not subject to the covenants, which was subsequently reviewed and approved by the city.

The Oregon Highway Plan (OHP) policies direct ODOT to plan and manage interchange areas for safe and efficient operations. Prompted by development pressures at the I-84 Chenoweth Interchange, ODOT is undertaking the development of an IAMP for the area surrounding the Chenoweth Interchange. Oregon Administrative Rule (OAR) 734-051-0285 requires an IAMP for any new interchange or significant modifications to an existing interchange. While it is not yet known if significant modifications to the Chenoweth Interchange will be necessary within the 20-year planning horizon, an IAMP will ensure that this interchange continues to serve regional and local transportation needs. The planning process anticipates that elements of the I-94 Chenoweth IAMP will be adopted by the City of The Dalles and Wasco County before ODOT presents the completed IAMP to the Oregon Transportation Commission (OTC) for review and approval.[2] The I-84 Chenoweth IAMP must be developed in accordance with Oregon Administrative Rule 734, Division 51 (Highway Approaches, Access Control, Spacing Standards and Medians) and the policies of the OHP.

Study Area Description

An IAMP Land Use Study Area (See Tech Memo #1, Figure 1) has been delineated around land in the vicinity of the I-84 Chenoweth interchange. The Land Use Study Area can be described as the area in which land uses may have an affect on the design and function of the interchange.

The Land Use Study Area includes all properties located roughly within a ½ mile of the interchange. The study area incorporates developed, developable, and re-developable properties that have the potential to impact the function of the interchange over a 20-year time horizon. Developments to the east of I-84 were included if their primary access to the Chenoweth Interchange is provided via River Road, including those located on Klindt Drive, Crates Way, and Steelhead Way. To the west of I-84 properties included in the Land Use Study Area include major developments, properties with potential to redevelop, and those that access US 30 directly.

[1] A new volume-to-capacity ratio for the interchange ramp intersection, trip caps, and reservations of capacity for other industrial lands in the area will be addressed by the IAMP.

[2] Major improvements to the interchange that may result from the IAMP planning process will need to be adopted into the local transportation system plan(s) before becoming eligible for State Transportation Improvement Program funding.

REGULATORY FRAMEWORK

Documents Reviewed

This memorandum summarizes relevant state and local regulatory documents, long-range plans, and adopted policies and identifies how they influence transportation planning in the vicinity of the interchange and possible future interchange improvements.

The Statewide Planning Goals relevant to the IAMP express the state's policies on land use and on related topics such as economic development, public facilities, transportation, and urbanization. Oregon's statewide goals are achieved through local comprehensive planning. State law requires each city and county to adopt a comprehensive plan and the zoning and land-division ordinances needed to put the plan into effect. The local comprehensive plans must be consistent with the Statewide Planning Goals. Plans are reviewed for such consistency by the state's Land Conservation and Development Commission (LCDC). When LCDC officially approves a local government's plan, it becomes the controlling document for land use in the area covered by that plan.

The Transportation Planning Rule (TPR) requires that land use plans and the transportation system plan are consistent with one another. It requires cities, counties, and the state to adopt transportation system plans that integrate land use and transportation planning.[3]

The Oregon Transportation Plan (OTP) is a policy document developed by ODOT in response to the federal and state mandates for systematic planning for the future of Oregon's transportation system. The OTP is intended to meet statutory requirements (ORS 184.618(1)) to develop a state transportation policy and comprehensive long-range plan for a multi-modal transportation system. The OTP, with all of the associated modal plans, constitute the state transportation system plan (TSP).

The 1999 Oregon Highway Plan (OHP) implements the OTP by establishing long-range policies and investment strategies for the State Highway System. As an element and modal plan of the OTP, the OHP guides the planning, operations, and financing of ODOT's Highway Division. Related transportation administrative rules establish procedures and criteria used by ODOT to coordinate with other jurisdictions and to govern aspects of highway design in compliance with statewide planning goals and in a manner compatible with acknowledged comprehensive plans and consistent with Oregon Revised Statutes (ORS), Oregon Administrative Rules (OAR), and the OHP.

[3] Elements of IAMPs, such as policies addressing interchange planning and access management plans, are adopted into local plans and ordinances and the document itself is adopted by the Oregon Transportation Commission as a Facility Plan of the Oregon Highway Plan. The IAMP planning process considers how existing and planned land uses are likely to impact the future function of the subject interchange. In addition to transportation improvements, recommendations in IAMPs can include land use restrictions. Restrictions on what uses are allowed in the vicinity of the interchange, for example, could be adopted as part of an IAMP to ensure that future development will not generate traffic that will exceed the capacity of the facility.

For both the City of The Dalles and the Wasco County, the local comprehensive plan documents contain objectives and policies that are intended to guide growth and development over a 20-year planning horizon. They are based on the specific qualities and characteristics of the community and reflect local plans/needs for future improvements. The comprehensive plans are intended to be consistent with the Statewide Planning Goals. The Dalles TSP, the transportation element of the city's comprehensive plan, is also reviewed here. TSPs contain policies relating to the transportation system, including streets and bicycle/pedestrian facilities. TSPs also outline planned transportation improvements.

Land use and zoning ordinances are used to implement the policies identified in comprehensive plans. They specify the different zoning districts and provide standards, regulations, and review procedures for all development within those zones.

The following transportation and land use plans were reviewed for policies and regulations applicable to the I-84 Chenoweth Interchange.

Federal

- Columbia River Gorge National Scenic Area Management Plan – p. 5

State/ODOT

- Statewide Planning Goal 1 (Public Involvement), Goal 2 (Land Use Planning), Goal 5 (Natural Resources, Scenic and Historic Areas, and Open Spaces), Goal 6 (Air, Water and Land Resources Quality), Goal 7 (Areas Subject to Natural Hazards), Goal 8 (Recreational Needs), Goal 9 (Economic Development), Goal 12 (Transportation) and Transportation Planning Rule (TPR) Oregon Administrative Rule 660 Division 12, and Goal 14 (Urbanization) – p. 6
- Oregon Administrative Rule 731, Division 15, Department of Transportation Coordination Rules – p. 11
- Oregon Transportation Plan (1992) – p. 11
- Oregon Highway Plan (1999) – p. 12
- Oregon Administrative Rule 734, Division 51 (Highway Approaches, Access Control, Spacing Standards and Medians) – p. 15
- Highway Design Manual – p. 19
- Port of The Dalles Chenoweth Interchange, Columbia River/Interstate 84, Final Environmental Impact Statement (1995) – p. 20
- Intergovernmental Agreement/Settlement Agreement (No. 23886) – ODOT, City of The Dalles, and WM3, Inc. (2007) – p. 20

Local

- Wasco County Comprehensive Plan (1983) – p. 21
- Wasco County Land Use and Development Ordinance (1985, Updated 1999) – p. 22

- City of The Dalles Comprehensive Plan (2006) – p. 23
- City of The Dalles Growth Management Report (2007) – p. 25
- City of The Dalles Land Use and Development Ordinance (1998, Updated 2008) – p. 27
- City of The Dalles Transportation System Plan (1999, Updated 2006) – p. 29
- City of The Dalles Capital Improvement Program, 2007-2012 (CIP) – p. 32

FEDERAL

Columbia River Gorge National Scenic Area Management Plan (1992, Updated 2007)

Land in the Chenoweth IAMP study area includes two Columbia River Gorge National Scenic Area (CRGNSA) designations: Urban Area and General Management Area (GMA) A-1 (160).

As stated in the Introduction to the CRGNSA Management Plan: "Urban Areas are exempt from the Management Plan, but are eligible to receive federal funds authorized to implement it. The Urban Areas will be the primary focus for future growth and economic development." The CRGNSA Management Plan regulates General Management Areas and Special Management Areas with land use policies, use standards, and development standards (e.g. setbacks). Uses and development on county land in the IAMP study area must comply with both County and CRGNSA Management Plan regulations according to applicable land use designations.

Provisions from Part II, Chapters 1 (Agriculture) and 7 (General Provisions and Guidelines) of the CRGNSA Management Plan apply to the portion of the IAMP study area zoned GMA A-1 (160). Uses permitted outright are specified in Chapter 7 ("Uses Allowed Outright, All Land Use Designations, Except Open Space and Agriculture-Special"). These uses include:

- Existing agricultural uses
- Small accessory structures not inside a wetland, riparian, or water body buffer area
- Fences, with additional special conditions
- Transportation facilities, with additional special conditions including Historic Columbia River Highway Master Plan provisions
- Specified utilities
- Specified signs.

Uses that are allowed on land zoned for large-scale agriculture that are subject to compliance with special review use criteria in Chapter 1 and resource protection guidelines in Part I of the Management Plan include:

- Agricultural uses
- Structures related to agricultural uses
- A single-family dwelling not related to agricultural use, with additional special conditions
- Roads
- Resource enhancement projects
- Hunting and fishing structures
- Docks and boathouses
- Commercial events

- Utilities
- Home occupations
- Produce stands
- Wineries and associated facilities
- Mineral and geothermal exploration, development, and production
- Research facilities
- Bed and breakfasts, with additional special conditions.

Chapter 1 also specifies minimum lot sizes for agricultural land and buffers or setbacks for agricultural uses.

STATE OF OREGON

Statewide Planning Goals

Statewide Planning Goal 1: Citizen Involvement

Goal 1, Citizen Involvement, requires jurisdictions that prepare, adopt, and maintain comprehensive plans to provide the "opportunity for citizens to be involved in all phases of the planning process." According to the goal, the planning process includes the preparation of plans and implementation measures, plan and implementation measure adoption, and minor and major amendments to adopted plans. Technical information associated with the planning process must be available to citizens in an understandable form, and accessible ways of feedback must also be available.

Developing and adopting the I-84 Chenoweth IAMP will involve a set of stakeholder interviews as well as meetings of a Technical Advisory Committee and Steering Committee, public workshops, and public hearings. These public involvement activities will be guided by and assessed according to Goal 1.

Statewide Planning Goal 2: Land Use Planning

Goal 2, Land Use Planning, requires that a land use planning process and policy framework be established as a basis for all decisions and actions relating to the use of land. Goal 2 is important for four reasons. First, Goal 2 requires planning coordination between those local governments and state agencies "which have programs, land ownerships, or responsibilities within the area included in the plan." Here, Goal 2 will require that ODOT coordinate with the City of The Dalles and Wasco County, which has planning authority over the area in the vicinity of the interchange. Coordination is particularly important because land use decisions in the vicinity of the interchange could affect its future use and operation.

A second important element of Goal 2 is its provision that land use decisions and actions be supported by an "adequate factual base." This requirement applies to both legislative and quasi-judicial land use actions and requires that such actions be supported by "substantial evidence." In essence, it requires that there be evidence that a reasonable person would find to be adequate to support findings of fact that a land use action complies with the applicable review standards.

Third, Goal 2 requires that city, county, and state and federal agency and special district plans and actions related to land use be "consistent with the comprehensive plans of cities and counties and regional plans adopted under ORS Chapter 268." This provision is important because elements of the IAMP developed for the I-84 Chenoweth Interchange will need to be adopted by the both City and County as elements of their respective transportation system plans (TSP).

In the case of resource land north of the proposed interchange, Goal 2 also provides a framework for allowing additional growth outside The Dalles city limits, in the vicinity of the interchange. Goal 2 includes standards for taking an "exception" to one or more statewide planning goals. Exception standards would need to be met before a more intensive land use designation could be adopted on parcels currently designated as A-1 (160), Exclusive Farm Use.[4] The Goal 2 exception standards apply when a local government or property owner proposes to use property in a manner otherwise prohibited by one or more statewide planning goals. The Goal 2 exception standards require the individual or local government taking the exception to demonstrate how the following standards are met:

- Reasons to justify why the state policy embodied in the applicable goals should not apply;
- Areas which do not require a new exception cannot reasonably accommodate the use;
- The long term environmental, economic, social and energy consequences resulting from the use at the proposed site with measures designed to reduce adverse impacts are not significantly more adverse than would typically result from the same proposal being located in areas requiring a goal exception other than the proposed site; and
- The proposed uses are compatible with other adjacent land uses or will be so rendered through measures designed to reduce adverse impacts.

The Goal 2 exceptions standards are interpreted in significant detail in **OAR 660, Division 4**. Rule sections particularly relevant to developing an IAMP for the I-84 Chenoweth Interchange are:

- OAR 660-004-0022, which establishes standards under which uses such as residential or industrial development may be justified on rural lands; and
- OAR 660-004-0020(2)(b), which requires demonstration why a proposed use cannot reasonably be accommodated on nonresource land or inside a UGB.

The Goal 2 exceptions criteria provide resource lands with a very high level of protection from higher intensity rural non-farm uses. See page 21 of this memorandum for the County's ordinance regulating farm land (Exclusive Farm Use/A-1 zone).

[4] The designation of General Management Area A-1 (160) is consistent with "large-scale agriculture," which is how the designation is shown on Figure 1, Interchange Management Study Area.

Statewide Planning Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces

The purpose of Goal 5, Natural Resources, Scenic and Historic Areas, and Open Spaces, is to "protect natural resources and conserve scenic and historic areas and open spaces." This goal requires local governments to inventory natural and cultural resources in their jurisdictions and to develop and adopt programs to conserve and protect them. Amongst the resources to be inventoried are: riparian corridors, wetlands, federal Wild and Scenic Rivers, state Scenic Waterways, groundwater resources, wildlife habitat (e.g. upland habitat in addition to riparian habitat), natural areas, wilderness areas, open spaces, scenic views and sites, mineral and aggregate resource areas, energy sources, and historic and cultural areas. Suggestions for implementing conservation and protection of these resources include fee acquisition, development rights acquisition, easements, preferential tax assessment, and clustered development.

Goal 5 resources on land in the county or city will need to be identified in the I-84 Chenoweth IAMP study area. Improvements proposed in the IAMP must comply with this goal and The Dalles Goal 5 policies and programs accordingly. Two significant natural resources in or adjacent to the study area include Chenoweth Creek and the Columbia River.

Statewide Planning Goal 6: Air, Water and Land Use Resources Quality

Jurisdictions must comply with state and federal environmental agency regulations. Goal 6, Air, Water and Land Resources Quality, calls for jurisdictions to "maintain and improve the quality of the air, water and land resources of the state." Waste and process discharges within a jurisdiction may not exceed the carrying capacity of the local air shed and water shed in the long-term, nor degrade the quality or otherwise threaten the availability of the air shed and water shed services.

This goal and corresponding policies in the County's and City's Comprehensive plans must be taken into account in developing and selecting alternatives for the I-84 Chenoweth IAMP.

Statewide Planning Goal 7: Areas Subject to Natural Hazards

Goal 7, Areas Subject to Natural Hazards, was adopted to "protect people and property from natural hazards." The goal requires local jurisdictions to adopt comprehensive plans, including inventories, policies, and implementation measures, for identifying natural hazard areas and prohibiting or limiting development in these areas. Although local jurisdictions may define others, the goal defines natural hazard areas as those subject to floods (both coastal and riparian), tsunamis, landslides, coastal erosion, earthquakes and related activities, and wildfires.

Similar to Goal 5 resources, natural hazards will need to be identified in the I-84 Chenoweth IAMP study area. Improvements proposed in the IAMP must comply with this goal and the local jurisdictions' Goal 7 policies and programs accordingly. In initial conversations with City staff, there are no identified Goal 7 hazards in the city portion of the study area.

Statewide Planning Goal 8: Recreational Needs

Goal 8, Recreational Needs, was adopted to "satisfy the recreational needs of the citizens of the state and visitors, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts." The goal requires that local government conduct comprehensive recreational planning by identifying recreational needs, planning for facilities in sufficient quantities and locations to meet these needs, and working with private companies and other partners in meeting these needs. The goal provides specific guidance on destination resort siting.

While destination resort siting may not necessarily be relevant to the IAMP study area, there is existing Commercial Recreational (CR) zoning on the west side of the Chenoweth Interchange and between the Columbia River and Klindt Driver on the east side of the study area. Other land zoned Industrial (I) in the study area around the terminus of River Trail Way is the site of the Gorge Discovery Center, which includes an interpretive visitor center as well as trails and river access. The study area also includes a portion of the Columbia River Gorge Historic Highway, which invites recreational driving and cycling and is subject to its own design standards.

Statewide Planning Goal 9: Economic Development

The intent of Goal 9, Economic Development, is to "provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens." Local comprehensive plans and policies must support this goal and should include an assessment of the jurisdiction's existing economic conditions and comparative advantages, policies generally and specifically addressing economic development and development opportunities, provide an adequate supply of sites with characteristics suitable for a variety of employment and economic development, and limit development around identified industrial sites to that which is compatible with uses allowed on the sites. The goal suggests implementation measures such as tax incentives and disincentives, preferential assessments, land use regulations, capital improvement planning and programming, and fee or partial fee acquisition.

The IAMP must demonstrate the ways in which the preferred alternative selected for future interchange improvements supports this goal and the economic development policies adopted in the City and County's Comprehensive Plans. This IAMP was necessitated by pressure to re-zone and develop the interchange area with more commercial and higher traffic-generating uses than those allowed by the underlying existing Industrial zoning in the study area. The allowance of future re-zoning will depend on the transportation and land use implementation measures adopted as part of the IAMP, and will need to comply in particular with Goal 12 and the Transportation Planning Rule (TPR) in order to both encourage employment development and protect the capacity and safe function of the interchange and any future state transportation investments.

Statewide Planning Goal 12: Transportation

Statewide Planning Goal 12, Transportation, requires cities, counties, metropolitan planning organizations, and ODOT to provide and encourage a safe, convenient, and economic

transportation system. This is accomplished through development of transportation system plans (TSPs) based on inventories of local, regional, and state transportation needs.

Goal 12 is implemented through **OAR 660, Division 12**, the Transportation Planning Rule (TPR). The TPR contains numerous requirements governing transportation planning and project development, several of which are relevant to planning a new interchange.

The TPR requires local governments to adopt land use regulations consistent with state and federal requirements "to protect transportation facilities, corridors and sites for their identified functions OAR 660-012-0045(2)." This policy is achieved through a variety of measures, including:

- Access control measures which are consistent with the functional classification of roads and consistent with limiting development on rural lands to rural uses and densities;
- Standards to protect future operations of roads;
- A process for coordinated review of future land use decisions affecting transportation facilities, corridors or sites;
- A process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities, corridors or sites;
- Regulations to provide notice to ODOT of land use applications that require public hearings, involve land divisions, or affect private access to roads; and
- Regulations assuring that amendments to land use designations, densities and design standards are consistent with the functions, capacities and performance standards of facilities identified in the TSP. (See also OAR 660-012-0060.)

LCDC's rules implementing Goal 12 do not regulate access management. ODOT adopted OAR 734, Chapter 51, to address access management and it is expected that ODOT, as part of this project, will engage in access management consistent with its Access Management Rule. This could involve the purchase of access rights within at least one-quarter mile of the interchange ramps. See OAR 734, Division 51 on page 15 for a review of these access management rules.

The TPR requires local governments to adopt land use regulations consistent with state and federal requirements "to protect transportation facilities, corridors, and sites for their identified functions OAR 660-012-0045(2)."

Statewide Planning Goal 14: Urbanization

Goal 14 regulates urban growth boundaries. The goal provides that establishment and change of a UGB shall be based upon consideration of the following four factors:

1. Efficient accommodation of identified land needs;
2. Orderly and economic provision of public facilities and services;
3. Comparative environmental, energy, economic, and social consequences;
4. Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.

Additionally, **ORS 197.298** establishes priorities for including land inside urban growth boundaries. The first (highest) priority for inclusion is land that is designated "urban reserve" land. The second priority is land adjacent to a UGB that is identified as "an exception area or nonresource land." The third priority is land that is designated as "marginal land" pursuant to ORS 197.247. The final (lowest) priority is land that is designated for agriculture, forestry, or both.

Oregon Administrative Rule 731, Division 15, Department of Transportation Coordination Rules

ODOT's Division 15, Coordination Rules, (OAR 731-015) ensures that the procedures used in developing highway improvement projects and other ODOT actions affecting land use comply with Oregon's Statewide Planning Goals and are consistent with applicable acknowledged comprehensive plans, as required by ORS 197.180. This administrative rule provides coordination procedures to be used when adopting Final Facility Plans, such as an interchange area management plan (OAR-731-015-0065).

Oregon Transportation Plan (2006)

Originally adopted in 1992, the Oregon Transportation Plan (OTP) is a policy document developed by ODOT in response to federal and state mandates for systematic planning for the future of Oregon's transportation system. The OTP is intended to meet statutory requirements (ORS 184.618(1)) to develop a state transportation policy and comprehensive long-range plan for a multi-modal transportation system that addresses economic efficiency, orderly economic development, safety, and environmental quality. The 2006 OTP expands on the policy objectives of the 1992 plan, with an emphasis on maintaining assets in place, [5] optimizing existing system performance through technology and better system integration, creating sustainable funding, and investing in strategic capacity enhancements.

The OTP's goals, policies, and strategies guide the development of state multimodal, modal/topic[6] and facility plans and regional and local transportation system plans. The OTP provides the framework for prioritizing transportation improvements and funding, but it does not identify specific projects for development.[7] As required by Oregon and federal statutes, the OTP guides development and investment in the transportation system through:

- Transportation goals and policies,
- Transportation investment scenarios and an implementation framework, and
- Key initiatives to implement the vision and policies.

[5] The OTP defines "asset management" as a "systematic process of maintaining, upgrading and operating physical assets cost-effectively. It combines engineering principles with sound business practices and economic theory, and it provides tools to facilitate a more organized, logical approach to decision-making. Asset management provides a framework for handling both short- and long-range planning."

[6] Modal or topic plans, as developed by ODOT and other state agencies, include plans for aviation, bicycle and pedestrian facilities, highways, marine ports and waterways, public transportation and rail.

[7] Projects are identified through facility plans and regional and local transportation system plans, and sometimes through modal plans.

Goals in the OTP include: Mobility and Accessibility; Management of the System; Economic Vitality; Sustainability; Safety and Security; Funding the Transportation System; and Coordination, Communication and Cooperation. Policies and strategies under many of these goals emphasize increasing coordination and cooperation among federal and state agencies, regional and local governments and private entities to achieve these goals.

The Implementation Framework section of the OTP describes the implementation process and how state multimodal, modal/topic plans, regional and local transportation system plans and master plans will further refine the OTP's broad policies and investment levels. Local transportation system plans can further OTP implementation by defining standards, instituting performance measures, and requiring that operational strategies be developed.[8]

The Implementation section also describes three investment levels, examples of the investment priorities for each level of investment, and their impacts on the transportation system. These levels are described as "flat funding" (Level 1), "maintaining and improving existing infrastructure" (Level 2), and "expanding facilities and services and services" (Level 3). The recommendation in the OTP is for the State to invest at levels closer to Level 3 "in order to be competitive economically and to have the transportation infrastructure and services that allow communities to function well."

Finally, a list of "key initiatives" describes the OTP's implementation priorities. The key initiatives are intended to help frame plan implementation and reflect the directions of the OTP including system optimization, integration of transportation modes, integration of transportation, land use, the environment and the economy, and the need to make strategic investments using a sustainable funding structure. The key initiatives envision creating the sustainable funding plan using both traditional and new revenue sources. The I-84 Chenoweth IAMP will likely draw on traditional and innovative revenue sources to fund its proposed improvements. Project funding will be addressed in the IAMP.

Oregon Highway Plan (1999)

The 1999 Oregon Highway Plan (OHP), an element and modal plan of the state's comprehensive transportation plan, guides the planning, operations, and financing of ODOT's Highway Division. Policies in the OHP emphasize the efficient management of the highway system to increase safety and to extend highway capacity, partnerships with other agencies and local governments, and the use of new techniques to improve road safety and capacity. These policies also link land use and transportation, set standards for highway performance and access management, and emphasize the relationship between state highways and local road, bicycle, pedestrian, transit, rail, and air systems.

The policies found within the OHP that are relevant to the I-84 Chenoweth IAMP include:

[8] As stated in the Implementation section of the OTP, requirements for regional and local transportation system plans (TSPs) are found in the Transportation Planning Rule (OAR 660-012). Regional and local TSPs must be consistent with the state TSP (the OTP), state multimodal, modal/topic and transportation facility plans.

- Policy 1A: State Highway Classification System;
- Policy 1B: Land Use and Transportation;
- Policy 1C: State Highway Freight System;
- Policy 1F: Highway Mobility Standards;
- Policy 1G: Major Improvements;
- Policy 2B: Off-System Improvements;
- Policy 3A: Classification and Spacing Standards;
- Policy 3B: Medians;
- Policy 3C: Interchange Access Management Areas;
- Policy 4A: Efficiency of Freight Movement;
- Policy 4B: Alternative Passenger Modes;
- Policy 5B: Scenic Resources

Policy 1A: State Highway Classification System. The state highway classification system includes five classifications: Interstate, Statewide, Regional, District, and Local Interest Roads. In addition, there are four special purpose categories that overlay the basic classifications: land use, statewide freight route, scenic byways, and lifeline routes.

I-84 is a four-lane interstate highway that runs north and south through the City of The Dalles. I-84 is the main east-west travel route within the State of Oregon providing connections between the City of Portland, Oregon and the City of Boise, Idaho. I-84 is designated by the 1999 Oregon Highway Plan as an Interstate Highway, a Freight Route, and is considered a part of the National Highway System.

The Policy 1A Action 1A.1 definition states:

> *"Interstate Highways (NHS) provide connections to major cities, regions of the state, and other states. A secondary function in urban areas is to provide connections for regional trips within the metropolitan area. The Interstate Highways are major freight routes and their objective is to provide mobility. The management objective is to provide for safe and efficient high-speed continuous-flow operation in urban and rural areas."*

The federal Intermodal Surface Transportation Efficiency Act of 1991 required the establishment of a National Highway System to provide an interconnected system of principal arterial routes that will serve "interstate and inter-regional travel." ODOT has an obligation to ensure that the National Highway System in Oregon adequately performs this function of serving a larger geographic area.

Mosier-The Dalles Highway (US 30) also serves The Dalles, largely running parallel with I-84 most of its length within the city. US 30 is a District Highway and a Scenic Byway. District Highways function largely as county and city arterials or collectors, providing connections and links between small urbanized areas, rural centers and urban hubs, and also serve local access and traffic. The management objective is to provide for safe and efficient, moderate to high-speed continuous-flow operation in rural areas reflecting the surrounding environment and

moderate to low-speed operation in urban and urbanizing areas for traffic flow and for pedestrian and bicycle movements. US 30 from the Chenoweth Interchange on the west to the Marina Interchange on the east is under city jurisdiction (The Dalles TSP, p. 1).

Policy 1B: Land Use and Transportation. This policy recognizes the role of both the State and local governments related to the state highway system and calls for a coordinated approach to land use and transportation planning.

Policy 1C: State Highway Freight System. This policy recognizes the need for the efficient movement of freight through the state. I-84 is a designated freight route. A main function of the interchange is to provide safe and efficient freight movements by providing free-flow movements for the through movements on I-84 and on and off movements to and from I-84 to River Road.

Policy 1F: Highway Mobility Standards Access Management Policy. This policy addresses state highway performance expectations, providing guidance for managing access and traffic control systems related to interchanges. As previously noted, the Oregon Transportation Commission changed the mobility standard for the Chenoweth Interchange from 0.85, as required by the OHP, to 0.75 V/C ratio based on the settlement agreement between the City of The Dalles, WM3, and ODOT.

Policy 1G: Major Improvements. This policy requires maintaining performance and improving safety by improving efficiency and management on the existing roadway network before adding capacity. The state's highest priority is to preserve the functionality of the existing highway system. Tools that could be employed to improve the function of the existing interchange include access management, transportation demand management, improved traffic operations, and changes to local land use designations or development restrictions. After existing system preservation, the second priority is to make minor improvements to existing highway facilities such as adding ramp signals or making improvements to the local street network to minimize local trips on the state facility. The third priority is to make major roadway, or in this case, interchange, improvements.

Policy 2B: Off-System Improvements. This policy recognizes that the state may provide financial assistance to local jurisdictions to make improvements to local transportation systems if the improvements would provide a cost-effective means of improving the operations of the state highway system. As part of this IAMP process, ODOT will work with the City of The Dalles and Wasco County to identify improvements to the local road system that support the planned land use designations in the vicinity of the I-84 Chenoweth Interchange and that will help preserve capacity and ensure the long-term efficient and effective operation of the interchange.

Policy 3A: Classification and Spacing Standards. This policy addresses the location, spacing and type of road and street intersections and approach roads on state highways. I-84 is classified as an Interstate Freeway. Interstate Freeways are subject to federal interstate standards as established by the Federal Highway Administration and to ODOT's Interchange Policy. ODOT owns the access rights onto I-84; direct access is not allowed and users may enter or exit the roadway only at interchanges.

The adopted spacing standards can be found in Appendix C of the *Oregon Highway Plan.* It includes standards for each highway classification; generally, the access spacing distance increases as either the highway's importance or posted speed increases. Table 12 specifies that the interchange spacing on interstate freeways through urban areas is 3 miles. As shown on Table 17, the spacing standard from the I-84 Chenoweth interchange, an urban interchange with a multi-lane crossroad, to the first major intersection of a crossroad is 1,320 feet.

Policy 3C: Interchange Access Management Areas. This policy addresses management of grade-separated interchange areas to ensure safe and efficient operation between connecting roadways. Action items include developing interchange area management plans to protect the function of the interchange to provide safe and efficient operations between connecting roadways and to minimize the need for major improvements of existing interchanges. The local jurisdiction's role in access management is stated in Policy 3C as follows: "necessary supporting improvements, such as road networks, channelization, medians and access control in the interchange management area must be identified in the local comprehensive plan and committed with an identified funding source, or must be in place (Action 3C.2)."

Access management standards are detailed in Policy 3C and include the distance required between an interchange and approaches and intersections. The most stringent standards apply in interchange areas. Table 17 contains the minimum spacing standards applicable to the I-84 Chenoweth Interchange, an urban highway interchange that has a multi-lane crossroad. The spacing standards in an urban area for this type of interchange are:

1 mile (1.6 km)	Distance between the start and end of tapers of adjacent interchanges.
1,320 feet (400 m)	Distance to first intersections where left turns are allowed.
1,320 feet (400 m)	Distance between the last approach road and the start of the taper for the on-ramp.

Policy 4A: Efficiency of Freight Movement. This policy emphasizes the need to maintain and improve the efficiency of freight movement on the state highway system. I-84 is a designated Freight Route. A principal function of the interchange is to accommodate safe and efficient freight movements by providing free-flow through movements on I-84 and on and off movements to and from River Road.

Policy 4B: Alternative Passenger Modes. This policy encourages the development of alternative passenger services and systems as part of broader corridor strategies and promotes the development of alternative passenger transportation services located off the highway system to help preserve the performance and function of the state highway system.

Access Management Rule (OAR 734-051)

This Administrative Rule defines the State's role in managing access to highway facilities in order to maintain functional use, safety and preserve public investment.

The purpose of division 51 rules is to provide a safe and efficient transportation system through the preservation of public safety, the improvement and development of transportation facilities, the protection of highway traffic from the hazards of unrestricted and unregulated entry from adjacent property, and the elimination of hazards due to highway grade intersections. These rules establish procedures and criteria used by the Department to govern highway approaches, access control, spacing standards, medians and restriction of turning movements in compliance with statewide planning goals and in a manner compatible with acknowledged comprehensive plans and consistent with Oregon Revised Statutes (ORS), Oregon Administrative Rules (OAR), and the 1999 Oregon Highway Plan (OHP).

Section, *Access Management Spacing Standards for Approaches in an Interchange Area*, outlines how the State will manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways. Pursuant to 734-051-0125(1), spacing standards for approaches in the area of an interchange:

(a) Are based on classification of highway and highway segment designation, type of area, and posted speed;
(b) Apply to properties abutting state highways, highway or interchange construction and modernization projects, planning processes involving state highways, or other projects determined by the Region Manager; and
(c) Do not apply to approaches in existence prior to April 1, 2000 except where any of the following occur:
(A) These standards will apply to private approaches at the time of a change of use.
(B) If infill development or redevelopment occurs, spacing and safety factors will improve by moving in the direction of the access management spacing standards, with the goal of meeting or improving compliance with the access management spacing standards.
(C) For a highway or interchange construction or modernization project or other roadway or interchange project determined by the Region Manager, the project will improve spacing and safety factors by moving in the direction of the access management spacing standards, with the goal of meeting or improving compliance with the access management spacing standards.

In order for ODOT to approve an application, the requirements of 734-051-0125(2) must be met:

a) Access spacing standards for approaches in the area of an interchange shown in Figures 1, 2, 3 and 4 must be met or approaches must be combined or eliminated to result in a net reduction of approaches to the state highway and improve compliance with spacing standards; and

(b) The approach must be consistent with any applicable Access Management Plan or Interchange Area Management Plan.

Additional Section -0125 standards applicable to interchange areas include:

(3) Deviations must meet the criteria in OAR 734-051-0135.
(4) Location of traffic signals within an interchange area illustrated in Figures 1, 2, 3 and 4 must meet the criteria of OAR 734-020-0400 through 734-020-0500.
(5) The Department should acquire access control on crossroads around interchanges for a distance of 1320 feet. In some cases it may be appropriate to acquire access control beyond 1320 feet.
(2) Spacing standards in Tables 5, 6, 7, and 8 and Figures 1, 2, 3, and 4, adopted and made a part of this rule, identify the spacing standards for approaches in an interchange area.
(3) When the Department approves an application:
(a) Access management spacing standards for approaches in an interchange area must be met or approaches must be combined or eliminated resulting in a net reduction of approaches to the state highway and an improvement of existing interchange management areas spacing standards; and
(b) The approach must be consistent with any applicable access management plan for an interchange.
(4) Deviations must meet the criteria in OAR 734-051-0135 .
(5) Location of traffic signals within an interchange management area must meet the criteria of OAR 734-020-0400 through 734-020-0500.
(6) The Department should acquire access control on crossroads around interchanges for a distance of 1320 feet. In some cases it may be appropriate to acquire access control beyond 1320 feet.

Section –0155 identifies when, how and why ODOT will develop access management plans and interchange area management plans for particular sections of a highway. The Rules states that:

(1) The Department encourages the development of Access Management Plans and Interchange Area Management Plans to maintain and improve highway performance and safety by improving system efficiency and management before adding capacity. Access Management Plans and Interchange Area Management Plans:
(a) Must be consistent with Oregon Highway Plan;
(b) Must be used to evaluate development proposals; and
(c) May be used to determine mitigation for development proposals.
(2) Access Management Plans and Interchange Area Management Plans must be adopted by the Oregon Transportation Commission as a transportation facility plan consistent with the provisions of OAR 731-015-0065. Prior to adoption by the Oregon Transportation Commission, the Department will work with local governments on any amendments to local comprehensive plans and transportation system plans and local land use and

subdivision codes to ensure the proposed Access Management Plan and Interchange Area Management Plan is consistent with the local plan and codes.

(3) The priority for developing Access Management Plans should be placed on facilities with high traffic volumes or facilities that provide important statewide or regional connectivity where:

(a) Existing developments do not meet spacing standards;

(b) Existing development patterns, land ownership patterns, and land use plans are likely to result in a need for deviations; or

(c) An Access Management Plan would preserve or enhance the safe and efficient operation of a state highway or interchange.

(4) An Access Management Plan may be developed:

(a) By the Department;

(b) By local jurisdictions; or

(c) By consultants.

(5) An Access Management Plan must comply with all of the following criteria, unless the Plan documents why a criterion is not applicable:

(a)Include sufficient area to address highway operation and safety issues and development of adjoining properties including local access and circulation.

(b) Describe the roadway network, right-of-way, access control, and land parcels in the analysis area.

(c) Be developed in coordination with local governments and property owners in the affected area.

(d) Be consistent with any applicable Interchange Area Management Plan, corridor plan, or other facility plan adopted by the Oregon Transportation Commission.

(e) Include polices, provisions and standards from local comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied upon to implement the Access Management Plan.

(f) Contain short, medium, and long-range actions to improve operations and safety and preserve the functional integrity of the highway system.

(g) Consider whether improvements to local street networks are feasible.

(h) Promote safe and efficient operation of the state highway consistent with the highway classification and the highway segment designation.

(i) Consider the use of the adjoining property consistent with the comprehensive plan designation and zoning of the area.

(j) Provide a comprehensive, area-wide solution for local access and circulation that minimizes use of the state highway for local access and circulation.

(6) The Department encourages the development of an Interchange Area Management Plan to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways:

(a) Interchange Area Management Plans are developed by the Department and local governmental agencies to protect the function of interchanges by maximizing the capacity of the interchanges for safe movement from the mainline facility, to provide safe and efficient operations between connecting roadways, and to minimize the need for major improvements of existing interchanges;

(b) The Department will work with local governments to prioritize the development of Interchange Area Management Plans to maximize the operational life and preserve

and improve safety of existing interchanges not scheduled for significant improvements; and

(c) Priority should be placed on those facilities on the Interstate system with cross roads carrying high volumes or providing important statewide or regional connectivity.

(7) An Interchange Area Management Plan is required for new interchanges and should be developed for significant modifications to existing interchanges. An Interchange Area Management Plan must comply with the following criteria, unless the Plan documents why compliance with a criterion is not applicable:

(a) Be developed no later than the time an interchange is designed or is being redesigned.

(b) Identify opportunities to improve operations and safety in conjunction with roadway projects and property development or redevelopment and adopt policies, provisions, and development standards to capture those opportunities.

(c) Include short, medium, and long-range actions to improve operations and safety within the designated study area.

(d) Consider current and future traffic volumes and flows, roadway geometry, traffic control devices, current and planned land uses and zoning, and the location of all current and planned approaches.

(e) Provide adequate assurance of the safe operation of the facility through the design traffic forecast period, typically 20 years.

(f) Consider existing and proposed uses of all the property within the designated study area consistent with its comprehensive plan designations and zoning.

(g) Be consistent with any applicable Access Management Plan, corridor plan or other facility plan adopted by the Oregon Transportation Commission.

(h) Include polices, provisions and standards from local comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied upon to implement the Interchange Area Management Plan.

Highway Design Manual

The Highway Design Manual includes ODOT standards and procedures for the location and design of new construction, major reconstruction, and resurfacing, restoration or rehabilitation (3R) projects. The Highway Design Manual is used for all projects that are located on state highways. Section 9.6, Interchange Design, includes the design standards, guidelines, and processes for designing interchanges for State Highways. ODOT, through the Engineering Services Unit, and FHWA must approve the reconstruction of an interchange on the Interstate system. The proposed interchange design must be prepared on the Standard Interchange Layout Sheet by the Engineering Services Unit or authorized representative. The approved design is then used for contract plans. Modifications to the I-84 Chenoweth Interchange would be subject to the standards in 9.6.1, Freeway Interchange Design.

Port of The Dalles Chenoweth Interchange, Columbia River/Interstate 84, Final Environmental Impact Statement (1995)

The stated purpose and need of the Final Environmental Impact Statement (EIS) is to improve access to the northern part of The Dalles, the proposed Gorge Discovery Center (700,000 visitors annually expected), and the Port of The Dalles. Access to the area was limited before the construction of the Chenoweth I-84 interchange because of the partial interchange that existed there previously, the lack of freeway crossings north of Hostetler Street, and railroad crossings north of Webber Street.

The preferred alternative evaluated in the Final EIS includes the construction of a full-diamond interchange south of where I-84 crosses Chenoweth Creek, widening US 30, and reconstruction of railings on the Chenoweth Creek Bridge. The bridge of the new interchange was expected to accommodate two 14-foot travel lanes, two 14-foot center turn lanes, two six-foot shoulders/bikeways, and two 7-foot sidewalks. The preferred alternative includes widening US 30 to accommodate a center turn lane for traffic accessing the interchange and travelers going eastbound on I-84.

The preferred alternative improvements described in the Final EIS are located entirely within The Dalles' Urban Growth Boundary (UGB) and outside of the Columbia River Gorge National Scenic Area (CRGNSA). Improvements include mitigation for minimal wetland impacts. It was found that the preferred alternative would not substantially affect wildlife or aquatic species and would not displace homes or businesses. About 10 acres of land would need to be acquired from Northwest Aluminum Company, however, for right-of-way. At the time of adoption of the Final EIS, there were 0.19 acres within existing interchange right-of-way in the General Management Area of the CRGNSA Plan, which would continue to be subject to applicable CRGNSA provisions.

Intergovernmental Agreement/Settlement Agreement (No. 23886) – ODOT, the City of The Dalles, and WM3, Inc.

This agreement, signed by ODOT, the City of The Dalles, and WM3, Inc., in February and March, 2007, is described in the background section of this memorandum. The City of The Dalles adopted a zoning change for approximately 67 acres of land southeast of the I-84 Chenoweth Interchange in 2006 (Ordinance No 06-1269). Because the City found that the proposed comprehensive plan designation and zone change would have a significant effect under OAR 660-012-0060, the zone change was approved with conditions. ODOT appealed the decision to LUBA (Case No. 2006-136), and both ODOT and the City agreed to suspend the appeal proceedings in order to pursue a settlement agreement. The parties reached an agreement that was presented to the OTC at its meeting in November, 2006, the result of which amended the OHP to lower the volume-to-capacity (V/C) ratio from .85 to .75 for the Chenoweth Interchange ramp intersections with River Road.

The terms of the agreement specify that interchange capacity will be protected in the short-term by changing the V/C ratio standard from .85 to .75. The terms also specify that needed

improvements to the Chenoweth Interchange and funding for these improvements will be identified in an IAMP for the interchange. The IAMP is to include policy and code amendments and any other necessary provisions that will be adopted in the City's adopted plans and ordinances and a facility plan that will be adopted by the OTC.

Until the IAMP and its provisions are adopted, the City agreed not to adopt Comprehensive Plan designation or zoning changes in the IAMP study area, and WM3 would not be permitted to challenge the revised v/c ratio standard. Of the 67 acres of land whose zoning was changed from industrial to commercial/light industrial, 42 acres of the land would be required to include covenants prohibiting non-industrial development on the land – even though allowed by the underlying commercial zoning – until the IAMP is adopted or until July 1, 2010, whichever occurs first. The V/C ratio standard would also not be re-considered or revised until the IAMP is completed and adopted.

LOCAL PLANNING DOCUMENTS

Wasco County Comprehensive Plan (1983)

Goals and policies for planning in Wasco County are found in Section XV of the County's Comprehensive Plan. Policies and implementation provisions related to land use include the following:

GOAL #2: LAND USE

B. Inventories and other forms of data used in the development of the Comprehensive Plan shall be the most factual and current data available.

C. The Comprehensive Plan shall be coordinated with all other plans and programs affected by, or having effect on, land use within the County.

POLICY 3 The Comprehensive Plan shall be reviewed periodically for necessary revisions to keep pace with changes in the physical, environmental, social and economic character of the County.

Implementation

B. Plan review and amendment shall take place every two years or whenever significant changes in the social, economic, physical, or environmental character of the County are evident.

C. Plan review, evaluation, and amendment shall be carried out utilizing the revisions process as set forth in the Comprehensive Plan.

GOAL #14: URBANIZATION

POLICY 1 Conversion of rural agricultural land to urbanizable land shall be based upon consideration of each of the following factors:

A. environmental, energy, social and economic consequences;

B. demonstrated need consistent with other goals;

C. availability of alternative suitable locations for the requested use;

D. compatibility of the proposed use with related agricultural land; and

E. the retention of Class I, II, III, IV, V, and VI soils in farm use.

POLICY 2 Preserve community identity by encouraging concentration of residential development in and near existing communities.

Existing land use policies and implementation provisions address the factual basis for the Comprehensive Plan, its coordination with other plans and programs, its update, the conditions for urban expansion, and concentrating residential development. There are not explicit policies or other provisions directing the type and location of land uses being planned for the County, for public facilities criteria in selecting urban reserve and UGB expansion areas being considered for The Dalles and the IAMP study area, or for managing these areas. These urbanization-related issues will need to be considered in the development of the I-84 Chenoweth IAMP.

The County has not yet adopted a Transportation System Plan (TSP) so the Transportation Element of the Comprehensive Plan is left to serve as the guide for transportation planning and programming in the County until a TSP is adopted. The Transportation section in the Comprehensive Plan (Section VI) generally describes existing facilities and services and does not propose policies or future projects. The plan refers to the six-year County road plan (maintained by Wasco County Advance Road Planning Program and Roadmaster) for an inventory of road conditions and priority for improvements.

The following transportation policies in Section XV represent the extent of roadway policy in the existing County Comprehensive Plan.

POLICY 1 Develop and maintain an adequate County road system.
Implementation

B. The development of alternative modes of transportation within the Wasco County six-year road plan shall be encouraged.
D. The safety features of County roads shall be improved to reduce congestion, adverse turns and impaired visibility.
G. Controlled access along highways and major arterials should enhance traffic flow and promote safety.
H. Standards for development along highways and roads shall take into consideration setbacks to reduce traffic hazards and congestion.

The one public road in the county portion of the IAMP study area is US Highway 30. This is the Historic Columbia River Highway and is subject to provisions in the Historic Columbia River Highway Master Plan.

Wasco County Land Use and Development Ordinance (1985, Updated 1999)

The Wasco County Land Use and Development Ordinance implements the general land use policies provided in the County's long-range Comprehensive Plan. The only county zone found in the IAMP study area is A-1 (160), which corresponds to Exclusive Farm Use zoning with a 160-acre minimum. As part of the Columbia River Gorge National Scenic Area outside of an

Urban Area, the county portion of the IAMP study area is also designated as General Management Area (GMA) and applicable provisions of the CRGNSA Management Plan are described in the earlier section of this memorandum.

According to Sections 3.210(B) and (C), permitted uses in the A-1 zone include the following:

- Uses permitted outright – agricultural uses and structures related to agricultural uses; replacement of dwelling; wetland and wildlife habitat creation, restoration, or enhancement; climbing and passing lanes within existing highway right-of-way; reconstruction, modification, or minor improvements of public roads not including additional travel lanes; schools; places of worship; mineral and geothermal operations; subdivisions and partitions subject to special conditions; utilities.
- Uses permitted conditionally – park and community centers; solid waste disposal sites; home occupations; facilities related to public roads; reconstruction or modification of public roads involving removal or displacement of structures but not involving creation of new parcels.

Future modifications to the interchange that are located outside of the UGB may require a county conditional use permit. Section 3.210(D) provides criteria for approving conditional uses. Proposed projects must not:

1. *Force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; or*
2. *Significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use.*

Dimensional standards and setbacks for uses in the A-1 zone are presented in Section 3.210(I).

City of the Dalles Comprehensive Plan (2006)

This document presents the adopted goals and policies that guide land use in The Dalles. The Comprehensive Plan is a statement of public policy for the guidance of growth, development, and conservation of resources within the city.[9]

Existing policies related to land use in the city include the following:

Goal #2: Land Use Planning
Policies
2. *Establish Plan review and revision procedures which include provisions for participation by citizens and affected governments and special districts.*
3. *Assure an adequate factual base for decisions and action.*

[9] Sections of the Comprehensive Plan will be superseded by information in the city's Growth Management Report (2007), once this document is adopted. The Growth Management Report (also reviewed in this memorandum) provides updated information for existing conditions and project land needs related to economic development (Goal #9), housing (Goal #10), and public uses (Goal #11). Although the city has not legislatively adopted the report in its entirety, certain source reports and analyses, such as the coordinated population forecast, have been adopted.

6. Implement this Plan through appropriate ordinances and action. Implementing measures shall be developed to allow administrative review and approval authority.

The I-84 Chenoweth IAMP will be adopted as an amendment to the City's TSP, which is part of the City's Comprehensive Plan. It will be developed with citizen participation in stakeholder interviews and at general public meetings and committee meetings and will require coordination between the City, County, and ODOT. The plan will be implemented through any necessary amendments to the City's Comprehensive Plan policies and the Land Use and Development Ordinance.

Confirmed Goal 5 resources in the IAMP study area will be subject to state and either County or City Goal 5 policies and programs. City Goal 5 policies include the policies below. Trails in the IAMP study area are addressed in adopted city policy and should be reflected in the IAMP and amended City TSP.

Goal #5: Open Spaces, Scenic and Historic Areas, and Natural Resources

1. Link and integrate the protection and enhancement of Open Space into Goal 8, Recreation.
2. Develop and maintain a current map and inventory areas of significant environmental concern…
3. Promote and provide incentives to protect and enhance Mill Creek, Chenoweth Creek, Fifteen Mile Creek and Three Mile Creek for their natural and recreational values, consistent with The Dalles Riverfront Plan. See Goal 8, Recreation.
4. Promote the development of a linear park system and nature trail along Mill and Chenoweth Creeks and a multipurpose trail along the Columbia River consistent with Goals 8 and 12 and The Dalles Riverfront Plan.

Economic development – and commercial development in particular – is largely driving the need for the I-84 Chenoweth IAMP. The following Goal #9 policies and implementation measures are pertinent to development in the vicinity of the IAMP, and transportation-related policy amendments proposed as part of IAMP implementation may modify or update them.

Goal #9: Economic Development
Policies

1. Provide appropriately designated vacant buildable land in adequate quantities to meet the forecast needs of The Dalles to the year 2010.
3. Plan for and make prudent public investments to meet the future demands of industrial, commercial, and residential growth in The Dalles.
11. Reserve industrial zones for industrial uses and uses compatible with industry.
12. Review and revise administrative policies and procedures to streamline the planning process, and reduce delays in obtaining development approvals.
16. Encourage cooperation between public and private sectors to support economic growth.

Implementation Measures

3. The Dalles Industrial Area

a. Provide for industrial development located with good access to I-84, arterial streets and rail facilities. Encourage the development of a full I-84 West Interchange to serve the industrial area as well as the Gorge Discovery Center.

4. Service/Recreation Areas

a. Provide for mixed-use business and service commercial areas in locations with good access to I-84, Columbia River access, and proximity to recreation and/or visitor attractions.

In terms of transportation, the goals and policies in the Comprehensive Plan are updated by those in the City's 2006 Transportation System Plan (TSP) (see City of the Dalles Transportation System Plan section of this memorandum).

City urban expansion is guided by the goals and policies of Goal #14 (Urbanization). City goals and policies guiding urbanization include those below:

Policies

4. Changes to the Urban Growth Boundary shall be based upon consideration of the following factors:

a. Demonstrated need to accommodate long-range urban population growth requirements consistent LCDC [statewide planning] goals;

b. Need for housing, employment opportunities, and livability;

c. Orderly and economic provision for public facilities and services

d. Maximum efficiency of land uses within and on the fringe of the existing urban area

5. Encourage the orderly annexation of land within the Urban Growth Boundary to the City of The Dalles.

a. Adequate public utilities shall be planned or provided for, per local and State statutes, to service an area when annexation is considered. This includes, but is not limited to, storm sewers, sanitary sewer and water service.

b. Public facilities such as roads, street lights, parks, and fire hydrants may be required for development of the area in question and shall be subject to review prior to annexation.

These goals and policies apply to urban growth areas inside the City's UGB but not yet annexed to the City. They also apply to areas of future urban expansion adjacent to the City's existing UGB.

The Dalles Growth Management Report (2007)

The Growth Management Report was prepared by Winterbrook Planning and released in June 2007. The report provides findings to support a proposed expansion of the 2026 UGB, the

expansion of The Dalles "Urban Area" consistent with the Columbia River Gorge National Scenic Area Act, and the establishment of the 2056 The Dalles Urban Reserve Area (URA).

The report relies on findings from the following reports and analyses:

- *Land Use Needs and Locational Analysis* (Erik C. Rundell, City of The Dalles, 2005)
- *Population Forecast for The Dalles* (ECONorthwest, 2006)
- *City of The Dalles Economic Opportunities Analysis* (ECONorthwest, 2007)
- *City of The Dalles Residential Land Needs Report* (Winterbrook Planning, 2007)
- *City of The Dalles Recommended Zoning District Amendments* (Winterbrook Planning, 2006)
- *City of The Dalles Demographic Trends Analysis* (Winterbrook Planning, 2006)
- *Buildable Lands Inventory Methods and Maps for The Dalles UGB and URA* (Winterbrook Planning and the City of The Dalles, 2006)
- *Goal 13 Energy and Land Use Analysis* (ECONorthwest, 2006)
- *Public Facilities Findings for 2026 UGB and 2056 URA* (City of The Dalles Public Works Department, 2007)
- *Rural Residential Area Capacity Analysis* (City of The Dalles Community Development Department, 2007).

While the City has not adopted the report in its entirety through a legislative process, supportive source reports and analyses, such as the population forecast, have been adopted.

According to the Growth Management Report, the twenty-year land need (to 2026, and in addition to land already inside the UGB) is approximately 540 gross buildable acres of residential land and approximately 85-120 buildable acres for employment. This is the amount of land that is being proposed for inclusion in the UGB. The fifty-year land need (to 2056) is estimated to be about 1,065 acres for residential uses and about 560 acres for employment uses. The proposed URA does not satisfy this fifty-year need: it is approximately 1,180 acres and short of the target by about 445 acres due to topographical and regulatory constraints.

According to Map 6, Generalized Comprehensive Plan, in the report, the UGB expansion and designation of URA areas to the north/northwest of the city, including lands in the vicinity of the Chenoweth Interchange, are intended primarily for residential use. However, according to City staff, all of this land is also designated as part of the Columbia River Gorge National Scenic Area (CRGNSA). The current NSA designation must be converted to Urban Area in order to accommodate the adoption of the UGB expansion and the establishment of a URA. A rules committee convened by the Columbia River Gorge Commission must determine whether this conversion constitutes a "minor" or "major" amendment to the NSA management plan (see Columbia River Gorge National Scenic Area Management Plan/National Scenic Area Act section in this memorandum). A minor amendment could be decided by the Columbia River Gorge Commission while a major amendment would need to be decided by Congress. It is possible that the rules committee decision and subsequent action – including potential appeals – will take several years. Regardless, consideration of the long-term urbanization of this area – even if for low-density residential uses – may be factored into the transportation analysis performed in developing this IAMP.

City of the Dalles Land Use and Development Ordinance (1998, Updated 2008)

The City's Land Use and Development Ordinance (LUDO) implements policies established in the City's Comprehensive Plan and regulates development through zoning designations and provisions that apply generally to all development and particularly to land divisions within the city.

Land inside the IAMP study area is zoned with the following designations, shown in Figure 1:

- Mobile Home Residential District (RMH)
- Recreational Commercial District (CR)
- General Commercial District (CG)
- Commercial/Light Industrial District (CLI)
- Industrial District (I).

There are also two areas of Community Facilities Overlay District (CFO) zoning applied in the IAMP study area: at the intersection of River Road and Columbia Road and at the end of River Trail Way. The City has not adopted overlay zoning districts for floodplains or steep slopes, but any of these natural hazard areas within the IAMP study area will be subject to provisions in **Chapter 8 (Physical and Environmental Constraints)**.

Each zoning district in **Chapter 5 (Zoning District Regulations)** of the City's LUDO regulates permitted uses and development and design elements, including lot area and dimensions, setbacks, lot coverage, pedestrian walkways, and parking areas, and drives. Some of the uses permitted outright in the zoning districts in the IAMP study area include the following:

- Mobile Home Residential District (RMH) – singe-family dwelling units, including attached units, and multi-family dwelling units, subject to site plan review provisions (Section 3.030); manufactured dwelling units in parks subject to special manufactured dwelling park provisions (Chapter 11); parks and open space; child care, family care, and residential care facilities; wireless towers, subject to special provisions (Section 6.140); accessory dwelling units and structures, subject to accessory development provisions (Section 6.030); bed and breakfast and vacation rentals, subject to special provisions (Section 6.040); home occupations, subject to home business provisions (Section 6.2020).
- Recreational Commercial District (CR) – all permitted uses subject to site plan review provisions (Section 3.030); retail services, except shopping centers and uses with floor areas over 15,000 square feet; conference and convention centers; lodging and campgrounds, subject to recreational vehicle park provisions (Section 5.080.030); recreational facilities; dwelling units above permitted commercial uses; restaurants; administrative offices; light industrial uses (compatible with commercial and recreational uses); parking lots, subject to parking standards (Chapter 7); parks and open space; wireless towers, subject to special provisions (Section 6.140); accessory buildings, subject to accessory development provisions (Section 6.030); dwelling unit for on-site personnel (one unit/site).

- General Commercial District (CG) – all permitted uses subject to site plan review provisions (Section 3.030); retail and wholesale services; personal and professional services; conference and convention centers; lodging; equipment sales and services; light manufacturing; restaurants and bars; parking lots, subject to parking standards (Chapter 7); parks, open space, and indoor recreational facilities; dwelling units above permitted commercial uses; residential care and family day care facilities; accessory buildings, subject to accessory development provisions (Section 6.030); bed and breakfast and vacation rentals, subject to special provisions (Section 6.040); home occupations, subject to home business provisions (Section 6.2020); wireless towers, subject to special provisions (Section 6.140); bus shelters, bike racks, and other pedestrian, bicyclist, and transit amenities.
- Commercial/Light Industrial District (CLI) – all permitted uses subject to site plan review provisions (Section 3.030); retail and wholesale services; personal and professional services; engineering, research and development; restaurants and bars; lodging; light manufacturing and warehousing; parks, open space, and indoor recreational facilities; parking lots, subject to parking standards (Chapter 7); transportation depots; wireless towers, subject to special provisions (Section 6.140); accessory buildings, subject to accessory development provisions (Section 6.030); dwelling unit for on-site personnel (one unit/site); bed and breakfast and vacation rentals, subject to special provisions (Section 6.040); home occupations, subject to home business provisions (Section 6.2020); bus shelters, bike racks, and other pedestrian, bicyclist, and transit amenities.
- Industrial District (I) - all permitted uses subject to site plan review provisions (Section 3.030); community facilities, subject to special overlay district provisions (Section 5.100); feed, seed, and fuel stores; food production and food services; heavy equipment sales and services; manufacturing and storage services; supporting personal and professional services; parking lots; fueling stations; parks and open space; rail yards, shipyards, and commercial docking facilities; rock and mineral processing; rodeo and circus grounds; transportation facilities; truck stop facilities; warehousing; wireless towers, subject to special provisions (Section 6.140); accessory buildings, subject to accessory development provisions (Section 6.030); dwelling unit for on-site personnel (one unit/site); bus shelters, bike racks, and other pedestrian, bicyclist, and transit amenities.

The Industrial District is the only zoning district that lists transportation facilities as a permitted use. The recommendations of the I-84 Chenoweth IAMP may include improvements to the existing interchange and the local transportation system in the vicinity. These improvements may require a city land use approval process.

The zoning districts in Chapter 5 also refer to regulations in Section 6.010 (Landscaping Standards), Section 6.030 (Accessory Development), Chapter 7 (Parking Requirements), and Section 6.050 (Access Management). The CFO District regulates permitted uses and development standards in the overlay district, and requires conditional use review and master planning for development in the district (Section 5.100).

Chapter 6 (General Provisions) of the City's LUDO addresses access management, driveway and entrance standards, and vision clearance standards among other provisions. Access management provisions (Section 6.050) include requirements for unified access and circulation,

connectivity, joint and cross access, and non-conforming access as well as allowances for shared parking. Table 1 provides access spacing standards in ranges based on the road classification. The section clearly defers to ODOT access spacing standards for ODOT roadways (Section 6.050.040(C)). Chapter 6 also provides standards for the number, widths, and other design elements of driveways (Section 6.060). Vision clearance regulations (Section 6.100) provide different standards depending on the road classification.

Chapter 9 (Land Divisions) establishes requirements for block size, lot access, street connectivity, and redevelopment plans for land divisions (Section 9.020). Partition application criteria require that the location of all existing and proposed streets, curbs, and sidewalks be shown in the plans as well as all areas proposed for public dedication including street rights-of-way, trails, and easements (Section 9.030.030). Subdivision and Planned Development application criteria similarly require that existing and proposed circulation systems be shown in site plans and conceptual development plans, including bikeways, off-street parking, service and loading areas, major access points to public rights-of-way, pedestrian pathways, and their interaction with the vehicular circulation system (Section 9.040.030 and 9.050.040). As part of final plat approval, the applicant must guarantee that transportation improvements shown in site plans will be constructed and constructed to City standards established in Chapter 10 (Improvements Required with Development).

Chapter 10 (Improvements Required with Development) establishes requirements for the timing and standards for constructing improvements. Timing regulations require that full improvements (including street, curb, sidewalk, and storm sewer) be provided with the construction or addition of a new dwelling unit on a lot, with exceptions for replacing units after a natural disaster and additional regulations for providing sidewalks (Section 10.030). Pedestrian improvement requirements (Section 10.040) address location and minimum widths as well as connectivity within a site and to adjacent sites, linkages to trails, and potential off-site improvements. Similarly, bicycle improvement requirements (Section 10.050) specify location of bike lanes (on new and reconstructed arterial and major collector streets), connectivity within and between sites, and minimum widths for bicycle/pedestrian paths.

Street improvement requirements (Section 10.060) establish the threshold and procedures for traffic studies as well as strategies for discouraging pass-through traffic on local streets, regulations for half-street improvements and streets adjacent to streets not improved to City standards, rules for connectivity, alley provisions, and conditions for providing private streets. The section includes a table of standards (including widths of right-of-way, roadway, bike lanes, sidewalks and planter strips) based on street classification.

Chapter 10 also addresses extensions of public utilities (Section 10.070) and dedications and easements (Section 10.110).

City of The Dalles Transportation System Plan (1999, Updated 2006)

The City of The Dalles TSP was adopted in 1999 to address transportation needs associated with anticipated future growth in the city's urban area for a 20-year period (1995-2015). A 2006 update addressed street functional classifications and the city's capital improvement program.

The TSP presents goals, policies, and objectives to guide transportation planning in the City, and includes road standards and access management guidelines for local roads, as well recommended projects for each modal element and a financing plan. It is expected that the City of The Dalles will amend the TSP by reference by adopting the IAMP document, and that this local action will occur prior to the OTC formally adopting the IAMP.

Among the goals in the adopted TSP that are most relevant to the I-84 Chenoweth IAMP are those that address transportation mobility, access, and the relationship between transportation and planned land uses (**Chapter 1**). There are no policies or objectives specific to interchanges in the existing TSP.

> *Goal 2: Enhance transportation mobility*
> *Objectives*
> *2.4 Develop a street system plan that maintains The Dalles as a hub by providing access for development in outlying areas.*
> *2.5 Evaluate the need for additional traffic signals in the city, including at the I-84 interchanges.*
> *2.6 Improve intersection operations through downtown by measures including, but not limited to, coordinating traffic signals along the highway.*
>
> *Goal 4: Develop a transportation system that supports planned land uses.*
> *Objectives*
> *Identify roadway system needs to serve undeveloped areas so that steps can be taken to preserve rights-of-way and maintain adequate traffic circulation.*
> *4.1 Integrate new arterial and collector routes into the existing city grid system.*
> *4.2 Identify improvements to existing policies and standards that address street connectivity and spacing.*

The land use and transportation objectives call for improving existing policies and standards for spacing and connectivity. Little guidance is provided related to the road system classifications and transportation improvements that would be appropriate for specified land uses. Also absent from city transportation policy is coordination of the review of land use applications and/or plan and code amendments with affected agencies like Wasco County and ODOT.

Chapter 6 (Transportation System Plan) of the City's TSP includes street standards and guidelines for access management on local roads. Street standards are presented by road classification in Figures 12 and 13 and Table 5. The road classifications reflect surrounding land uses. These include standards for industrial collectors and industrial/commercial local roads that apply in the IAMP study area. General access management guidelines, not standards, for local roads are presented in Table 6. The section refers to state and OHP access management standards for freeway interchanges, and regional and district highways.

Chapter 6 also addresses transportation improvements according to mode. The IAMP study area includes sites for roadway, bicycle and pedestrian projects shown in Figures 14 and 15. Figure 16 shows a truck route on River Road and Highway 30 north to the border of the UGB. Existing and planned transit facilities and services in the city are limited to long distance

Greyhound service and demand responsive service from senior centers and through the Mid Columbia Council of Governments; there is no fixed-route system.

The following roadway and bicycle/pedestrian projects are recommended in the study area:

- Project 1 – construction of Riverfront bicycle/pedestrian trail, short-term project, $500,000, the City of the Dalles and other "financial partners"; note: would use the River Road bridge to cross Chenoweth Creek and connect to Columbia River Historic Highway.
- Project 6 – re-stripe and provide bike lanes, sidewalks, and curbs on Hostetler Street from 6th Street to 10th Street, short-term project, $2 million, Wasco County "financial partner"
- Project 22 – widen bridge on River Road over Chenoweth Creek, long-term project, $1.5 million, ODOT, Wasco County, and the City of The Dalles "financial partners"
- Project 23 – Construct bikeway and pedestrian trail along Chenoweth Creek, long-term project, $750,000, the City of The Dalles and other "financial partners"
- Proposed bike lanes on River Road and Chenoweth Loop Road.

Although it is dated at this point, the City's Bicycle Master Plan (1993) also recommended a bike path as part of Chenoweth Creek Trail from W 6th to W 10th (1.1 miles, $180,000, low priority) and the Riverfront Trail (7.0 miles, $980,000, high priority) and bike lanes on W 6th Street (US 30) from Chenoweth Creek to Cherry Heights (1.9 miles, cost $1,300, high priority) in the study area.

Standards for traffic impact studies are not established in the City's TSP but in the City's code. Section 10.060 (Street Requirements) requires traffic studies for all proposed development of 16 dwelling units or more, all development projected to generate more than 400 average daily vehicle trips, or potentially for development near an intersection that is already operating at or below level of service "D."

Financing transportation improvements is addressed in **Chapter 7 (Funding Options and Financial Plan)**. Financing needs for State and County projects in the IAMP study area include the following projects. It is to be noted for the County projects that there was more land in the urban growth area (inside the City UGB but outside its city limits) at the time the TSP was prepared.

- State project – Chenoweth Interchange, estimated cost $10.8 (Table 21)
- County projects – Short-term (2005-2010), widen Chenoweth Loop Road ($288,000) and re-stripe Hostetler Street ($156,000); long-term (2016+), widen River Road Bridge ($412,000).

Approximately $19 million is needed to fund all short-, medium-, and long-range projects. The TSP identifies a combination of State, County, City, and other funding sources (Table 20). Table 24 reports a funding deficit of $1.8 million or a cumulative deficit of $881,000 for local projects only. Projections for revenue from a potential utility fee or transportation System Development Charge (SDC) are made in the TSP as ways to make up for the deficit.

City of The Dalles Capital Improvement Program, 2007-2012 (CIP)

The City's Capital Improvement Program (CIP) document schedules infrastructure improvements for construction over the short term (five years), including transportation improvements. The CIP document specifies the source of funding for these projects. There are no projects in the IAMP study area listed in the 2007-2012 CIP.

Appendix C

Technical Memorandum #3/4: Existing Land Use and Transportation

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TECHNICAL MEMORANDUM #3/4

I-84 Chenoweth IAMP

Existing Land Use and Transportation

Date: March 23, 2009 Project #: 9600.0

To: Ana Jovanovic, ODOT
Dick Gassman, City of The Dalles
Brad DeHart, ODOT
Rod Cathcart, ODOT
David Boyd, ODOT

cc: Dan Durow, City of The Dalles
Dale McCabe, City of The Dalles
Todd Cornett, Wasco County
Marty Matherly, Wasco County
Gary Nychyk, Wasco County
Sam Wilkins, ODOT
Mark Radabaugh, ODOT
Mark Devoney, ODOT
Casey Bergh, Kittelson & Associates, Inc.
Darci Rudzinski, AICP, Angelo Planning Group
Shayna Rehberg, AICP, Angelo Planning Group

From: Susan Wright, PE, Casey Bergh, Marc Butorac, P.E., P.T.O.E., Kittelson & Associates, Inc.

INTRODUCTION

This memorandum provides a review of existing land uses and transportation facilities within the vicinity of the I-84/Chenoweth interchange in The Dalles, Oregon as depicted Figure 3-1. As shown in Figure 3-1, the study includes an Operations/Access Review Study Area and a Land Use Study Area. The interchange is located at the northwest end of the city and has a Service Area much larger than the study areas. The information identified in this memorandum is intended to provide a basis for identifying opportunities and constraints for meeting the goals and objectives of the IAMP.

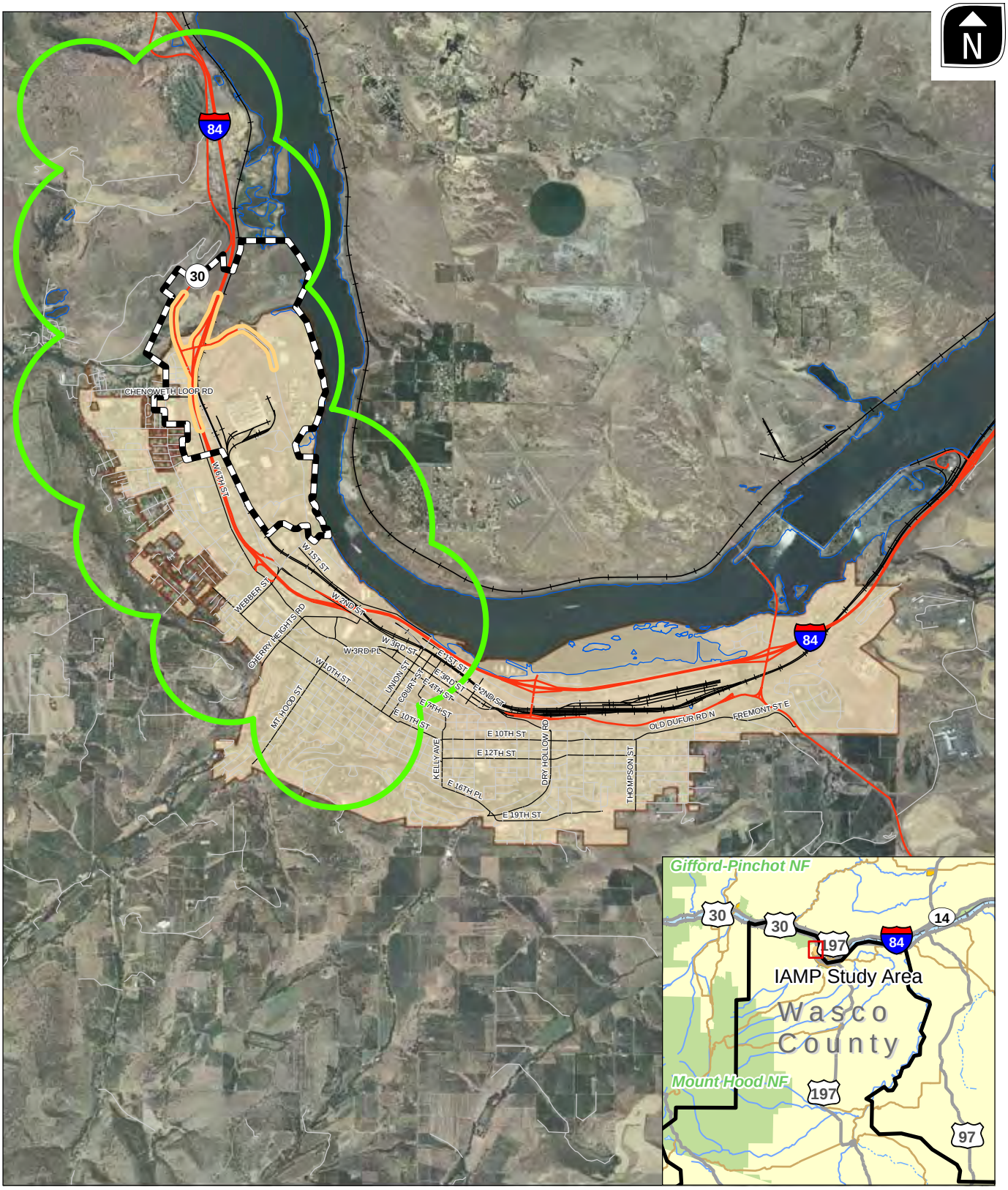
INTERCHANGE MANAGEMENT STUDY AREA

The intent of this review is to describe developed, undeveloped, and re-developable properties with potential to impact the function and operation of the interchange over a 20-year horizon. The Land Use Study Area shown in Figure 3-2 includes the areas with trip generation potential that are expected to have a direct affect on the design and function of the interchange. Generally speaking, land uses outside of the Land Use Study area in the Interchange Service Area (shown in Figure 3-1) use the facility and are impacted by traffic using the facility, but are not anticipated to directly impact the function of the interchange because they are already developed, have limited redevelopment potential, or are outside of The Dalles Urban Growth Boundary (UGB). Specific trip generation from

land uses within the Land Use Study Area will be calculated based on individual property development or redevelopment potential, while growth from outside of this area will be represented through a regional traffic growth forecast as part of the traffic analysis for the IAMP.

Figure 3-2 also outlines the Interchange Operations and Access Study Area. The operations and access management of intersections and accesses within this area is the subject of analysis described later in this memo.

A majority of the Land Use Study Area includes industrial land, to the east of I-84. Many of the industrial properties gain access to I-84 through the Chenoweth Interchange via River Road, including those located on Klindt Drive, Crates Way, Columbia Road, and Steelhead Way. Land to the west and north of the interchange includes undeveloped and underdeveloped land, both inside and outside of The Dalles UGB. The boundary of the Land Use Study Area extends south of the interchange to encompass the Northwest Aluminum Company parcels and all of the Port of The Dalles property.



LEGEND

- Interchange Service Area
- IAMP Operation/Access Study Area
- Land Use Study Area
- The Dalles Town Boundary

0 2,650 5,300 10,600 Feet

STUDY AREA VICINITY MAP
THE DALLES, OREGON

FIGURE **3-1**

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LEGEND

- Minimum 1,320-foot IAMP Limits
- IAMP Operation/Access Study Area
- Land Use Study Area

0 650 1,300 2,600 Feet

INTERCHANGE MANAGEMENT STUDY AREA
THE DALLES, OREGON

FIGURE **3-2**

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EXISTING LAND USE

Pursuant to the requirements stated in the Oregon Administrative Rule 734-051-0155 for the preparation of an IAMP, a land use inventory has been prepared for the I-84 Chenoweth IAMP study area. This section provides a description of the existing land-use patterns and zoning regulations that currently exist within the interchange study area.

DESIGNATIONS AND DEVELOPMENT STANDARDS

As shown in Figure 3-3, parcels within the Land Use Study Area and The Dalles city limits are designated in The Dalles Comprehensive Plan. The comprehensive plan identifies the following designations:

- Low Density Residential (RL)
- High/Medium Density Residential (RH)
- Mobile Home Residential (RMH)
- Neighborhood Center (NC)
- Park & Open Space (P/OS)
- General Commercial (C)
- Recreational Commercial (CR)
- Industrial District (I)

The Dalles' Land Use and Development Ordinance (LUDO) implements policies established in the City's Comprehensive Plan and regulates development through zoning designations and provisions that apply generally to all development and particularly to land divisions within the city. As shown in Figure 3-3, LUDO zoning is relatively consistent with The Dalles Comprehensive Plan designations, with the exception of the relatively recent zoning designation of Commercial/Light Industrial District (CLI) in the immediate vicinity of the interchange.

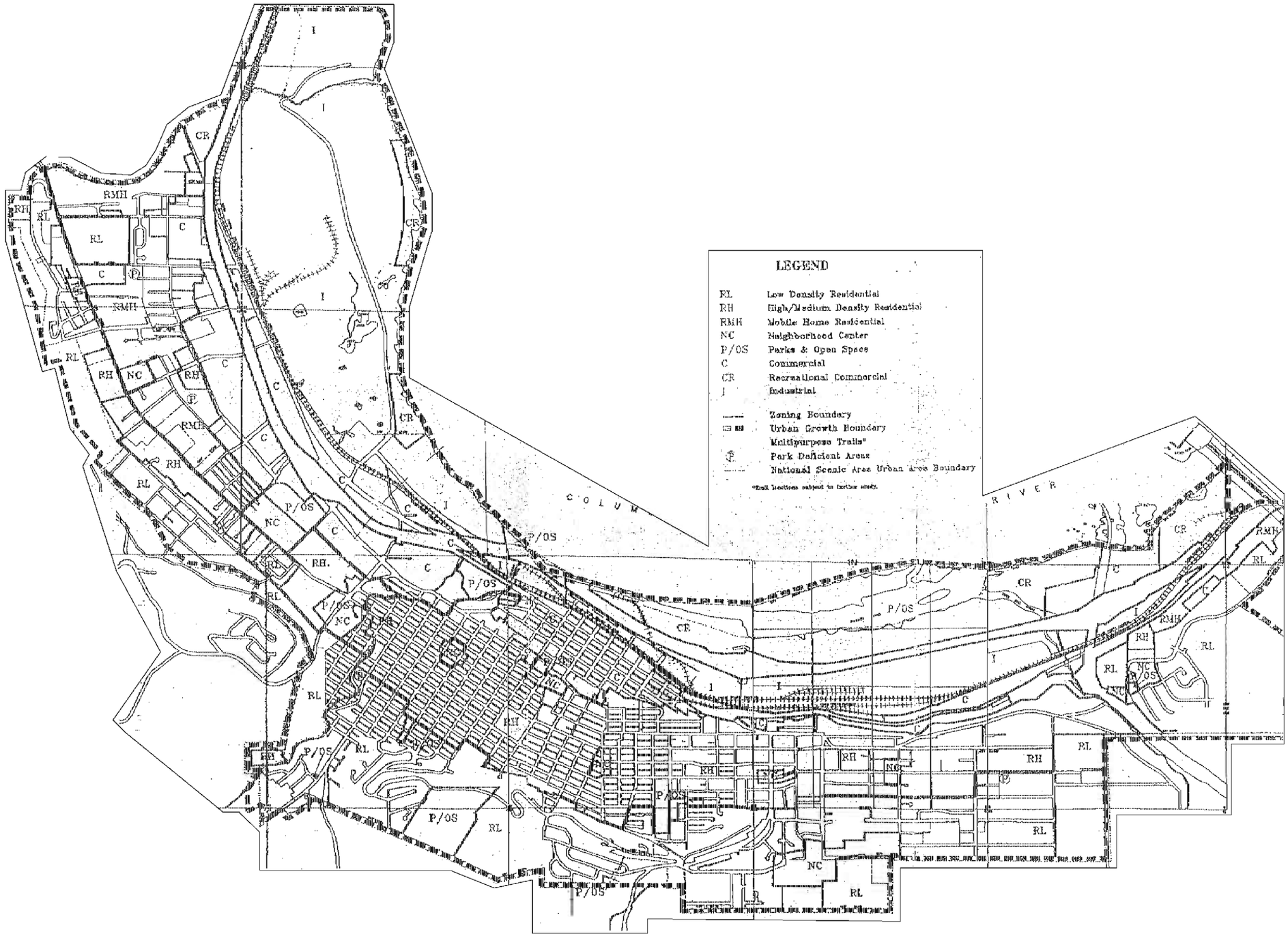
The majority of the land in the Land Use Study Area east of I-84 is zoned Industrial District. Uses allowed in this zone include what is generally considered "heavy industrial" uses, such as manufacturing and storage services; rail yards; shipyards; commercial docking facilities; rock and mineral processing; and, warehousing. With the exception of uses that support personal and professional services (e.g., restaurant, laundry, and cleaning services), commercial and retail uses are prohibited. The minimum lot size for development zoned Industrial is 10,000 square-feet. There are no upper limitations on lot size or lot coverage; however, building heights are limited to 55 feet.

Several properties are zoned for Recreational Commercial, including properties east of Klindt Drive, east of River Road near Webber Street, and between I-84 and West 6th Street near River Road. Light industrial uses that are compatible with commercial and recreational uses are allowed in this zone, as are restaurants, administrative offices, lodging, and campgrounds. Retail services with limited floor area (15,000 square feet) are allowed, but shopping centers are prohibited.

The 67-acre property in the southeast quadrant of the interchange that was the subject of an agreement between the City of The Dalles and ODOT is zoned Commercial/Light Industrial (CLI). This agreement initiated the preparation of the I-84/Chenoweth IAMP (see Memorandum #2). Uses allowed in the zone that can be considered "light industrial" include: engineering; research and development; manufacturing; and, warehousing. Retail uses, including shopping centers and grocery stores, are also allowed. As in the Industrial zone, there is a minimum lot size required for development in the CLI zone (10,000 square feet), but no maximum limits on size, lot coverage, or lot width or depth. Building heights are also limited to 55 feet in the CLI zone.

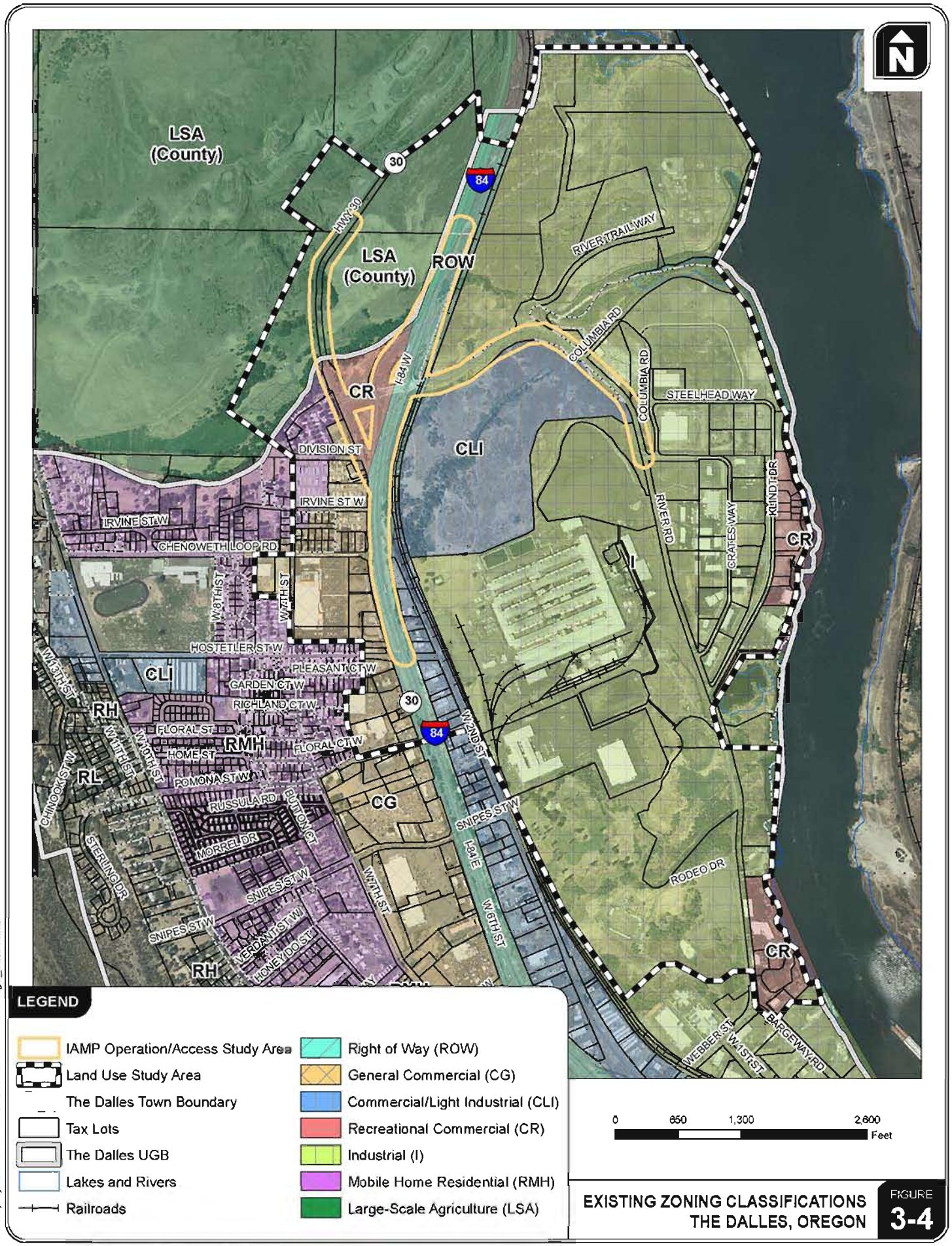
Currently, land to the northwest of the interchange is largely outside of the city's existing UGB. The Wasco County Land Use and Development Ordinance governs land outside the city's UGB. County zoned land within the Land Use Study Area is A-1 (160), which corresponds to Exclusive Farm Use (EFU) zoning with a 160-acre minimum. The county portion of the IAMP study area, which is part of the Columbia River Gorge National Scenic Area (CRGNSA), and outside of the Urban Area, is also designated as General Management Area (GMA). Applicable provisions of the CRGNSA Management Plan are described in Technical Memorandum #2.

Permitted uses in the A-1 zone are limited to agricultural uses and structures for agricultural use. Transportation improvements, consistent with state law, are also permitted, as are schools, places of worship, and mineral and geothermal operations. Parks and community centers are allowed conditionally.



EXISTING COMPREHENSIVE PLAN
THE DALLES, OREGON

FIGURE **3-3**



EXISTING ZONING CLASSIFICATIONS
THE DALLES, OREGON

FIGURE 3-4

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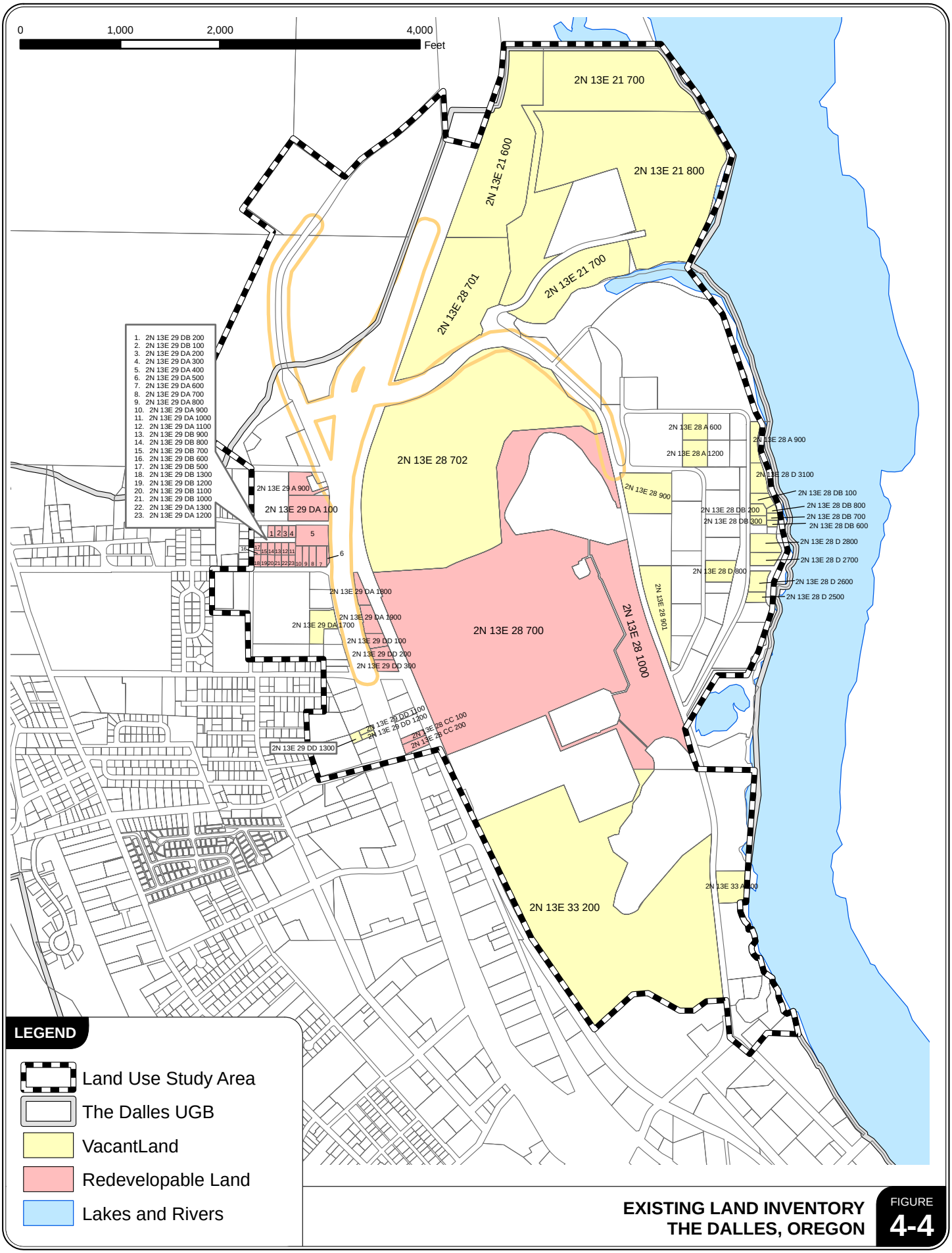
LAND USE INVENTORY

Existing land uses in the Land Use Study Area are largely consistent with the uses allowed by the underlying zoning. There are 200 acres in the Port Industrial Area, some in private ownership. The largest property owner is the Port of The Dalles, with multiple businesses leasing land, including Munsen Paving, a large rock crushing and aggregate company.

Another large land holder is Northwest Aluminum Company. Currently, structures on an approximately 100-acre site owned by this company are being demolished and the site is being prepared for redevelopment. Northwest Aluminum Specialties, a secondary aluminum casting operation, has 100 employees and is located to the south of the site that is being redeveloped.

An inventory of land within the IAMP Land Use Study Area was prepared based on GIS data and site observations. Figure 3-5 illustrates the identified vacant and re-developable lands. Re-developable land includes parcels that can be expected to be cleared and redeveloped without requiring deconstruction of valuable infrastructure. Vacant lands include parcels that have no buildings and on which new developments could be constructed. All other land is expected to continue to be used by existing tenants, or tenants with similar trip generation potential, through the 20-year study period.

Table 3-1 provides supporting information for each vacant and re-developable parcel. The tax lot identification for each parcel is labeled on the map for reference.



EXISTING LAND INVENTORY
THE DALLES, OREGON

FIGURE **4-4**

H:\projfile\9600 - I-84 Chenoweth IAMP\GIS\Fig2_Tax Lots.mxd

Kittelson & Associates, Inc.
transportation engineering / planning

Table 3-1 Existing Land Inventory

Tax Lot	Acres	Zoning	Existing Development	Owner
2N 13E 28 CC 100	0.3	CLI	Various	LEE ERNEST W & MARY L
2N 13E 28 CC 200	0.6	CLI	Various	LEE ERNEST W & MARY L
2N 13E 29 DA 1800	0.6	CLI	Various	VELADOR AMADO & CHARLOTTE
2N 13E 29 DA 1900	1.0	CLI	Various	KOOPS DUANE C & JEAN M
2N 13E 29 DD 100	0.6	CLI	Various	STEELE CLARA S ET AL
2N 13E 29 DD 200	0.6	CLI	SPEE DEE HAULERS INC	SPEE DEE HAULERS INC
2N 13E 29 DD 300	0.5	CLI	SPEE DEE HAULERS INC	SPEE DEE HAULERS INC
2N 13E 28 700	94.3	I	NORTHWEST ALUMINUM CO	NORTHWEST ALUMINUM CO
2N 13E 28 1000	18.7	I	NORTHWEST ALUMINUM CO	NORTHWEST ALUMINUM CO
2N 13E 28 900	4.4	I	Vacant	CHENOWITH CREEK DEVELOPERS LLC
2N 13E 28 901	4.3	I	Vacant	NORTHWEST ALUMINUM CO
2N 13E 28 DB 600	0.2	CR	Vacant	RIVERFRONT ASSETS LLC
2N 13E 28 DB 300	0.3	CR	Vacant	RIVERFRONT ASSETS LLC
2N 13E 28 DB 700	0.2	CR	Vacant	RIVERFRONT ASSETS LLC
2N 13E 29 DA 1500	0.8	CG	Vacant	HOME DEPOT USA INC
2N 13E 29 DA 1501	1.0	CG	Vacant	MAGID ROBERT N
2N 13E 29 DA 1700	1.6	CG	Vacant	METRO INVESTMENTS LLC
2N 13E 29 DD 1100	0.2	CG	Vacant	DEAN SANDY ET AL
2N 13E 29 DD 1200	0.2	CG	Vacant	DEAN SANDY ET AL
2N 13E 29 DD 1300	0.2	CG	Vacant	DEAN SANDY ET AL
2N 13E 28 701	20.5	I	Vacant	NORTHWEST ALUMINUM CO
2N 13E 33 200	76.9	I	Vacant	NORTHWEST ALUMINUM CO
2N 13E 28 702	67.2	CLI	Vacant	WM3 INC
2N 13E 21 700	40.9	I	Vacant	PORT OF THE DALLES
2N 13E 21 800	42.5	I	Vacant	PORT OF THE DALLES
2N 13E 33 A 100	7.6	I	Vacant	FORT DALLES RIVERFRONT PROP LLC
2N 13E 21 600	22.2	I	Vacant	NORTHWEST ALUMINUM CO
2N 13E 28 A 600	1.5	I	Vacant	PORT OF THE DALLES
2N 13E 28 A 900	0.8	I	Vacant	PORT OF THE DALLES
2N 13E 28 A 1200	1.6	I	Vacant	PORT OF THE DALLES
2N 13E 28 D 3100	1.1	CR	Vacant	PORT OF THE DALLES
2N 13E 28 D 3000	1.2	CR	Vacant	PORT OF THE DALLES
2N 13E 28 D 2800	1.3	CR	Vacant	PORT OF THE DALLES
2N 13E 28 D 2700	0.9	CR	Vacant	PORT OF THE DALLES
2N 13E 28 D 2600	0.7	CR	Vacant	PORT OF THE DALLES
2N 13E 28 D 2500	0.9	CR	Vacant	PORT OF THE DALLES
2N 13E 28 D 800	1.4	I	Vacant	PORT OF THE DALLES

CR=Recreational Commercial, CLI=Commercial/Light Industrial, I=Industrial, CG=General Commercial

EXISTING TRANSPORTATION INVENTORY

The second major component of the I-84/Chenoweth IAMP existing conditions evaluation process is the transportation system. The existing transportation inventory provides a detailed description of all transportation facilities and travel modes within the study area. In addition, the inventory identifies the current operational, traffic control, and geometric characteristics of roadways and other transportation facilities. A detailed description of these facilities is provided in the following sections.

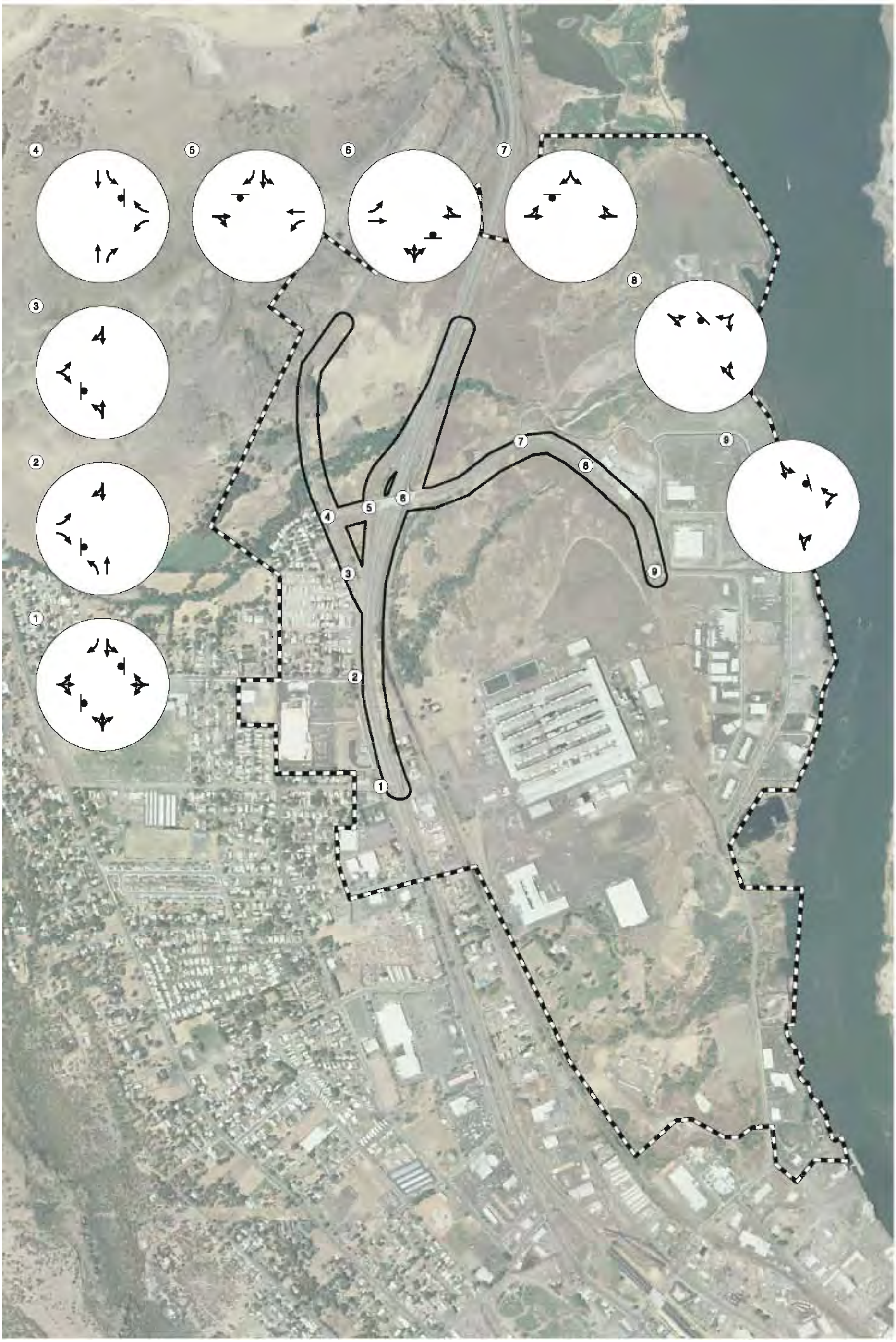
ROADWAY FACILITIES

The roadways within the study area include state, county, and city roadways. A description of each of the roadway facilities is summarized below and in Table 3-2. Figure 3-6 illustrates the existing lane configurations and traffic control devices at the respective study intersections.

Table 3-2 Existing Transportation Facilities and Roadway Designations

Roadway	Existing Roadway Ownership/ Functional Classification	Cross-section	Surface Type	Posted Speed (mph)	Side-walks?	Bicycle Lanes?	On-Street Parking?
Interstate-84	ODOT/ Interstate Highway	4-lane	Paved	65	No	No[1]	No
W. 6th Street	[2]City/ Arterial	2-lane	Paved	40	Partial	South of River Rd.	No
River Road	Wasco County/ Collector	2-lane	Paved	40	No	Yes	No
Hostetler Road	Wasco County/ Collector[3]	2-lane	Paved	30	Partial	West of W. 6th Street	Yes
Chenoweth Loop	Wasco County/ Collector	2-lane	Paved	25	Partial	Yes	Yes
Division Street	Wasco County/ Local	2-lane	Paved	25	No	No	Yes
River Trail Way	Local[4]	2-lane	Paved	Not Posted	No	No	No
Columbia Road	Local[4]	2-lane	Paved	20	Partial	No	No
Crates Way	Local[4]	2-lane	Paved	20	Partial	No	No

[1] It is illegal to operate a bicycle or other non-motorized vehicle on an interstate.
[2] 6th Street is a ODOT facility North of Division Street and is classified as a district highway and Oregon Scenic Byway
[3] East of W. 6th Street the City of The Dalles maintains Hostetler and classifies it as a local street.
[4] Not documented in the City of The Dalles TSP; currently functioning as local streets.



LEGEND

- STOP SIGN
- TRAFFIC SIGNAL

EXISTING LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
THE DALLES, OREGON

FIGURE **3-6**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

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Interstate-84

I-84 is a four-lane interstate highway that runs east-west through The Dalles. It is the main east-west travel route within the State of Oregon providing connections between Portland, Oregon and Boise, Idaho. I-84 is part of the National Highway System and is designated in the 1999 Oregon Highway Plan (Reference 1) as an Interstate Highway, Freight Route, and Truck Route. The pavement conditions on Interstate-84 were observed to be in good condition in the vicinity of the I-84/Chenowith Interchange at the time of the study.

Interstate-84 Ramps

The interstate ramps are single-lane, paved connections between the right lane of travel on I-84 and River Road. The eastbound ramp provides approximately 900 feet for deceleration and queue storage from the ramp gore to the ramp terminal intersection. Right-turn storage is provided for approximately eight passenger cars on the eastbound I-84 off-ramp at the intersection with River Road. The Westbound ramp approach to the intersection with River Road provides approximately 800 feet for deceleration and queue storage from the ramp gore to the ramp terminal. The approach is flared to provide right-turn storage for approximately one passenger car. Due to the need to elevate River Road over I-84 and the parallel railroad tracks, the overpass has a grade that slopes down to the west from the high point located just east of the westbound ramp terminal as shown in Exhibit 1.

Exhibit 1 I-84 Chenoweth Interchange from North looking South at EB On-Ramp

Because the westbound ramp terminal is located at approximately the high point of the interchange, the eastbound ramp terminal is located at a lower elevation. Consequently, sight distance from the eastbound off-ramp terminal is limited due to vertical curve when looking towards the east, as shown in Exhibit 2.

Exhibit 2 River Road at I-84 Looking East at EB Ramp Terminal

West 6th Street (US 30)

Highway 30, designated by the Oregon Highway Plan as a District Highway and an Oregon Scenic Byway, runs parallel to I−84 west of the study area and ends just south of River Road at Division Street. South of Division Street Highway 30 becomes West 6th Street, a city facility, which has a posted speed limit of 40 mph and in general has a two-lane cross-section with bicycle lanes and intermittent sidewalks along the west side. At some intersections there are exclusive left-turn and/or right-turn lanes. West 6th Street connects to I-84 again at the Webber Street interchange approximately 1.5 miles south of the Chenoweth Interchange at River Road. The Dalles TSP classifies West 6th Street as an arterial.

River Road

River Road is a two-lane collector road that links US 30 and 1st Street. River Road is a Wasco County facility from the Chenoweth Interchange to Bargeway Road at which point it becomes Webber Street, a City of The Dalles facility. River Road has a posted speed of 40 mph and provides a connection between the I-84 Chenoweth and Webber Street Interchanges on the east side of I-84. It is the main access to the Port of The Dalles.

Hostetler Road

Hostetler Road is a Wasco County road running east-west connecting West 10th Street to West 2nd Street. It is the only crossing of I-84 between the Chenoweth and Webber Street Interchanges (this location is an underpass). The main access to the Northwest Aluminum Company industrial property is at the intersection of Hostetler Road and West 2nd Street. Hostetler Road is maintained by Wasco County east of West 6th Street and by the City west of West 6th Street. The county portion is classified as collector and the city portion is a local road. The speed limit is 30 mph near the West 6th Street intersection.

Chenoweth Loop

Chenoweth Loop is a two-lane Wasco County collector road that provides an east-west connection from West 10th Street to West 6th Street. The posted speed limit is 25 mph on Chenoweth Loop.

Division Street

Division Street is an un-striped, two-way local street maintained by the county. It provides access to a residential area west of I-84 and has a posted speed limit is 25 mph.

River Trail Way, Columbia Boulevard, and Crates Way

River Trail Way, Columbia Boulevard, and Crates Way are not classified in the City of The Dalles TSP. All three streets function as local streets providing access to local properties.

PUBLIC TRANSPORTATION FACILITIES

There are no public transportation facilities that operate within the study area. The Mid-Columbia Council of Governments has created Transportation Network which operates demand responsive service to residents throughout Wasco County.

PEDESTRIAN AND BICYCLE FACILITIES

Pedestrian facilities throughout the study area include sidewalks on the west side of West 6th Street and on other local and collector facilities as outlined in Table 1. The inconsistent segments of sidewalk form an incomplete system that does not provide consistent pedestrian connections. Pedestrian volumes were observed to be minimal.

Designated bicycle lanes provide connections between the Port of The Dalles and other properties located on the east side of I-84 and residential and commercial developments along West 6th Street west of I-84. Hostetler Road and Chenoweth Loop provide partial bicycle facilities west of West 6th Street. Low levels of bicycle activity were observed within the study area.

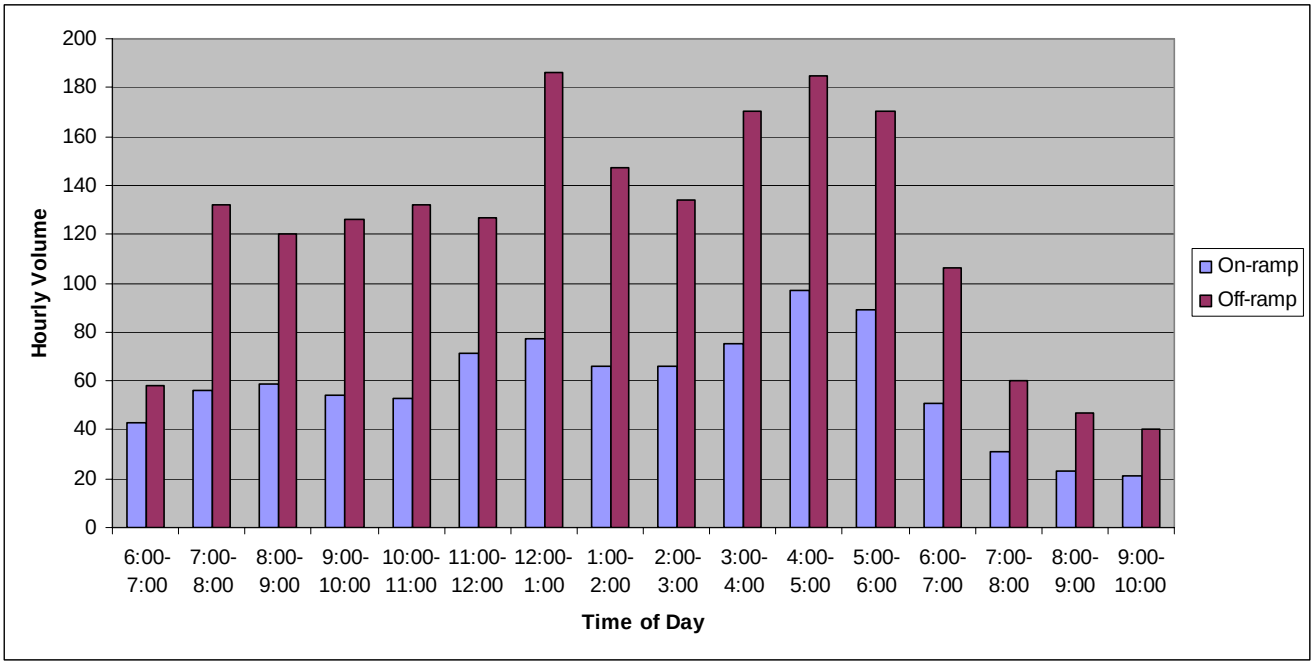
EXISTING TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

Manual intersection turning movement counts were obtained from ODOT at each of the study intersections to assess the operational performance and characteristics within the study area. These counts were conducted on mid-week days in July 2008. Due to some missing turning movements at the ramp terminals and unbalanced volumes between the ramp terminals and River Trail Way, the traffic volumes were supplemented with data from the July 2007 traffic counts collected for the WM3 Traffic Impact Analysis completed by DKS Associates. A description of the analysis conducted with this data is summarized in the following sections.

Peak Hour Intersection Volumes

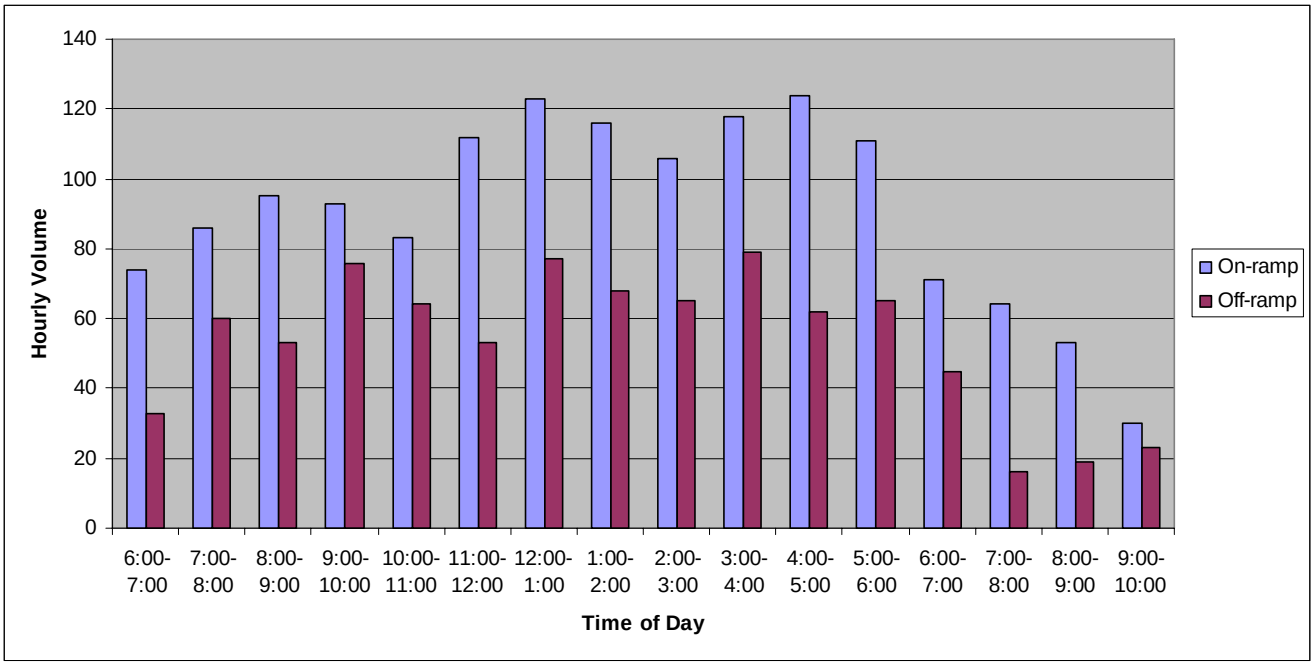
Turning movement counts at each intersection were recorded from 6:00 a.m. to 10:00 p.m. Because of the close proximity of the intersections, a system-wide peak hour was identified based on the volumes at all study intersections. The weekday p.m. peak hour in the study area was found to occur between 4:45–5:45 p.m. Figures 3-7 through 3-9 illustrate the daily volume peaking characteristics of the I-84 ramp traffic and I-84 through traffic. Figure 3-10 illustrates the daily volume peaking characteristics of River Road east of US 30. *The existing unadjusted turning movement traffic counts are provided in Attachment "A."*

Figure 3-7 Daily Traffic Volume Profile for I-84 EB Ramps at Chenoweth



Note: On-ramp volumes collected in August 2008, Off-ramp Volumes collected in April 2008.

Figure 3-8 Daily Traffic Volume Profile for I-84 WB Ramps at Chenoweth



Note: On-ramp volumes collected in August 2008, Off-ramp Volumes collected in April 2008.

Figure 3-9 Daily Traffic Volume Profile for I-84 (bi-directional) at Chenoweth

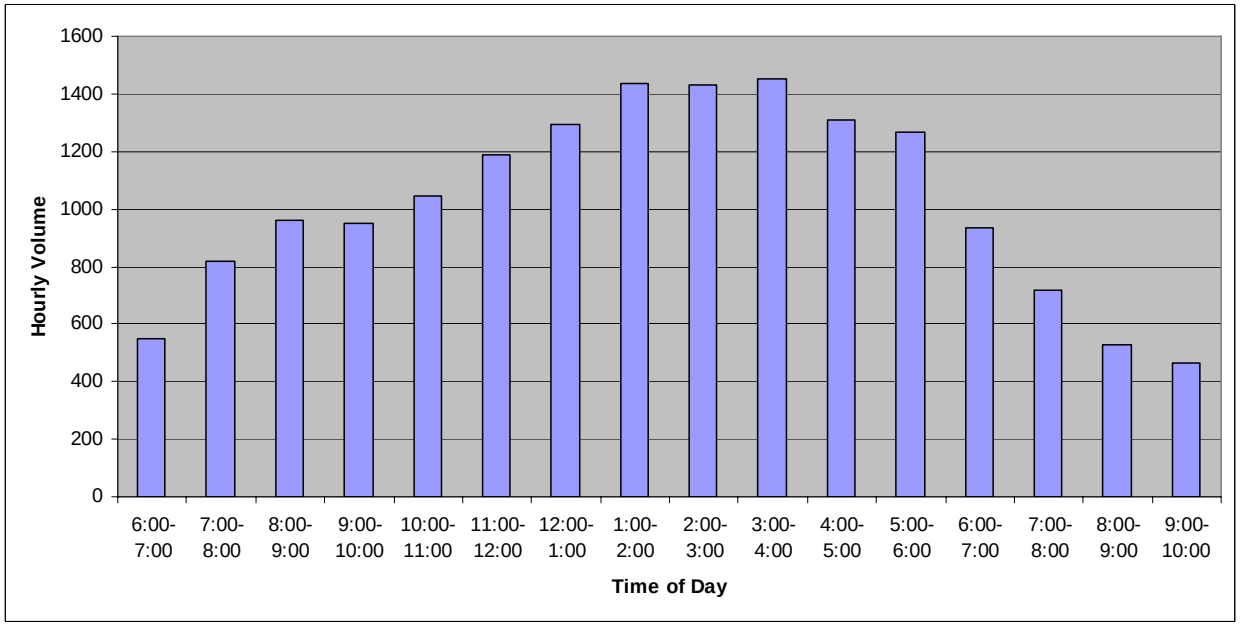
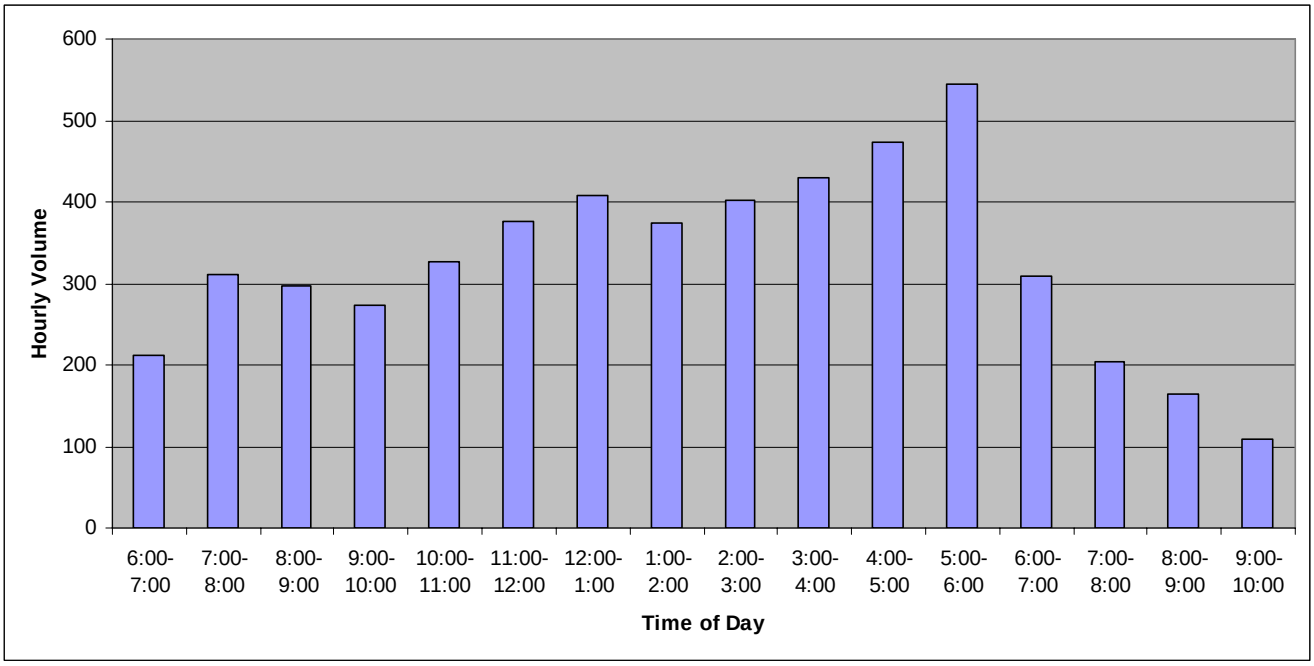


Figure 3-10 Daily Traffic Volume Profile on River Road (East of US 30)

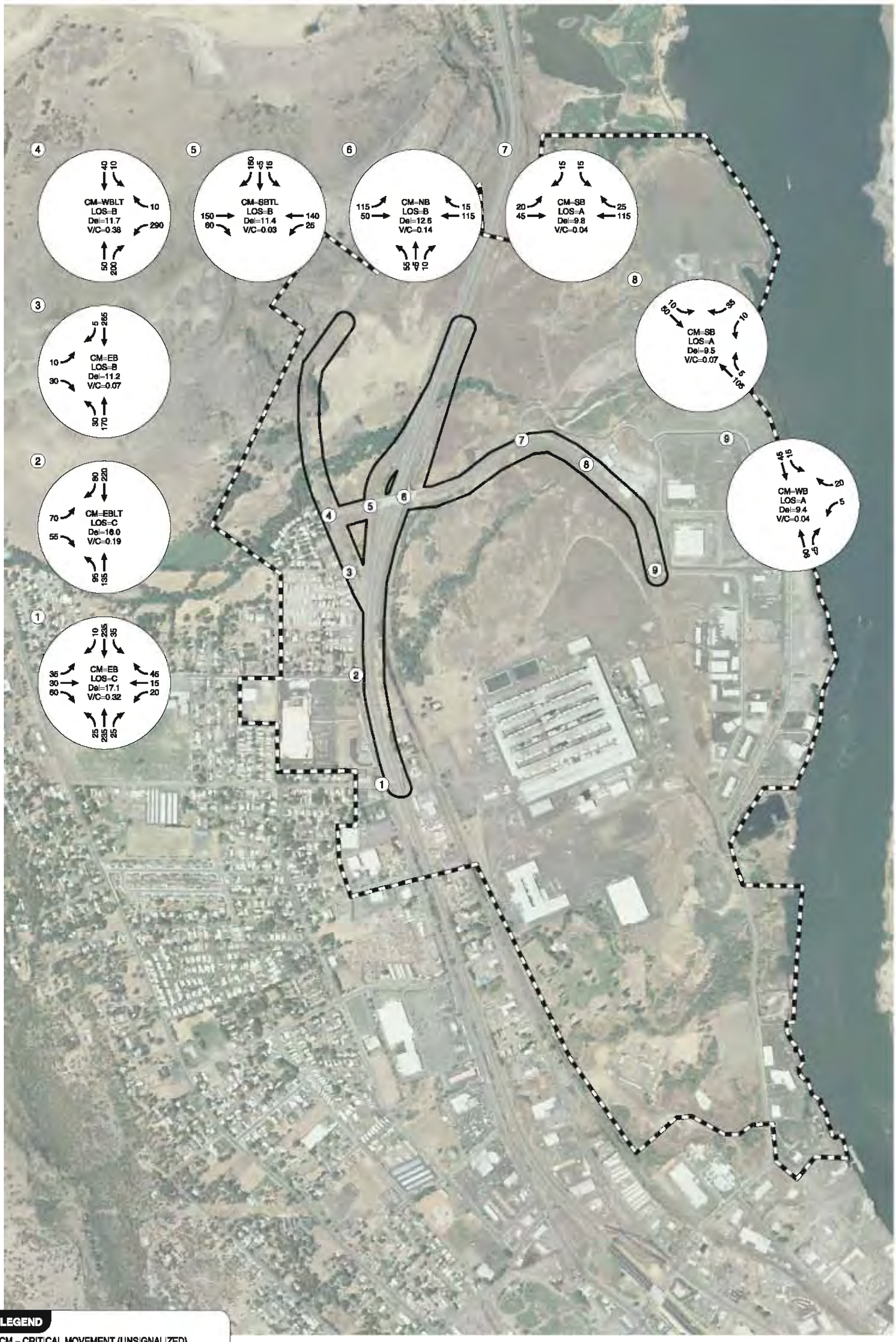


Seasonal Adjustments

Following the methodology outlined by ODOT's Analysis Procedures Manual (Reference 2), a seasonal adjustment factor was not applied to the traffic counts collected for the existing conditions analysis. The counts were collected in late July which was found to be the peak traffic volume time period of the year during four of the last five years at ODOT Automatic Traffic Recorder location 03-001, approximately 6 miles west of Chenoweth on I-84. The weekday p.m. intersection turning movement counts used for the existing conditions analysis are shown in Figure 3-11.

Existing Intersection Operations

All level of service analyses described in this analysis was performed in accordance with the procedures stated in the 2000 Highway Capacity Manual (Reference 3). The operational standard for the ramp terminals is a volume-to-capacity ratio of 0.75. The operational standard for all other study intersections is a LOS D. As shown in Figure 3-11, all study intersections currently operate acceptably. *The existing conditions level-of-service worksheets are provided in Attachment "B."*



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

EXISTING TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
THE DALLES, OREGON

FIGURE **3-11**

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TRAFFIC SAFETY

The crash histories at the respective study intersections and three study roadway sections were reviewed in an effort to identify potential intersection safety issues. The three study roadway sections include: I-84 one mile in each direction of the Chenoweth Interchange, River Road from West 6th Street (US 30) to Klindt Drive, and West 6th Street (US 30) from Discovery Drive to Hostetler Street. Crash records were obtained from ODOT for the three-year period from January 1, 2005 through December 31, 2007.

No crashes were reported for the following intersections and roadway sections:

- River Road from 6th Street (US 30) to Klindt Drive,
- River Road/I-84 eastbound and westbound ramp terminals,
- 6th Street (US 30) /River Road,
- River Road/Columbia Road,
- River Road/Crates Way, and
- River Road/River Trail Way.

Reported crashes on I-84 and West 6th Street are summarized in Table 3-3. There was one fatal crash involving a collision with a deer on West 6th Street (US 30) between Discovery Drive and Hostetler Street. The crash rates calculated along these segments were compared to statewide averages for similar facilities. As shown in Table 3-3 the crash rates for similar facilities in Oregon are greater than or equal to the crash rates for the study roadways. Further review of the crash patterns on I-84 shows that 67 percent of crashes were fixed object crashes. This proportion of fixed-object crashes is comparable to other single-vehicle crashes in Wasco County and on Oregon State Highways.

Table 3-4 summarizes the reported crashes at the study intersections where crashes occurred. No observable crash patterns have been identified within the study area; therefore, no traffic safety mitigation has been proposed in this memorandum. No crash rates are available at a statewide level for comparison with the calculated rates shown here. Generally a crash rate of 1.0 or greater indicates the need for further investigation. Given the relatively low entering volume and number of crashes, no patterns could be identified. An engineering study is recommended to determine the need for installation of a warning sign along West 6th Street to alert road users to conditions that might call for a reduction of speed or an action in the interest of minimizing potential for future deer-vehicle collisions. *ODOT crash data summary sheets are provided in Attachment "C".*

Table 3-3 Roadway Section Crash Histories (January 1, 2005 through December 31, 2007)

Roadway Section	Segment Length (Miles)	Number of Crashes	Crash Type					Severity			Crash Rate	Statewide Comparison	
			Fixed Object	Rear -End	Overturn	Turning	Other	PDO	Injury	Fatality			
I-84: 1 Mile Each Direction from Chenoweth Interchange	2.0	15	10	2	2	0	1	8	7	0	0.38	Interstate Freeway	0.38
West 6th Street (US 30) from Discovery Drive to Hostetler Street	1.9	5	1	1	1	1	1	2	2	1	0.51	Rural Cities, Minor Arterials	1.71

Table 3-4 Intersection Crash Histories (January 1, 2005 through December 31, 2007)

Intersection	Number of Crashes	Crash Rate	Crash Type				Severity		
			Angle	Rear-End	Turning	Other	PDO	Injury	Fatality
West 6th Street/ Hostetler Street	3	1.1	1	1	1	0	3	0	0
West 6th Street/ Chenoweth Loop	1	0.4	0	0	1	0	0	1	0
West 6th Street/ Division Street	1	0.5	0	0	1	0	0	1	0

EXISTING ROADWAY ACCESS CONDITIONS

There are currently seven private access points located within the Operations and Access Study Area, all of which are located on West 6th Street. There are an additional eight public road access points in the Operations and Access Study Area. The existing spacing of the closest private access to the eastbound ramp terminal is approximately 700 feet to the gas station on West 6th Street.

The existing access points demonstrate previous efforts to consolidate access as redevelopment occurred. An example of this is the redevelopment of the Home Depot on West 6th Street. Figure 3-11 shows the location and type (public or private) of each of the access locations within the access study area. Table 3-5 identifies the tax lots and existing businesses served by each of the access points.

Oregon Administrative Rule 734, Division 51 and the Oregon Highway Plan (OHP) identify ODOT's access management standards within the vicinity of interchanges. Within 1,320 feet from the ramp terminals no partial or full access is allowed according to the OHP. Figure 3-2 and Figure 3-12 show the 1,320 foot access control area as measured from the Interstate-84 ramp terminal intersections. As shown, three private and two public accesses are located within the 1,320 foot control area west of the interchange. The two public accesses include the River Road/River Trail Way and W. 6th Street/Division Street intersections. It should be noted that access to the WM3 commercial development was approved to have an access connection at the River Road/River Trail Way intersection which is within the 1,320 foot access control area.

Access spacing standards are 500 feet for US 30, a District Highway, based on the spacing requirements stipulated in the OHP. South of Division Street, West 6th Street is designated as a City Arterial and minimum spacing standards are 300-400 feet between driveways and/or streets. Minimum spacing standards for River Road, a major collector, are 150-300 feet between driveways and/or streets according to the City of The Dalles TSP. The public and private accesses on River Road within the Operations and Access Study Area meet these spacing standards.

Table 3-5 Chenoweth IAMP Public/Private Approach Inventory

Access Number	Approach Type (Jurisdiction)	Roadway	Side	Serves Tax Lot Number	Property Owner/ Business Name	Zoning	Acreage
1	Public (City)	W. 6th Street	West	Hostetler Street	Wasco County	NA	NA
2	Private (City)	W. 6th Street	West	2N 13E 29 DD 1900	Columbia Star LLC/ Adult Shop	CG	0.8
3	Private (City)	W. 6th Street	West	2N 13E 29 DA 1600		CG	0.6
4	Private (City)	W. 6th Street	West	2N 13E 29 DA 1700	METRO INVESTMENTS LLC/Vacant	CG	1.6
				2N 13E 29 DA 1501, 1400, and 1500	HOME DEPOT USA INC/Home Depot	CG	11.2
5	Public (City)	W. 6th Street	West	Chenoweth Loop Rd	Wasco County	NA	NA
6	Private (City)	W. 6th Street	West	2N 13E 29 DA 600	DONNELL MARTIN & CARLEE	CG	0.5
7	Private (City)	W. 6th Street	West	Lee Street	Private	NA	NA
8	Public (City)	W. 6th Street	West	Irvine Street	City of The Dalles	NA	NA
	Private (City)			2N 13E 29 DA 400	ROBINSON DORIS J FAMILY TRUST/Ideal Homes	CG	1.6
				2N 13E 29 DA 100	ROBINSON DORIS J FAMILY TRUST/ Marlett Homes	CG	2.4
9	Private (City)	W. 6th Street	West	2N 13E 29 A 900	ROBINSON DORIS J FAMILY TRUST	CG	1.3
10	Private (City)	W. 6th Street	West	2N 13E 29 A 1100	LONG STEPHEN MARCO	CG	0.4
11	Private (City)	W. 6th Street	West	2N 13E 29 A 1000	LINDLEY MARION D & KATHRYN S/ Doug's Affordable Muffler	CG	0.3
12	Public (ODOT)	W. 6th Street	West	Division Street	Wasco County	NA	NA
13	Private (ODOT)	W. 6th Street	West	2N 13E 29 A 200	HATTENHAUER JOHN	CG	1.6
14	Private (ODOT)	US 30	West	2N 13E 29 100	SPEE DEE HAULERS INC	LSA (County)	155.0
15	Public (County)	River Road	North	River Trail Way	City of The Dalles	NA	NA
16	Public (County)	River Road	East	Columbia Road	City of The Dalles	NA	NA
17	Public (County)	River Road	East	Crates Way	City of The Dalles	NA	NA

LEGEND

- Minimum 1,320-foot IAMP Limits
- IAMP Operation/Access Study Area
- Land Use Study Area
- Tax Lots

Type of Access

- (#) Public Approach
- [#] Private Approach

EXISTING ACCESS LOCATIONS
THE DALLES, OREGON

FIGURE **3-12**

Kittelson & Associates, Inc.
transportation engineering / planning

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EXISTING ROADWAY DEFICIENCIES

No significant existing roadway deficiencies were identified within the study area along the paved sections of roadway with the exception of potential sight distance limitations at the east-bound off-ramp terminal at the I-84 Chenoweth Interchange due to the vertical curve of the overpass. The length and grade of the I-84 ramps may also be too short and steep to be consistent with current ODOT design standards given the high-speed approach of vehicles entering and exiting I-84.

Traffic operations at each of the study intersections are currently acceptable during the critical weekday p.m. peak hour and there are no identified safety issues based on the crash history.

NATURAL AND CULTURAL RESOURCES

Land in the I-84/Chenoweth IAMP study area includes two Columbia River Gorge National Scenic Area (CRGNSA) designations: Urban Area and General Management Area (GMA) A-1 (160). These designations are intended to preserve natural resources within the CRGNSA. Based on a regulatory review of state and local government publications (see Technical Memorandum #2) there are currently no known fish or wildlife habitat, flood plains, historic properties, archeological resources, hazardous materials, or major utilities identified within the IAMP study area boundary.

SUMMARY

- The primary roadways within the study area include Interstate-84, West 6th Street, US 30, and River Road.
- All of the study roadways have a two-lane cross-section with the exception of Interstate-84 which is a four-lane facility.
- All of the study intersections operate at a volume-to-capacity ratio of 0.38 or less and a Level-of-Service "C" or better during the weekday p.m. peak hour which satisfies the ODOT volume-to-capacity thresholds and local mobility standards, respectively.
- There are no identified safety issues within the study area based on a review of the most recent five years of available crash data; however, one fatal collision involving a deer may warrant an engineering study to determine the need for installation of a warning sign on West 6th Street.
- There are currently 17 access points located within the Operations and Access Study Area along West 6th Street and River Road. The existing access points are a combination of public and private approaches.
- ODOT's access spacing standard within the vicinity of the interchange is 1,320 feet from the ramp terminals to any type of access (partial or full). Three private access points and two public accesses (River Road/River Trail Way and W. 6th Street/Division Street intersections) do not meet ODOT's current access spacing standard. Access to the WM3 commercial development was approved to have an access connection at the River Road/River Trail Way intersection.

- Access spacing standards for US 30, a district highway, are based on the spacing requirements stipulated in the OHP of 500 feet.
- Access spacing standards for West 6th Street, a City Arterial south of Division Street, are based on the spacing requirements stipulated in the City of The Dalles TSP of 300-400 feet. The driveways and streets on West 6th Street in the Operations and Access Study Area do not consistently meet these spacing standards.
- There are no consistent pedestrian or bicycle facilities providing connection between properties east and west of I-84.
- The length and grade of the I-84 ramps is observed to be too short and steep given the high-speed approach of vehicles entering and exiting I-84 and may be inconsistent with current ODOT design standards. Additionally sight distance on River Road and at the I-84 eastbound off-ramp is limited by the vertical curve of the bridge over I-84.
- There are no identified fish or wildlife habitat, flood plains, historic properties, archeological resources, hazardous materials, or major utilities within the IAMP study area boundary. Land within the I-84/Chenoweth IAMP study area is included in the Columbia River Gorge National Scenic Area, which is intended to preserve the natural resources within the region.

REFERENCES

1. Oregon Department of Transportation. *1999 Oregon Highway Plan*. 1999
2. Transportation Research Board. *Highway Capacity Manual*. 2000.
3. Oregon Department of Transportation. *Analysis Procedures Manual*. 2006.

ATTACHMENTS

A. Traffic Counts

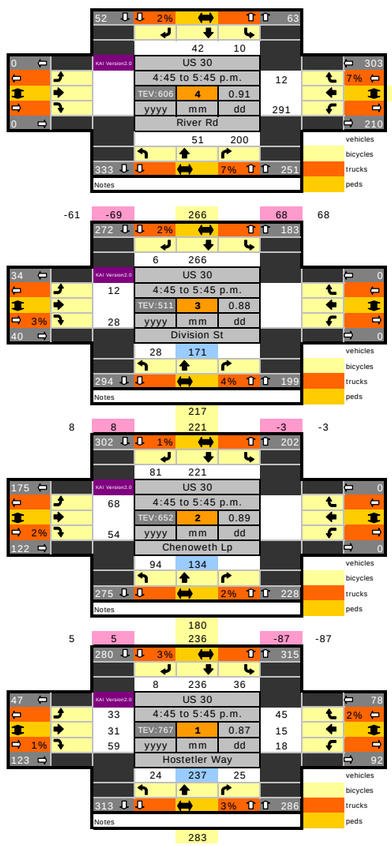
B. Existing Conditions Worksheets

C. Crash Data

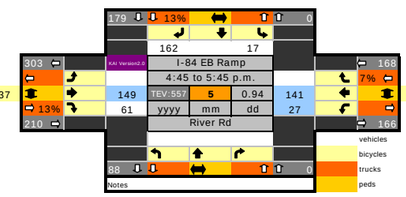
Attachment A

Traffic Counts

DKS Volume



DKS Volume



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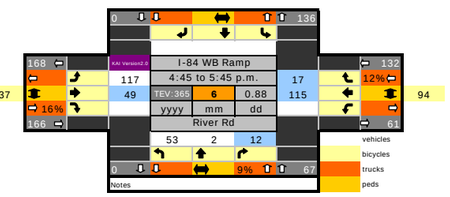
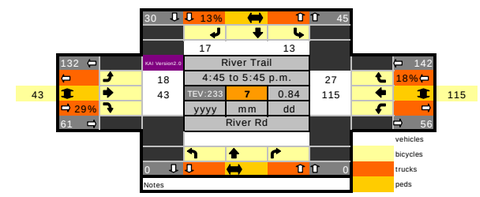


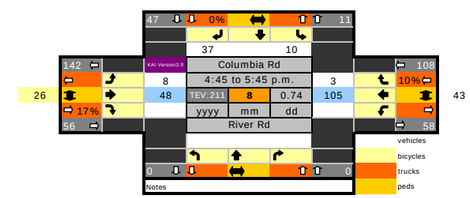
DKS Throughs, New Turns

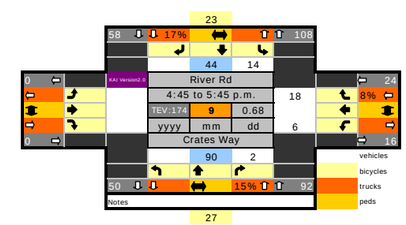


Color Code

- Keep the Difference in volume
- Balanced Volume
- Original volume or DSK Volume

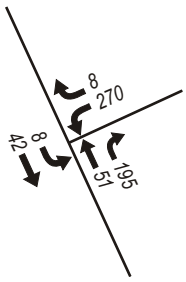
New Turns



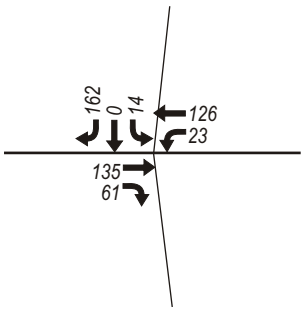


New Turns

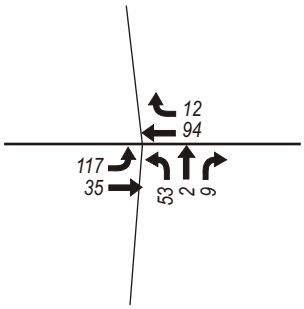
1 River Rd @ W 6th St



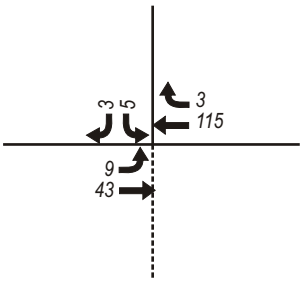
2 River Rd @ I-84 EB Ramp



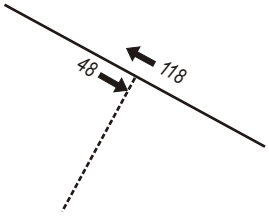
3 River Rd @ I-84 WB Ramp



4 River Rd @ River Trail Wy (North Project Access)

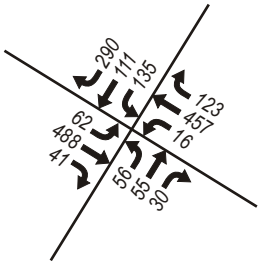


5 River Rd @ South Project Access

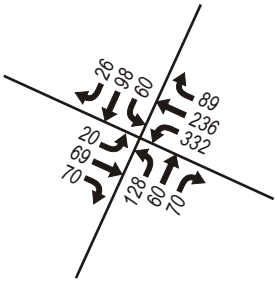


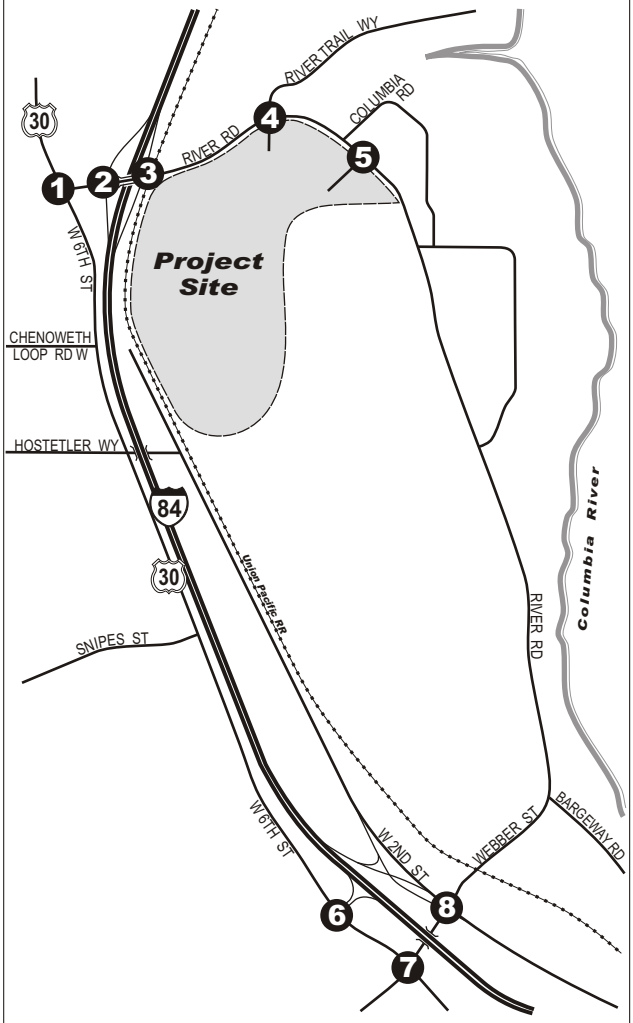
6 W 6th St @ I-84 EB Ramp

7 W 6th St @ Webber St



8 W 2nd St @ Webber St





NO SCALE

DKS Associates
TRANSPORTATION SOLUTIONS

LEGEND

1 - Study Intersection & Number

← AAA - 30th Highest Hour Traffic Volume

Note: Traffic Counts were collected Tuesday July 10, 2007

Figure 2

EXISTING 2007 TRAFFIC VOLUMES

18-hour Volume Profile

Time	River Road (East of US 30)	I-84	I-84 EB On Ramp	I-84 WB On Ramp	I-84 WB Off Ramp	I-84 EB Off Ramp
6:00-7:00	211	549	43	74	33	58
7:00-8:00	311	816	56	86	60	132
8:00-9:00	297	962	59	95	53	120
9:00-10:00	273	950	54	93	76	126
10:00-11:00	326	1046	53	83	64	132
11:00-12:00	377	1188	71	112	53	127
12:00-1:00	408	1295	77	123	77	186
1:00-2:00	375	1435	66	116	68	147
2:00-3:00	401	1432	66	106	65	134
3:00-4:00	430	1454	75	118	79	170
4:00-5:00	474	1307	97	124	62	185
5:00-6:00	544	1268	89	111	65	170
6:00-7:00	308	937	51	71	45	106
7:00-8:00	203	716	31	64	16	60
8:00-9:00	165	529	23	53	19	47
9:00-10:00	109	465	21	30	23	40

6th St/ Hostetler Way														
	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Total
06:00-06:15A	2	9	0	2	3	2	2	11	2	3	1	0	37	
06:15-06:30A	2	16	0	4	4	2	3	14	0	4	0	0	49	
06:30-06:45A	2	23	1	6	6	5	3	21	10	2	1	0	80	
06:45-07:00A	3	17	3	3	8	6	0	20	6	6	1	0	73	239
07:00-07:15A	2	21	1	3	4	6	3	23	12	8	2	0	85	287
07:15-07:30A	5	26	0	7	3	1	0	23	3	6	4	2	80	318
07:30-07:45A	0	24	1	5	3	7	2	28	4	3	4	3	84	322
07:45-08:00A	2	30	2	13	9	6	1	40	10	6	5	0	124	373
08:00-08:15A	3	30	7	6	3	6	3	31	8	10	1	0	108	396
08:15-08:30A	2	21	2	7	1	1	0	37	5	5	2	1	84	400
08:30-08:45A	4	35	2	3	2	1	2	27	2	14	2	3	97	413
08:45-09:00A	4	44	3	4	4	8	4	48	3	13	3	2	140	429
09:00-10:00A	7	146	15	27	6	17	8	191	32	50	19	15	533	533
10:00-11:00A	11	225	20	44	9	12	17	208	21	39	18	23	647	647
11:00-12:00P	14	249	21	54	15	18	17	312	26	48	16	18	808	808
12:00-01:00P	20	254	32	51	14	21	18	261	31	54	18	34	808	808
01:00-02:00P	14	219	25	55	13	24	32	285	29	62	16	27	801	801
02:00-03:00P	14	234	34	35	14	12	29	285	24	51	17	18	767	767
03:00-03:15P	1	73	3	13	3	6	4	69	4	14	6	2	198	
03:15-03:30P	1	54	3	6	13	4	4	72	13	20	13	4	207	
03:30-03:45P	3	49	8	15	9	4	6	72	4	13	6	3	192	
03:45-04:00P	1	47	11	10	3	1	3	78	4	23	9	2	192	789
04:00-04:15P	5	49	8	10	0	6	8	66	2	16	10	6	186	777
04:15-04:30P	2	55	15	12	2	6	5	70	5	10	6	4	192	762
04:30-04:45P	2	41	8	10	2	5	7	69	8	16	11	10	189	759
04:45-05:00P	2	46	8	12	0	4	8	76	6	22	6	15	205	772
05:00-05:15P	4	68	8	9	6	5	8	61	2	11	8	1	191	777
05:15-05:30P	1	63	13	12	5	6	4	82	11	20	8	8	233	818
05:30-05:45P	1	59	7	12	4	3	5	64	5	6	9	9	184	813
05:45-06:00P	1	67	8	12	2	2	3	59	2	9	10	4	179	787
06:00-07:00P	6	198	27	46	9	17	15	215	5	32	31	12	613	613
07:00-08:00P	2	137	18	31	4	7	14	162	8	23	13	9	428	428
08:00-09:00P	6	134	33	32	7	9	17	137	3	11	17	7		413
09:00-10:00P	2	83	12	15	3	8	6	84	2	7	6	2	230	230
Peak Hour Total	8	236	36	45	15	18	25	283	24	59	31	33		
Heavy Veh	13%	3%	0%	2%	0%	6%	4%	2%	0%	0%	0%	3%		
Peak Hour Factor	0.87													
	233													
Heavy Vehicles	1	6	0	1	0	1	1	6	0	0	0	1		

6th St/ Chenoweth Lp														
	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Total
06:00-06:15A	5	11						10	3	6		13	48	
06:15-06:30A	6	12						17	4	4		16	59	
06:30-06:45A	1	26						15	6	8		20	76	
06:45-07:00A	9	23						23	5	10		11	81	264
07:00-07:15A	6	33						24	3	11		15	92	308
07:15-07:30A	7	18						30	5	10		17	87	336
07:30-07:45A	4	21						24	5	9		22	85	345
07:45-08:00A	15	34						33	1	12		15	110	374
08:00-08:15A	3	27						38	5	11		14	98	380
08:15-08:30A	7	33						16	7	10		10	83	376
08:30-08:45A	6	25						33	5	8		10	87	378
08:45-09:00A	6	29						35	12	20		9	111	379
09:00-10:00A	30	162						132	34	33		52	443	443
10:00-11:00A	36	169						157	54	66		44	526	526
11:00-12:00P	37	217						176	74	59		46	609	609
12:00-01:00P	54	206						185	73	66		49	633	633
01:00-02:00P	42	229						180	63	49		66	629	629
02:00-03:00P	55	226						177	58	51		42	609	609
03:00-04:00P	64	219						184	72	62		50	651	651
04:00-04:15P	18	53						40	21	14		21	167	
04:15-04:30P	10	61						40	16	13		13	153	
04:30-04:45P	17	58						36	22	11		11	155	
04:45-05:00P	16	58						41	18	16		19	168	643
05:00-05:15P	20	44						48	26	12		11	161	637
05:15-05:30P	21	68						49	26	11		21	196	680
05:30-05:45P	24	51						42	23	15		17	172	697
05:45-06:00P	16	48						54	19	12		11	160	689
06:00-07:00P	78	159						140	92	49		55	573	573
07:00-08:00P	40	111						97	55	39		32	374	374
08:00-09:00P	30	97						87	54	36		24	328	328
09:00-10:00P	29	65						76	30	21		14	235	235
Peak Hour Total	81	221	0	0	0	0	0	180	93	54	0	68		
Heavy Veh	1%	1%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	2%	0%	0%	#DIV/0!	4%		
Peak Hour Factor	0.89													
Peak 15 Min Volume	196													
Heavy Vehicles	1	3	0	0	0	0	0	4	0	0	0	3		

6th St/Division St														
	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Total
06:00-06:15A	0	15						20	5	1		4	45	
06:15-06:30A	0	10						24	7	4		5	50	
06:30-06:45A	2	19						27	8	7		4	67	
06:45-07:00A	0	23						28	6	6		6	69	231
07:00-07:15A	0	31						30	7	9		2	79	265
07:15-07:30A	3	22						35	11	4		6	81	296
07:30-07:45A	0	18						41	4	7		3	73	302
07:45-08:00A	1	42						46	6	5		4	104	337
08:00-08:15A	2	21						51	6	9		3	92	350
08:15-08:30A	0	33						23	8	6		2	72	341
08:30-08:45A	1	28						44	6	3		4	86	354
08:45-09:00A	0	30						30	8	5		5	78	328
09:00-10:00A	3	148						164	18	37		13	383	383
10:00-11:00A	7	160						171	23	24		10	395	395
11:00-12:00P	5	183						149	23	24		13	397	397
12:00-01:00P	10	229						194	33	28		14	508	508
01:00-02:00P	3	219						205	32	25		9	493	493
02:00-02:15P	0	64						53	9	5		6	137	137
02:15-02:30P	4	78						40	7	6		7	142	
02:30-02:45P	1	54						45	5	8		3	116	
02:45-03:00P	2	50						37	9	12		6	116	
03:00-03:15P	1	50						53	12	8		4	128	502
03:15-03:30P	2	63						48	15	6		1	135	495
03:30-03:45P	1	54						41	9	11		4	120	499
03:45-04:00P	0	68						33	8	6		4	119	502
04:00-04:15P	3	63						50	9	11		6	142	516
04:15-04:30P	0	56						43	4	4		1	108	489
04:30-04:45P	2	59						35	9	11		2	118	487
04:45-05:00P	1	60						47	8	8		2	126	494
05:00-05:15P	1	64						48	6	4		3	126	478
05:15-05:30P	2	73						63	5	10		5	158	528
05:30-05:45P	2	69						59	9	6		2	147	557
05:45-06:00P	2	55						50	11	7		3		559
06:00-07:00P	4	205						155	36	32		11		443
07:00-08:00P	5	127						100	21	12		7		272
08:00-09:00P	1	104						83	20	16		6		230
09:00-10:00P	2	77						74	11	9		8	181	181
Peak Hour Total	6	266	0	0	0	0	0	217	28	28	0	12		
Heavy Veh	33%	2%						4%	0%	0%		8%		
Peak Hour Factor	0.88													
	158													
Heavy Vehicles	2	4						8	0	0		1		

I-84 EB/ River Rd														
	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Total
06:00-06:15A					4	1	0		0	8	12		25	
06:15-06:30A					7	0	0		0	9	32		48	
06:30-06:45A					10	1	0		0	8	39		58	
06:45-07:00A					20	1	0		0	13	49		83	214
07:00-07:15A					17	1	0		0	10	34		62	251
07:15-07:30A					14	1	0		0	7	40		62	265
07:30-07:45A					12	2	0		0	14	44		72	279
07:45-08:00A					25	4	0		0	16	39		84	280
08:00-08:15A					27	3	0		0	14	49		93	311
08:15-08:30A					9	4	0		0	15	45		73	322
08:30-08:45A					25	2	0		0	8	28		63	313
08:45-09:00A					16	1	0		0	10	29		56	285
09:00-10:00A					52	17	0		0	37	126		232	232
10:00-11:00A					71	14	0		0	39	112		236	236
11:00-12:00P					97	19	0		0	52	124		292	292
12:00-01:00P					86	19	0		0	58	168		331	331
01:00-02:00P					72	19	0		0	47	146		284	284
02:00-03:00P					97	14	0		0	52	135		298	298
03:00-04:00P					106	24	0		0	50	140		320	320
04:00-04:15P					35	8	0		0	14	33		90	
04:15-04:30P					21	13	0		0	13	39		86	
04:30-04:45P					40	9	0		0	14	55		118	
04:45-05:00P					40	15	0		0	10	51		116	410
05:00-05:15P					56	12	0		0	18	66		152	472
05:15-05:30P					44	15	0		0	14	54		127	513
05:30-05:45P					47	6	0		0	11	50		114	509
05:45-06:00P					26	4	0		0	9	30		69	462
06:00-07:00P					94	17	0		0	34	111		256	256
07:00-08:00P					41	9	0		0	22	75		147	147
08:00-09:00P					46	11	0		0	12	67		136	136
09:00-10:00P					27	3	0		0	18	34		82	82
Peak Hour Total	0	0	0	0	187	48	0	0	0	53	221	0		
Heavy Veh	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1%	6%	#DIV/0!	#DIV/0!	#DIV/0!	6%	3%	#DIV/0!		
Peak Hour Factor	0.84													
Peak 15 Min Volume	152													
Heavy Vehicles	0	0	0	0	2	3	0	0	0	3	7	0		

I-84 WB/River Rd														
	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Total
06:00-06:15A	0		0	3	2						9	14	28	
06:15-06:30A	0		0	4	4						15	18	41	
06:30-06:45A	0		0	0	4						24	17	45	
06:45-07:00A	0		0	0	8						28	18	54	168
07:00-07:15A	0		0	2	2						21	22	47	187
07:15-07:30A	0		0	3	5						18	22	48	194
07:30-07:45A	0		0	3	9						21	18	51	200
07:45-08:00A	0		0	3	16						31	13	63	209
08:00-08:15A	0		0	1	11						17	28	57	219
08:15-08:30A	0		0	1	14						14	21	50	221
08:30-08:45A	0		0	5	6						18	16	45	215
08:45-09:00A	0		0	3	8						17	20	48	200
09:00-10:00A	0		0	13	34						48	80	175	175
10:00-11:00A	0		0	22	40						57	61	180	180
11:00-12:00P	0		0	8	59						61	104	232	232
12:00-01:00P	0		0	7	57						58	116	238	238
01:00-02:00P	0		0	7	38						60	109	214	214
02:00-03:00P	0		0	7	58						58	99	222	222
03:00-03:15P	0		0	3	20						20	24	67	
03:15-03:30P	0		0	8	12						18	28	66	
03:30-03:45P	0		0	7	30						9	23	69	
03:45-04:00P	0		0	2	15						14	23	54	256
04:00-04:15P	0		0	1	13						11	30	55	244
04:15-04:30P	0		0	1	15						8	30	54	232
04:30-04:45P	0		0	3	12						11	34	60	223
04:45-05:00P	0		0	5	10						9	20	44	213
05:00-05:15P	0		0	8	25						9	23	65	223
05:15-05:30P	0		0	7	12						10	21	50	219
05:30-05:45P	0		0	1	19						7	30	57	216
05:45-06:00P	0		0	2	11						9	19	41	213
06:00-07:00P	0		0	8	37						24	63	132	132
07:00-08:00P	0		0	2	21						17	62	102	102
08:00-09:00P	0		0	4	22						17	49		92
09:00-10:00P	0		0	5	7						5	25	42	42
Peak Hour Total	0	0	0	21	66	0	0	0	0	0	35	94		
Heavy Veh	#DIV/0!	#DIV/0!	#DIV/0!	5%	12%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	17%	4%		
Peak Hour Factor	0.83													
	65													
Heavy Vehicles	0	0	0	1	8	0	0	0		0	6	4		

River Rd/ River Trail														
	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Total
06:00-06:15A	2		0	0	4						6	2	14	
06:15-06:30A	2		1	0	2						15	1	21	
06:30-06:45A	1		0	0	7						25	0	33	
06:45-07:00A	0		0	3	6						38	2	49	117
07:00-07:15A	0		4	0	7						22	1	34	137
07:15-07:30A	0		0	0	10						25	2	37	153
07:30-07:45A	0		1	0	13						19	0	33	153
07:45-08:00A	0		0	3	19						21	0	43	147
08:00-08:15A	2		2	0	18						22	4	48	161
08:15-08:30A	1		2	0	6						27	1	37	161
08:30-08:45A	1		1	2	10						22	1	37	165
08:45-09:00A	0		3	2	11						16	1	33	155
09:00-10:00A	5		5	8	49						41	3	111	111
10:00-11:00A	3		3	3	52						47	2	110	110
11:00-12:00P	6		2	3	67						48	4	130	130
12:00-01:00P	5		1	4	63						58	4	135	135
01:00-02:00P	4		2	3	58						48	5	120	120
02:00-03:00P	7		2	7	54						45	5	120	120
03:00-04:00P	14		3	11	82						49	7	166	166
04:00-04:15P	3		1	1	19						13	1	38	
04:15-04:30P	2		2	4	23						14	2	47	
04:30-04:45P	6		4	6	27						23	8	74	
04:45-05:00P	7		1	8	36						23	6	81	240
05:00-05:15P	3		4	10	51						27	6	101	303
05:15-05:30P	4		4	4	50						27	1	90	346
05:30-05:45P	3		4	5	35						15	5	67	339
05:45-06:00P	5		2	9	14						11	2	43	301
06:00-07:00P	8		14	15	52						37	4	130	130
07:00-08:00P	8		13	14	24						21	4	84	84
08:00-09:00P	14		11	16	23						13	4	81	81
09:00-10:00P	4		5	1	8						4	0	22	22
Peak Hour Total	17	0	13	27	172	0	0	0	0	0	92	18		
Heavy Veh	12%	#DIV/0!	15%	19%	2%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	4%	22%		
Peak Hour Factor	0.84													
Peak 15 Min Volume	101													
Heavy Vehicles	2	0	2	5	4	0	0	0	0	0	4	4		

River Rd/ Columbia Rd														
	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Total
06:00-06:15A	2		1	2	3						6	0	14	
06:15-06:30A	2		0	1	4						7	2	16	
06:30-06:45A	0		0	2	6						18	8	34	
06:45-07:00A	1		0	3	6						16	12	38	102
07:00-07:15A	1		1	3	2						12	7	26	114
07:15-07:30A	2		0	4	6						11	8	31	129
07:30-07:45A	0		0	3	12						14	6	35	130
07:45-08:00A	8		2	4	10						19	9	52	144
08:00-08:15A	2		1	6	11						10	10	40	158
08:15-08:30A	1		2	1	12						8	4	28	155
08:30-08:45A	2		2	5	8						11	9	37	157
08:45-09:00A	1		2	5	9						9	3	29	134
09:00-10:00A	7		5	11	48						37	14	122	122
10:00-11:00A	8		8	8	42						38	7	111	111
11:00-12:00P	7		2	5	51						49	10	124	124
12:00-01:00P	18		9	6	41						45	15	134	134
01:00-02:00P	8		8	9	32						41	12	110	110
02:00-03:00P	13		10	8	46						30	14	121	121
03:00-03:15P	4		1	3	12						13	5	38	
03:15-03:30P	3		2	3	13						9	2	32	
03:30-03:45P	7		3	3	25						5	0	43	
03:45-04:00P	3		4	3	12						10	0	32	145
04:00-04:15P	4		1	2	10						8	0	25	132
04:15-04:30P	5		6	5	7						10	0	33	133
04:30-04:45P	5		4	0	9						9	1	28	118
04:45-05:00P	5		1	0	7						6	2	21	107
05:00-05:15P	11		2	1	20						8	1	43	125
05:15-05:30P	10		3	1	10						4	3	31	123
05:30-05:45P	11		4	1	6						8	2	32	127
05:45-06:00P	8		1	1	4						7	0	21	127
06:00-07:00P	16		10	1	23						24	0	74	74
07:00-08:00P	5		1	1	17						15	0	39	39
08:00-09:00P	6		1	1	20						17	2		47
09:00-10:00P	2		0	0	7						3	1	13	13
Peak Hour Total	37	0	10	3	43	0	0	0	0	0	26	8		
Heavy Veh	0%	#DIV/0!	10%	33%	9%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	19%	13%		
Peak Hour Factor	0.74													
	43													
Heavy Vehicles	0	0	1	1	4	0	0	0		0	5	1		

River Rd/ Crates Way														
	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL	TOTAL	Hourly Total
06:00-06:15A		1	4	2		1	4	4					16	
06:15-06:30A		4	5	5		0	1	1					16	
06:30-06:45A		8	9	4		0	1	4					26	
06:45-07:00A		7	10	3		0	5	4					29	87
07:00-07:15A		7	7	3		0	0	3					20	91
07:15-07:30A		4	7	5		1	1	7					25	100
07:30-07:45A		10	5	11		2	0	4					32	106
07:45-08:00A		11	10	9		4	1	5					40	117
08:00-08:15A		6	4	9		2	1	5					27	124
08:15-08:30A		4	6	10		1	2	3					26	125
08:30-08:45A		8	4	8		0	2	7					29	122
08:45-09:00A		5	7	5		0	2	9					28	110
09:00-10:00A		32	16	30		6	7	36					127	127
10:00-11:00A		20	24	16		6	2	34					102	102
11:00-12:00P		33	18	34		6	6	25					122	122
12:00-01:00P		31	19	14		12	6	31					113	113
01:00-02:00P		27	22	19		3	3	25					99	99
02:00-03:00P		25	15	27		13	4	27					111	111
03:00-04:00P		31	17	33		13	5	37					136	136
04:00-04:15P		4	3	10		3	2	4					26	
04:15-04:30P		9	8	1		1	2	6					27	
04:30-04:45P		9	3	4		0	2	7					25	
04:45-05:00P		4	2	4		1	1	3					15	93
05:00-05:15P		8	3	7		2	0	13					33	100
05:15-05:30P		5	2	5		1	0	4					17	90
05:30-05:45P		6	7	2		2	1	7					25	90
05:45-06:00P		3	5	3		0	0	6					17	92
06:00-07:00P		19	11	17		2	1	10					60	60
07:00-08:00P		9	7	6		1	0	11					34	34
08:00-09:00P		10	7	11		3	1	9					41	41
09:00-10:00P		2	0	2		0	0	5					9	9
Peak Hour Total	0	23	14	18	0	6	2	27	0	0	0	0		
Heavy Veh	#DIV/0!	13%	21%	11%	#DIV/0!	0%	0%	15%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
Peak Hour Factor	0.68													

Attachment B

Existing Conditions Worksheets

Kittelson & Associates, Inc. - Project #9660
Chenoweth IAMP - the City of The Dalles, OR
Year 2008 Existing Traffic Conditions, Weekday PM Peak Hour

Scenario Report

Scenario:	EX
Command:	EX
Volume:	EX
Geometry:	EX
Impact Fee:	Default Impact Fee
Trip Generation:	No Trip
Trip Distribution:	No Trip
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #9660
Chenoweth IAMP - the City of The Dalles, OR
Year 2008 Existing Traffic Conditions, Weekday PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in D/V
# 1 US 30/Hostetler Way	C	17.1	0.000	C	17.1	0.000	+ 0.000
# 2 US 30/Chenoweth Lp	B	13.5	0.000	B	13.5	0.000	+ 0.000
# 3 US 30/Division St	B	11.2	0.000	B	11.2	0.000	+ 0.000
# 4 US 30/River Rd	B	11.6	0.000	B	11.6	0.000	+ 0.000
# 5 I-84 EB Ramp/River Rd	B	10.3	0.000	B	10.3	0.000	+ 0.000
# 6 I-84 WB Ramp/River Rd	B	12.6	0.000	B	12.6	0.000	+ 0.000
# 7 River Trail/River Rd	A	9.8	0.000	A	9.8	0.000	+ 0.000
# 8 Columbia Rd/River Rd	A	9.5	0.000	A	9.5	0.000	+ 0.000
# 9 River Rd/Crates Way	A	9.4	0.000	A	9.4	0.000	+ 0.000
# 18 Site Drwy South		0.0	0.000		0.0	0.000	+ 0.000

Kittelson & Associates, Inc. - Project #9660
Chenoweth IAMP - the City of The Dalles, OR
Year 2008 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 US 30/Hostetler Way

Average Delay (sec/veh): 4.9 Worst Case Level Of Service: C[17.1]

Street Name:	US 30						Hostetler Way					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 1 0 0 1			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	24	237	25	36	236	8	33	31	59	18	15	45
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	24	237	25	36	236	8	33	31	59	18	15	45
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
PHF Volume:	28	272	29	41	271	9	38	36	68	21	17	52
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	28	272	29	41	271	9	38	36	68	21	17	52
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	280	xxxx	xxxxx	301	xxxx	xxxxx	730	710	271	752	705	287
Potent Cap.:	1276	xxxx	xxxxx	1254	xxxx	xxxxx	339	360	770	326	361	752
Move Cap.:	1276	xxxx	xxxxx	1254	xxxx	xxxxx	291	340	770	262	341	752
Volume/Cap:	0.02	xxxx	xxxx	0.03	xxxx	xxxx	0.13	0.10	0.09	0.08	0.05	0.07
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.9	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	437	xxxxx	xxxx	452	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	1.4	xxxxx	xxxxx	0.7	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	17.1	xxxxx	xxxxx	14.9	xxxxx
Shared LOS:	*	*	*	A	*	*	*	C	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			17.1			14.9		
ApproachLOS:	*			*			C			B		

Note: Queue reported is the number of cars per lane.

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Kittelson & Associates, Inc. - Project #9660
Chenoweth IAMP - the City of The Dalles, OR
Year 2008 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 US 30/Chenoweth Lp

Average Delay (sec/veh): 3.7 Worst Case Level Of Service: B[13.5]

Street Name:	US 30						Chenoweth Lp					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1 0 0			0 0 0 1 0			1 0 0 0 1			0 0 0 0 0		
Volume Module:												
Base Vol:	94	134	0	0	221	81	68	0	54	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	94	134	0	0	221	81	68	0	54	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
PHF Volume:	106	151	0	0	248	91	76	0	61	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	106	151	0	0	248	91	76	0	61	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	339	xxxx	xxxxx	xxxx	xxxx	xxxxx	656	xxxx	294	xxxx	xxxx	xxxxx
Potent Cap.:	1220	xxxx	xxxxx	xxxx	xxxx	xxxxx	430	xxxx	745	xxxx	xxxx	xxxxx
Move Cap.:	1220	xxxx	xxxxx	xxxx	xxxx	xxxxx	402	xxxx	745	xxxx	xxxx	xxxxx
Volume/Cap:	0.09	xxxx	xxxx	xxxx	xxxx	xxxx	0.19	xxxx	0.08	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.7	xxxx	0.3	xxxx	xxxx	xxxxx
Control Del:	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	16.0	xxxx	10.3	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	C	*	B	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			13.5			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

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Kittelson & Associates, Inc. - Project #9660
Chenoweth IAMP - the City of The Dalles, OR
Year 2008 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #3 US 30/Division St

Average Delay (sec/veh): 1.3 Worst Case Level Of Service: B[11.2]

Street Name:	US 30								Division St			
Approach:	North Bound				South Bound				East Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Uncontrolled				Uncontrolled				Stop Sign			
Rights:	Include				Include				Include			
Lanes:	0 1	0	0	0	0 0	0	1	0	0 0	1!	0	0
Volume Module:												
Base Vol:	28	171	0	0	266	6	12	0	28	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	28	171	0	0	266	6	12	0	28	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	32	194	0	0	302	7	14	0	32	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	32	194	0	0	302	7	14	0	32	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	309	xxxx	xxxxx	xxxx	xxxx	xxxxx	564	564	306	xxxx	xxxx	xxxxx
Potent Cap.:	1240	xxxx	xxxxx	xxxx	xxxx	xxxxx	485	434	732	xxxx	xxxx	xxxxx
Move Cap.:	1240	xxxx	xxxxx	xxxx	xxxx	xxxxx	476	422	732	xxxx	xxxx	xxxxx
Volume/Cap:	0.03	xxxx	xxxx	xxxx	xxxx	xxxx	0.03	0.00	0.04	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	630	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.2	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.2	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	A	*	*	*	*	*	*	B	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx				11.2		xxxxxx		
ApproachLOS:	*			*				B		*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #9660
Chenoweth IAMP - the City of The Dalles, OR
Year 2008 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 US 30/River Rd

Average Delay (sec/veh): 5.9 Worst Case Level Of Service: B[11.6]

Street Name:	US 30								River Rd			
Approach:	North Bound				South Bound				East Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Uncontrolled				Uncontrolled				Stop Sign			
Rights:	Include				Include				Include			
Lanes:	0 0	1	0	1	1 0	1	0	0	0 0	0	0	0
Volume Module:												
Base Vol:	0	51	200	10	42	0	0	0	0	291	0	12
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	51	200	10	42	0	0	0	0	291	0	12
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	0	56	220	11	46	0	0	0	0	320	0	13
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	56	220	11	46	0	0	0	0	320	0	13
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.5	xxxx	6.3
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.6	xxxx	3.4
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	276	xxxx	xxxxx	xxxx	xxxx	xxxxx	124	xxxx	56
Potent Cap.:	xxxx	xxxx	xxxxx	1287	xxxx	xxxxx	xxxx	xxxx	xxxxx	859	xxxx	997
Move Cap.:	xxxx	xxxx	xxxxx	1287	xxxx	xxxxx	xxxx	xxxx	xxxxx	853	xxxx	997
Volume/Cap:	xxxx	xxxx	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	0.37	xxxx	0.01
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	1.8	xxxx	0.0
Control Del:	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	11.7	xxxx	8.7
LOS by Move:	*	*	*	A	*	*	*	*	*	B	*	A
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			11.6		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #9660
Chenoweth IAMP - the City of The Dalles, OR
Year 2008 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 I-84 EB Ramp/River Rd

Average Delay (sec/veh): 3.7 Worst Case Level Of Service: B[10.3]

Street Name:	I-84 EB Ramp								River Rd							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	0	0	0	17	0	162	0	149	61	27	141	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	17	0	162	0	149	61	27	141	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94								
PHF Volume:	0	0	0	18	0	172	0	159	65	29	150	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	18	0	172	0	159	65	29	150	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.5	6.6	6.3	xxxxx	xxxx	xxxxx	4.2	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.6	4.1	3.4	xxxxx	xxxx	xxxxx	2.3	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	398	431	150	xxxx	xxxx	xxxxx	223	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	586	501	868	xxxx	xxxx	xxxxx	1316	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	577	490	868	xxxx	xxxx	xxxxx	1316	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.03	0.00	0.20	xxxx	xxxx	xxxx	0.02	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.7	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	10.2	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	B	*	*	*	A	*	*								
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT								
Shared Cap.:	xxxx	xxxx	xxxxx	577	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	11.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	B	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			10.3			xxxxxx			xxxxxx										
ApproachLOS:	*			B			*			*										

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #9660
Chenoweth IAMP - the City of The Dalles, OR
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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #6 I-84 WB Ramp/River Rd

Average Delay (sec/veh): 4.9 Worst Case Level Of Service: B[12.6]

Street Name:	I-84 WB Ramp								River Rd							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1!	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	53	2	12	0	0	0	117	49	0	0	115	17								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	53	2	12	0	0	0	117	49	0	0	115	17								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88								
PHF Volume:	60	2	14	0	0	0	133	56	0	0	131	19								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	60	2	14	0	0	0	133	56	0	0	131	19								
Critical Gap Module:																				
Critical Gp:	6.5	6.6	6.3	xxxxx	xxxx	xxxxx	4.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
FollowUpTim:	3.6	4.1	3.4	xxxxx	xxxx	xxxxx	2.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	462	472	56	xxxx	xxxx	xxxxx	150	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Potent Cap.:	545	480	992	xxxx	xxxx	xxxxx	1350	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Move Cap.:	504	433	992	xxxx	xxxx	xxxxx	1350	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Volume/Cap:	0.12	0.01	0.01	xxxx	xxxx	xxxx	0.10	xxxx	xxxx	xxxx	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*								
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT								
Shared Cap.:	xxxx	550	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	0.5	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	12.6	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	B	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	12.6			xxxxxx			xxxxxx			xxxxxx										
ApproachLOS:	B			*			*			*										

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #9660
Chenoweth IAMP - the City of The Dalles, OR
Year 2008 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #7 River Trail/River Rd

Average Delay (sec/veh): 1.9 Worst Case Level Of Service: A[9.8]

Street Name:	River Trail								River Rd							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	0	1!	0	0	0	1	0	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	0	0	0	13	0	17	18	43	0	0	115	27								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	13	0	17	18	43	0	0	115	27								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84								
PHF Volume:	0	0	0	15	0	20	21	51	0	0	137	32								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	15	0	20	21	51	0	0	137	32								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.5	6.6	6.3	4.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.6	4.1	3.4	2.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	247	247	153	169	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	718	637	865	1260	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	709	626	865	1260	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.02	0.00	0.02	0.02	xxxx	xxxx	xxxx	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*								
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT								
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	789	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	9.8	xxxxx	7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	A	*	A	*	*	*	*	*								
ApproachDel:	xxxxxx				9.8		xxxxxx			xxxxxx										
ApproachLOS:	*				A		*			*										

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #9660
Chenoweth IAMP - the City of The Dalles, OR
Year 2008 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 Columbia Rd/River Rd

Average Delay (sec/veh): 2.4 Worst Case Level Of Service: A[9.5]

Street Name:	Columbia Rd								River Rd							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	0	1!	0	0	0	1	0	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	0	0	0	10	0	37	8	48	0	0	105	3								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	0	0	0	10	0	37	8	48	0	0	105	3								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74								
PHF Volume:	0	0	0	14	0	50	11	65	0	0	142	4								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	14	0	50	11	65	0	0	142	4								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	4.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	2.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	230	230	144	146	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	762	673	909	1349	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	758	668	909	1349	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	0.02	0.00	0.06	0.01	xxxx	xxxx	xxxx	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*								
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT								
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	872	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.2	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	9.5	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	A	*	A	*	*	*	*	*								
ApproachDel:	xxxxxx				9.5		xxxxxx			xxxxxx										
ApproachLOS:	*				A		*			*										

Note: Queue reported is the number of cars per lane.

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Kittelson & Associates, Inc. - Project #9660
Chenoweth IAMP - the City of The Dalles, OR
Year 2008 Existing Traffic Conditions, Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #9 River Rd/Crates Way

Average Delay (sec/veh): 1.9 Worst Case Level Of Service: A[9.4]

Street Name:	River Rd						Crates Way					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0 1	0	0 1	0 0	0	0 0	0 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	0	90	2	14	44	0	0	0	0	6	0	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	90	2	14	44	0	0	0	0	6	0	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
PHF Volume:	0	132	3	21	65	0	0	0	0	9	0	26
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	132	3	21	65	0	0	0	0	9	0	26
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.5	6.6	6.3
FollowUpTim:	xxxxx	xxxx	xxxxx	2.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.6	4.1	3.4
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	135	xxxx	xxxxx	xxxx	xxxx	xxxxx	240	240	134
Potent Cap.:	xxxx	xxxx	xxxxx	1362	xxxx	xxxxx	xxxx	xxxx	xxxxx	736	651	899
Move Cap.:	xxxx	xxxx	xxxxx	1362	xxxx	xxxxx	xxxx	xxxx	xxxxx	727	641	899
Volume/Cap:	xxxx	xxxx	xxxx	0.02	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	0.00	0.03
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	849	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	9.4	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	A	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx				9.4	
ApproachLOS:	*			*			*				A	

Note: Queue reported is the number of cars per lane.

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Attachment C
Crash Data

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Historic Columbia River Hwy #100 / From Discovery Dr. to Hostetler St. / (Intersections Excluded)
January 1, 2005 Through December 31, 2007

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2007														
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	1	0	1	0	0	0	1
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	0	0	0
2007 TOTAL	0	1	1	2	0	1	0	2	0	2	0	0	0	1
YEAR: 2006														
MISCELLANEOUS	1	0	0	1	1	0	0	1	0	0	1	0	0	0
2006 TOTAL	1	0	0	1	1	0	0	1	0	0	1	0	0	0
YEAR: 2005														
NON-COLLISION	0	1	0	1	0	1	0	0	1	1	0	0	0	1
REAR-END	0	0	1	1	0	0	0	1	0	1	0	0	0	0
2005 TOTAL	0	1	1	2	0	1	0	1	1	2	0	0	0	1
FINAL TOTAL	1	2	2	5	1	2	0	4	1	4	1	0	0	2

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Columbia River Hwy #002 (I-84) Mainline -- 1 Mile Each Dir. from Chenoweth Interchange / MP 80.85 - MP 83.32 (Intersections Excluded)
January 1, 2005 Through December 31, 2007

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2007														
FIXED / OTHER OBJECT	0	3	3	6	0	4	1	2	4	1	5	0	0	6
2007 TOTAL	0	3	3	6	0	4	1	2	4	1	5	0	0	6
YEAR: 2006														
FIXED / OTHER OBJECT	0	1	1	2	0	1	0	1	1	0	2	0	0	2
NON-COLLISION	0	1	0	1	0	1	0	0	1	1	0	0	0	1
PEDESTRIAN	0	1	0	1	0	1	0	1	0	1	0	0	0	0
REAR-END	0	0	2	2	0	0	1	2	0	2	0	0	0	0
2006 TOTAL	0	3	3	6	0	3	1	4	2	4	2	0	0	3
YEAR: 2005														
FIXED / OTHER OBJECT	0	1	1	2	0	1	0	1	1	1	1	0	0	2
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	0	1	0	1	0	0	0
2005 TOTAL	0	1	2	3	0	1	0	1	2	1	2	0	0	2
FINAL TOTAL	0	7	8	15	0	8	2	7	8	6	9	0	0	11

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

002 COLUMBIA RIVER — Columbia River Hwy #002 (I-84) Mainline -- 1 Mile Each Dir. from Chenoweth Interchange / MP 80.85 - MP 83.32 (Intersections Excluded)
January 1, 2005 Through December 31, 2007

SER# INVEST	SPEED	ALCOHOL	DRUGS	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST SECOND	STREET STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00287	N	N	N	N	N	10/25/2007	WASCO	2	01			CURVE		N	Y	CLR	FIX OBJ	01	NONE 1	STRGHT										043,010	16
STATE						Thu		0	0			UN	(RSDMD)	ONE-WAY	N	DRY	FIX		PRVTE	E W									000	043,010	00
						2A		81.30				08			N	DARK	INJ		SEMI TOW		01	DRVR	INJB	61	M	OTH-Y		080,081	017		16
													(04)													N-RES					
00343	Y	N	N	N	N	12/25/2006	WASCO	1	01			CURVE		N	Y	RAIN	OVERTURN	01	NONE 0	STRGHT										079	30
STATE						Mon		0	0			UN	(RSDMD)	UNKNOWN	N	WET	NCOL		PRVTE	W E									000	079	00
						4P		81.32				01			N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	19	F	OR-Y		083,050	017		30
													(04)													OR>25					
00014	Y	N	N			01/11/2007	WASCO	2	11			STRGHT		N	Y	CLR	FIX OBJ	01	NONE 0	STRGHT										067,010,124	01
NONE						Thu		0	0			UN	(RSDMD)	UNKNOWN	N	ICE	FIX		PRVTE	E W									001	067,010,124	00
						8A	THE DLLS UA	81.50				08			N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	31	F	OR-Y		047	017		01
													(04)													OR<25					
00267	N	N	N	N	N	10/08/2006	WASCO	1	11			CURVE		N	N	CLR	S-STRGHT	01	NONE 0	STRGHT											32
STATE						Sun		0	0			UN	(RSDMD)	NONE	N	DRY	REAR		PRVTE	E W									000		00
						2P	THE DLLS UA	81.82				06			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	73	F	OTH-Y		052	000		32
													(04)													N-RES					
																		02	NONE 0	STRGHT											
																			PRVTE	E W									000		00
																			PSNGR CAR		01	DRVR	NONE	20	M	SUSP		000	000		00
																										OR<25					
00349	Y	N	N	N	N	12/01/2006	WASCO	1	11			STRGHT		N	Y	CLR	FIX OBJ	01	NONE 0	STRGHT										124,079,044	01,10
STATE						Fri		0	0			UN	(RSDMD)	ONE-WAY	N	ICE	FIX		PRVTE	W E									033	079,067,044	00
						7A	THE DLLS UA	82.00				01			N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	20	F	OR-Y		047,081	017		01,10
													(04)													OR<25					
00236	N	N	N			09/07/2005	WASCO	2	11			CURVE		N	Y	CLR	FIX OBJ	01	NONE 0	STRGHT										044	10
STATE						Wed		0	0			UN	(RSDMD)	UNKNOWN	N	DRY	FIX		PRVTE	E W									000	044	00
						1P	THE DLLS UA	82.00				05			N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	33	F	OR-Y		080,083	000		10
													(04)													OR<25					
00364	Y	N	N	N	N	12/25/2007	WASCO	1	11			STRGHT		N	Y	SNOW	FIX OBJ	01	NONE 0	STRGHT										124,044	30,10
STATE						Tue		0	0	00408		W	(RSDMD)	ONE-WAY	N	ICE	FIX		PRVTE	W E									031	124,044	00
						6P	THE DLLS UA	82.00		09102		04			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	25	F	OR-Y		050,030,081	017		30,10
													(04)													OR<25					
00194	N	N	N			08/15/2007	WASCO	1	11			STRGHT		N	Y	CLR	FIX OBJ	01	NONE 0	STRGHT										044,048,035	10
COUNTY						Wed		0	0			UN	(RSDMD)	MEDIAN BAR	N	DRY	FIX		PRVTE	W E									007	044,048,035	00
						9P	THE DLLS UA	82.06				04			N	DARK	INJ		PSNGR CAR		01	DRVR	INJA	15	F	OR-Y		081	000		10
													(04)													OR>25					
																					02	PSNG	INJB	46	F			000	000		00
00133	Y	N	N	N	N	06/15/2006	WASCO	2	11			CURVE		N	N	CLD	S-STRGHT	01	NONE 0	STRGHT										013	01
STATE						Thu		0	0			UN	(RSDMD)	UNKNOWN	N	DRY	REAR		PRVTE	E W									001	013	00
						3P	THE DLLS UA	82.20				04			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	35	M	OR-Y		047	017		01
													(04)													OR<25					

002 COLUMBIA RIVER Columbia River Hwy #002 (I-84) Mainline -- 1 Mile Each Dir. from Chenoweth Interchange / MP 80.85 - MP 83.32 (Intersections Excluded)
January 1, 2005 Through December 31, 2007

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST SECOND	STREET STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																		02	NONE 0 PRVTE PSNGR CAR	STRGHT E W	01	DRVR	NONE	63	M	OTH-Y N-RES	000	000		00 00
																		03	NONE 0 PRVTE TRUCK	PRKD-P E W									008		00
00069 CITY	Y	N	N	N	N	03/18/2006 Sat 11P	WASCO THE DALLES THE DLLS UA	2 0 82.50	11 0	00408 09104		CURVE NW 08	(RSDMD) (04)	N ONE-WAY	Y N N	CLR DRY DARK	FIX OBJ FIX INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT SE NW	01	DRVR	INJB	19	F	OR-Y OR<25	050	001 017	062,010,087 062,010,087	30 00 30
00343 STATE	Y	N	N	N	N	12/01/2007 Sat 7P	WASCO THE DALLES THE DLLS UA	2 0 83.00	11 0	00408 09102		GRADE E 05	(RSDMD) (04)	N ONE-WAY	Y N N	SNOW SNO DLIT	FIX OBJ FIX PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT E W	01	DRVR	NONE	41	M	OR-Y OR>25	047,080,081	000 017	124,043,044 124,043,044	01,10 00 01,10
00207 COUNTY	N	N	N	N	N	08/16/2006 Wed 2P	WASCO THE DALLES THE DLLS UA	2 0 83.00	11 0	00408 09109		STRGHT W 05	(RSDMD) (04)	N UNKNOWN	N N N	CLR DRY DAY	PED PED INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT E W	01	DRVR	NONE	45	M	OTH-Y N-RES	000	000		18 00 00
																				STRGHT S N	01	PED	INJB	50	M		04 057	037		18
00364 NONE	Y	N	N			12/23/2005 Fri 5A	WASCO THE DALLES THE DLLS UA	1 0 83.00	11 0	00408 09104		STRGHT NW 01	(RSDMD) (04)	N UNKNOWN	Y N N	CLD ICE DARK	FIX OBJ FIX PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT NW SE	01	DRVR	NONE	57	F	OR-Y OR<25	047	000 000	079 079	01 00 01
00013 NONE	Y	N	N			01/11/2007 Thu 5A	WASCO THE DALLES THE DLLS UA	2 0 83.00	11 0	00408 09104		STRGHT NW 05	(RSDMD) (04)	N UNKNOWN	Y N N	SNOW ICE DARK	FIX OBJ FIX PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT SE NW	01	DRVR	NONE	36	F	OR-Y OR<25	047	001 017	044,124 044,124	01 00 01
00369 STATE	N	N	N	N	N	12/30/2005 Fri 8P	WASCO THE DALLES THE DLLS UA	1 0 83.00	11 0	00408 09104		STRGHT NW 06	(RSDMD) (04)	N NONE	N RAIN N WET N DLIT	S-STRGHT SS-O PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT SE NW	01	DRVR	NONE	17	F	OR-Y OR<25	016	000 000		27 00 27
																		02	NONE 0 PRVTE PSNGR CAR	STRGHT SE NW	01	DRVR	NONE	49	M	OR-Y N-RES	000	000		00 00

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

100 HISTORIC COLUMBIA RIVER

Historic Columbia River Hwy #100 / From Discovery Dr. to Hostetler St. / (Intersections Excluded)
January 1, 2005 Through December 31, 2007

SER# INVEST	SPEED	ALCOHOL	DRUG	SCHOOL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST SECOND	STREET STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00197	Y	N	N			08/17/2007	WASCO	1	07			CURVE		N	Y	CLR	FIX OBJ	01	NONE 0	STRGHT										079,010,035	01
COUNTY						Fri		0	0			UN	(NONE)	NONE	N	DRY	FIX		PRVTE	E W								007	079,010,035	00
						6P		70.17				01			N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	21	M	OR-Y	081	017		01
													(02)													OR<25					
00217	N	N	N	N	N	10/29/2006	WASCO	1	07			CURVE		N	N	CLD	ANIMAL	01	NONE 0	STRGHT										032,013,087	12
COUNTY						Sun		0	0			UN	(NONE)	UNKNOWN	N	DRY	OTH		PRVTE	E W								000	032,013,087	00
						5P		71.21				04			N	DUSK	FAT		PSNGR CAR		01	DRVR	KILL	66	F	OR-Y	000	000		12
													(02)													OR<25					
																		02	NONE 0	STRGHT											
																			PRVTE	W E								000		00
																			PSNGR CAR		01	DRVR	NONE	20	M	OR-Y	000	000		00
																										OR<25					
00019	Y	N	N	N	N	01/16/2005	WASCO	1	07			CURVE		N	Y	SNOW	OVERTURN	01	NONE 0	STRGHT										088	01
COUNTY						Sun		0	0			UN	(NONE)	NONE	N	ICE	NCOL		PRVTE	W E								001	088	00
						9A		71.92				06			N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	28	F	OR-Y	081	017		01
													(02)													OR<25					
00207	N	N	N			08/10/2005	WASCO	1	17			STRGHT		N	N	CLR	S-1STOP	01	NONE 0	STRGHT										004	07
NONE						Wed		0	0			UN	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	W E								000		00
						4P	THE DLLS UA	72.30				03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	49	F	OR-Y	026	000		07
													(02)													OR<25					
																		02	NONE 0	STOP											
																			PRVTE	W E								011	004	00
																			PSNGR CAR		01	DRVR	NONE	53	M	OTH-Y	000	000		00
																										N-RES					

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

URBAN NON-SYSTEM CRASH LISTING

CITY OF THE DALLES, WASCO COUNTY

Historic Columbia River Hwy #100 / From Discovery Dr. to Hostetler St. / (Intersections Excluded)

January 1, 2005 Through December 31, 2007

SER# INVEST	SPEED	ALC	DRUG	SCHL	WORK	DATE DAY TIME	CLASS DIST FROM	CITY STREET FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CONTL	OFF-RD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00248	N	N	N			09/26/2007	17	6TH ST	ALLEY		N		N	CLR	ANGL-OTH	01	NONE 0	TURN-L										02
NONE						Wed	250	CHENOWITH ST	SE	(NONE)	UNKNOWN		N	DRY	TURN		PRVTE	SW NW								018		00
						11A			07				N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y	000	028		00
										(02)														OR<25				
																02	NONE 0	STRGHT										
																	PRVTE	NW SE								000		00
																	PSNGR CAR		01	DRVR	NONE	74	F	OR-Y	000	000		00
																								OR<25				

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

River Road From Historic Columbia River Hwy #100 to Klindt Drive / (Intersections Excluded)
January 1, 2005 Through December 31, 2007

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Historic Columbia River Hwy #100 @ Hostetetler Street
January 1, 2005 Through December 31, 2007

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2006														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2006 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2005														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2005 TOTAL	0	0	2	2	0	0	0	2	0	2	0	2	0	0
FINAL TOTAL	0	0	3	3	0	0	0	3	0	3	0	3	0	0

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

292 MOSIER-THE DALLES

Historic Columbia River Hwy #100 @ Hostetetler Street
January 1, 2005 through December 31, 2007

SER# INVEST	SPED	ALCS	DRUG	SCHL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00117	N	N	N			05/19/2005	WASCO	1	16		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT						Thu	THE DALLES	0	0	HOSTETLER WAY	CN		STOP SIGN	N	DRY	TURN		PRVTE	E W											00
						12P	THE DLLS UA	15.59		MOSIER-DALLES HY	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	40	F	OR-Y	000		000		00
																									OR>25					
																	02	NONE 0	TURN-L											
																		PRVTE	NW E									015		00
																		PSNGR CAR		01	DRVR	NONE	75	F	OR-Y	028		000		02
																									OR<25					
00091	N	N	N			04/11/2005	WASCO	1	16		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT						Mon	THE DALLES	0	0	HOSTETLER WAY	CN		STOP SIGN	N	DRY	ANGL		PRVTE	NW SE									000		00
						12P	THE DLLS UA	15.59		MOSIER-DALLES HY	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	26	M	OR-Y	000		000		00
																									OR<25					
																	02	NONE 0	STRGHT											
																		PRVTE	W E									015		00
																		PSNGR CAR		01	DRVR	NONE	30	F	OR-Y	028		000		02
																									OR<25					

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF THE DALLES, WASCO COUNTY

Historic Columbia River Hwy #100 @ Hostetetler Street
January 1, 2005 Through December 31, 2007

SER# INVEST	SPEED	ALC	DRUG	SCHL	WORK	DATE DAY TIME	CLASS DIST FROM	CITY STREET FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CONTL	OFF-RD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00263	N	N	N			10/06/2006	17	HOSTETLER WAY	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						Fri	0	MOSIER-DALLES HY	SE		STOP SIGN	N	DRY	REAR		PRVTE	SE NW									001		00
						2P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	40	F	OR-Y	026		000		07
																							OR>25					
															02	NONE 0	STOP											
																PRVTE	SE NW									012		00
																PSNGR CAR		01	DRVR	NONE	25	F	OR-Y	000		000		00
																							OR<25					

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Historic Columbia River Hwy #100 @ Chenoweth Loop
January 1, 2005 Through December 31, 2007

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2005														
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	0	1	1	0	0
2005 TOTAL	0	1	0	1	0	1	0	1	0	0	1	1	0	0
FINAL TOTAL	0	1	0	1	0	1	0	1	0	0	1	1	0	0

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

292 MOSIER-THE DALLES

Historic Columbia River Hwy #100 @ Chenoweth Loop
January 1, 2005 Through December 31, 2007

SER# INVEST	SPED	ALCS	DRUG	SCHL	WORK	DATE DAY TIME	COUNTY CITY URBAN AREA	RD# COMPNT MLG MILEPNT	FC TYP	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00242	N	N	N	N	N	09/17/2005	WASCO	1	16		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L											02
CITY						Sat	THE DALLES	0	0	CHENOWITH LP RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	N E									019	00
						7P	THE DLLS UA	15.39		MOSIER-DALLES HY	03	0		Y	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	51	F	OR-Y		028	000		02
																									OR<25					
																	02	NONE 0	TURN-R											
																		PRVTE	W S									015		00
																		PSNGR CAR		01	DRVR	INJB	22	M	OR-Y		000	000		00
																									OR<25					

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Historic Columbia River Hwy #100 @ Division Street
January 1, 2005 Through December 31, 2007

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2005														
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	0	1	1	0	0
2005 TOTAL	0	1	0	1	0	1	0	1	0	0	1	1	0	0
FINAL TOTAL	0	1	0	1	0	1	0	1	0	0	1	1	0	0

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

100 HISTORIC COLUMBIA RIVER

Historic Columbia River Hwy #100 @ Division Street
January 1, 2005 Through December 31, 2007

SER# / INVEST	SPED	ALCS	DRUG	SCHL	WORK	DATE / DAY / TIME	COUNTY / CITY / URBAN AREA	RD# / COMPNT / MLG / MILEPNT	FC / TYP	CONN # / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	AGE	SEX	LICNS / RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00056	N	N	N	N	N	02/17/2005	WASCO	1	17		INTER	3-LEG	N		N	CLR	O-1TURN	01	NONE 0	TURN-L									02
STATE						Thu		0	0		CN		L-TURN REF		N	DRY	TURN		PRVTE	W N								000	00
						6A	THE DLLS UA	72.31			02	0			N	DAWN	INJ		PSNGR CAR		01	DRVR	NONE	53	M	OR-Y OR<25	004	000	02
																		02	NONE 0	STRGHT									
																			PRVTE	E W								000	00
																			PSNGR CAR		01	DRVR	NONE	50	M	OR-Y OR<25	000	000	00
																					02	PSNG	INJB	48	M		000	000	00

Appendix D

Technical Memorandum #5/6: Future Conditions

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

TECHNICAL MEMORANDUM #5/6

I-84 Chenoweth Interchange IAMP

Future Conditions

Date: March 23, 2009 Project #: 9600.0

To: Ana Jovanovic, ODOT
Dick Gassman, City of The Dalles
Brad DeHart, ODOT
Rod Cathart, ODOT
David Boyd, ODOT

From: Dan Durow, City of the Dalles
Dale MCCabe, City of the Dalles
Todd Cornett, Wasco County
Marty Matherly, Wasco County
Gary Nychyk, Wasco County
Sam Wilkins, ODOT
Mark Radabaugh, ODOT
Mark Devoney, ODOT
Tracy White, ODOT
Darci Rudzinski, AICP, Angelo Planning Group
Shayna Rehberg, AICP, Angelo Planning Group

cc: Susan Wright, PE, Casey Bergh, Marc Butorac, PE, PTOE

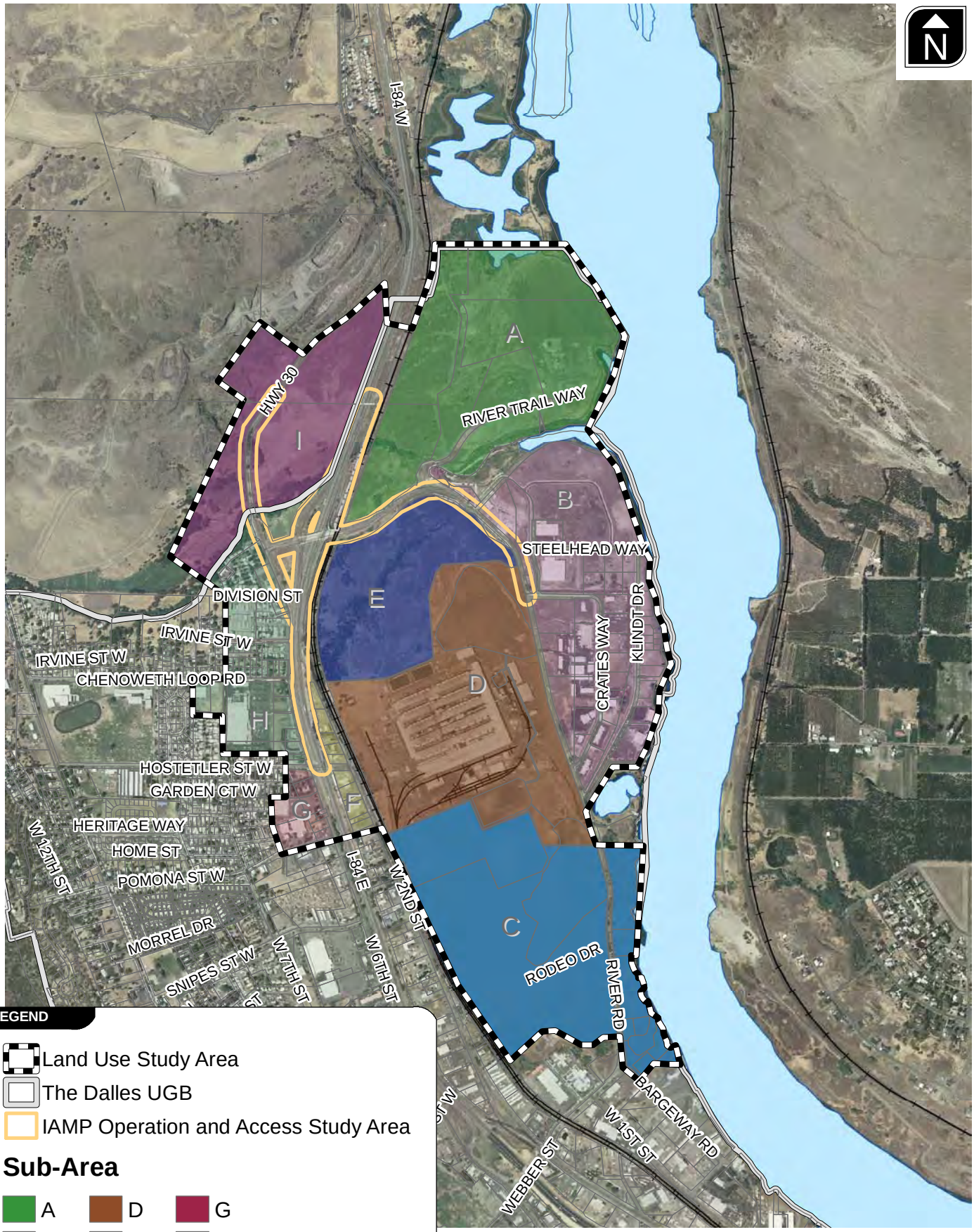
This memorandum documents the future land use as well as the forecast traffic operations in the vicinity of the Chenoweth interchange. Two future land use scenarios were developed with guidance from the Technical Advisory Committee (TAC) and Steering Committee (SC). Land use scenarios #1 and #2 were assessed in year 2030 assuming no improvements are made to the system, except those already scheduled and funded.

FUTURE LAND USES

The analysis of future land uses within the vicinity of the I-84 Chenoweth Interchange was focused on parcels that are expected to have development or redevelopment potential that would generate traffic at the I-84 Chenoweth Interchange. The Land Use Study Area defined in Figure 4-1 illustrates the parcels identified for study. The Land Use Study Area includes approximately 880 acres and incorporates a variety of land uses, including: commercial, industrial, residential, and agricultural. The majority of the land is zoned industrial.

Sub-Area Analysis

For the purposes of forecasting future development potential and access alternatives, the study area has been divided into eight sub-areas, as illustrated in Figure 4-1. The sub-areas were defined based on current zoning, the travel shed served, and point of primary access.



LEGEND

- Land Use Study Area
- The Dalles UGB
- IAMP Operation and Access Study Area

Sub-Area

A, B, C, D, E, F, G, H, I

H:\projfile\9600 - I-84 Chenoweth IAMP\GIS\Fig2_Tax Lots.mxd

LAND USE SUB-AREAS
THE DALLES, OREGON

FIGURE **4-1**

Kittelson & Associates, Inc.
transportation engineering / planning

Each sub-area shown in Figure 4-1 is described in 0. *Attachment "A" provides a listing of tax lot numbers and acreage of each tax lot that was identified in Technical Memorandum #3/4 as vacant or redevelopable within each sub-area.*

Table 4-1 Future Conditions Sub-Area analysis Zones

Sub-area	Zoning Classifications	Developable or Re-Developable Land (Acres)	Non-Buildable	Developed / Occupied	Total Acreage	Primary Access
A	I	126.2	0.00	10.3	136.5	River Trail Way at River Road
B	I	14.0	0.00	89.1	109.4	Crates Way at River Road
	CR	6.3				
C	I	79.1	47.6	20.3	147.0	River Road
	CR	0.0				
D	I	113.0	29.2	0.00	142.2	River Road, Hostetler Street
E	CLI	25.0	2.5	0.00	67.2	River Road at River Trail Way
	I	36.4	3.3			
F	CLI	4.3	0.0	3.0	7.3	Hostetler Street
G	CG	0.6	0.0	10.5	11.1	6th Street
H	CG	11.6	0.0	34.7	46.3	6th Street
I	LSA	0.0	0.0	80.6	80.6	US 30

1 Zoning Classifications: I – Industrial; CR – Recreational Commercial; CLI – Commercial/Light Industrial; CG – General Commercial

As shown in Table 4-1, sub-areas 'A', 'C', 'D', and 'E' have the greatest potential for development and each gain access to the I-84 Chenoweth Interchange via River Road. The following section describes the characteristics of the sub-areas.

Sub-Area "A"

Sub-area "A" is located in the NE corner of the Land Use Study Area. The majority of land within sub-area "A" is currently vacant, except for a power sub-station located in the center of the sub-area. All parcels within sub-area "A" are designated for Industrial use and are accessed via River Trail Way, which connects to River Road east of the I-84 ramp terminals.

Sub-Area "B"

The land within sub-area "B" is composed of currently developed and vacant parcels zoned for Industrial (I) and Recreational Commercial (CR) use. A total of 20.3 acres in the sub-area have been estimated to be developable or having potential to be redeveloped. Access to the developable or re-developable parcels is primarily served through an unsignalized intersection on River Road at Crates Way (North).

Sub-Area "C"

Sub-area "C" is composed of multiple properties on the east side of River Road just north of Webber Street and one large parcel west of River Road. The majority of land within sub-area "C" is currently vacant, with the exception of several smaller developments on the east side of River Road. A total of 47.6 acres within sub-area "C" consists of non-buildable land, which has been designated as a Brownfield area. It is assumed that traffic generated by new development within sub-area "C" will utilize the Chenoweth and Webber Street Interchanges to access I-84.

Sub-Area "D"

The largest redevelopment opportunity within the Land Use Study Area is the Northwest Aluminum site which solely comprises sub-area "D." The sub-area is located southeast of the I-84 Chenoweth Interchange and currently has two accesses to River Road. The current plan for the 100-acre site is to make it shovel ready for future industrial uses. According to Northwest Aluminum's project manager, there have been several inquires and site visits by future industrial users and discussion about how best to utilize the site. One potential plan would include dividing it into smaller parcels for future uses. Future users would likely continue to access River Road. The site is reportedly a fairly clean site, having gone through PCB abatement in the 1990s, and ongoing soil sampling as part of a final work plan that will be submitted to DEQ in early 2009. The site is also anticipated to be certified by the Oregon Economic and Community Development Department as a certified "shovel ready" industrial site. The project manager anticipates that there will be new industrial uses on the site by 2010.

Sub-Area "E"

Sub-area "E" is was comprised of one 67.2 acre parcel zoned Commercial/Light Industrial District (CLI) but has recently been partitioned into five parcels, all of which are owened by WM3, Inc. (WM3). Twenty-five acres of sub-area will be developed with commercial uses, consistent with existing zoning. A development application for a 149,147 square-foot Wal-Mart to be constructed on 18.08 of the 25 acres has been approved by the city and the remaining 6.92 acres are expected to be developed with commercial uses. As discussed in Technical Memorandum #2, the type of use that is allowed to develop on the additional 42.2 acres is dependent on the outcome of the IAMP.

Two future land use scenarios were developed for the future analysis based on variation of the development potential within sub-area "E." The following identifies the assumptions of each scenario:

Scenario #1

- Commercial development of 25 acres.
- Industrial development of 36.4 acres.
- Dedicated right-of-way and wetland tract to utilize 5.8 acres.

Scenario #2

- Commercial development of 61.4 acres of buildable land.
- Dedicated right-of-way and wetland tract to utilize 5.8 acres.

Sub-Area "F"

Multiple parcels within sub-area "F" make up 4.3 acres of land that is expected to have potential for re-development. Access to the sub-area "F" parcels is provided via 2nd Street, which connects to 6th Street via Hostetler Street. These land uses will likely utilize both the Chenoweth and Webber Street interchanges depending on the ultimate origination/destination of the trips.

Sub-Area "G"

Three vacant parcel on the west side of 6th Street comprise approximately 0.6 acres of land. The parcels are currently zoned General Commercial (CG) and are expected to attract similar commercial development.

Sub-Area "H"

Sub-area "H" is comprised of CG, I, and Mobile Home Residential (RMH) uses. The majority of land within sub-area "H" is currently developed, with the exception of one retail pad associated with the Home Depot development that is currently for sale. Several parcels West of 6th Street and between Division Street and Chenoweth Loop are currently in use as RMH, but the existing zoning classifications and comprehensive plan map classify these parcels as CG. In order to provide a reasonably conservative analysis of a 20-year development horizon, it is assumed these parcels will redevelop as commercial uses over the next 20 years. The parcels expected to redevelop combine to make up 11.6 acres adjacent to 6th Street.

Sub-Area "I"

Sub-area "I" is comprised of land in the northwest quadrant of the I-84 Chenoweth Interchange. The majority of this land is not included in the existing City of The Dalles Urban Growth Boundary (UGB) and is zoned Large-Scale Agriculture (LSA) by Wasco County. An approximately 3.6 acres parcel in the NW quadrant of the Chenoweth Interchange within sub-area "I" is within the UGB boundary, but is owned by ODOT and is not expected to be developed in the next 20 years.

It is difficult to anticipate when, or if, development outside the existing City of The Dalles UGB will occur in the 20-year planning horizon. Currently, this land is designated a National Scenic Area (NSA) and is governed by the provisions of the Columbia River Gorge National Scenic Area (CRGNSA) Act. The purpose of the CRGNSA Act is to protect and provide for the enhancement of the scenic, cultural, recreational and natural resources of 292,500 acres within the Gorge; and, to protect and support the economy of the Columbia River Gorge area by encouraging growth to

occur in existing urban areas and by allowing future economic development. Uses and development on county land in the IAMP study area must comply with both Wasco County and CRGNSA Management Plan regulations according to applicable land use designations.

The City of The Dalles 2007 Growth Management Report provides findings to support a proposed expansion of the 2026 UGB, the expansion of The Dalles "Urban Area" consistent with the CRGNSA Act, and the establishment of the 2056 The Dalles Urban Reserve Area (URA). The current NSA designation must be converted to Urban Area in order to accommodate the adoption of the UGB expansion and the establishment of a URA. A rules committee convened by the Columbia River Gorge Commission must determine whether this conversion constitutes a "minor" or "major" amendment to the NSA management plan (see Columbia River Gorge National Scenic Area Management Plan/National Scenic Area Act section in Technical Memorandum #2). A minor amendment could be decided by the Columbia River Gorge Commission while a major amendment would need to be decided by Congress. It is possible that the rules committee decision and subsequent action, including potential appeals, will take several years.

According to the Generalized Comprehensive Plan (Map 6 in the Growth Management Report) the UGB expansion and designation of URA areas to the north/northwest of the city, including lands in the vicinity of the Chenoweth Interchange, are intended primarily for residential use. The Growth Management Report documents a twenty-year land need (to 2026, and in addition to land already inside the UGB) of approximately 540 gross buildable acres of residential land and approximately 85-120 buildable acres for employment throughout the City of The Dalles. This is the amount of land that is being proposed for inclusion in the UGB.

Given that there is uncertainty as to whether or not the UGB may be expanded, the land outside of the existing UGB is not assumed to generate new trips prior to 2030. However, if future expansion of the UGB includes the land in the northwest quadrant of the interchange, the interchange area should be evaluated as part of the amendment.

YEAR 2030 NO-BUILD TRAFFIC VOLUMES FORECAST METHODOLOGY

Year 2030 "No-Build" traffic volume forecasts for intersection turning movements and street segments were developed in order to analyze the effects of traffic growth on the I-84 Chenoweth Interchange and the surrounding transportation system. The year 2030 "No-Build" scenario was developed based on the currently adopted Wasco County and City of The Dalles comprehensive plans. The remainder of this section describes the methodology and assumptions used to develop year 2030 forecasts.

Future year 2030 no-build traffic volumes were developed by considering the following traffic growth through year 2030:

- Future traffic growth related to development and redevelopment of land in the vicinity of the I-84 Chenoweth Interchange (including sub-areas "A" through "I").

- Future traffic related to regional growth within The Dalles UGB and along the I-84 Interstate corridor.

The specific assumptions used in each of these traffic growth components are summarized below.

Development and Redevelopment Traffic

To account for local traffic growth attributed to the development and redevelopment of vacant and re-developable land in the vicinity of the I-84 Chenoweth Interchange, the project team calculated the reasonable "worst-case" trip-generating potential of the properties. The development assumptions are described below.

The reasonable "worst-case" trip-generation potential of each parcel was estimated using a two-step approach. Step one included reducing the developable or re-developable area (summarized in Table 4-1) by 20 percent to account for utility and roadway right-of-way. Step two applied a Floor Area Ratio (FAR) of 0.25 for commercial zones and 0.40 for industrial lands. The Technical Advisory Committee agreed that these FARs represent a maximum FAR that could be expected for the area. Tables 4-2 and 4-3 provide a summary of the development assumed to occur under Scenario #1 and #2, respectively.

The City of The Dalles Development Code does not specify a maximum FAR, but limits the height of development to 40 feet in CR zones and 50 feet in I, CLI, and CG zones.

Table 4-2 I-84 Chenoweth Interchange Area Development Assumptions – Scenario #1

Land Use	Total Developable or Re-developable Land Area (Acres)	Utilities and ROW (20%)	Net Developable or Re-developable Land Area (Acres)	FAR	Size (1,000 Sq. Feet GLA)
Sub-area "A"					
Industrial	126.2	(25.0)	101.2	0.40	1,763
Sub-area "B					
Industrial	14.0	(3.0)	11.0	0.40	192
Commercial	6.3	(1.0)	5.3	0.25	58
Sub-area "C"					
Industrial	79.1	(16.0)	63.1	0.40	1,099
Sub-area "D"					
Industrial	113.0	(23.0)	90.0	0.40	1,567
Sub-area "E"					
Commercial/ Light Industrial[1]	25.0	-	25.0	0.25	272
Industrial[1]	36.4	-	36.4	0.40	634
Sub-area "F"					
Commercial/ Light Industrial	4.3	(1.0)	3.3	0.25	35
Sub-area "G"					
Commercial	0.6	0.0	0.6	0.25	6
Sub-area "H"					
Commercial	11.6	(2.0)	9.6	0.25	104
Sub-area "I"					
LSA	0.0	0.0	0.0	-	-

[1] The developable land for Sub-area "E" includes a 5.83 acre reduction for utility and ROW land needs based on the Chenoweth Station Subdivision development application dated October 17, 2008.

Table 4-3 I-84 Chenoweth Interchange Area Development Assumptions – Scenario #2

Land Use	Total Developable or Re-developable Land Area (Acres)	Utilities and ROW (20%)	Net Developable or Re-developable Land Area (Acres)	FAR	Size (1,000 Sq. Feet GLA)
Sub-area "A"					
Industrial	126.2	(25.0)	101.2	0.40	1,763
Sub-area "B					
Industrial	14.0	(3.0)	11.0	0.40	192
Commercial	6.3	(1.0)	5.3	0.25	58
Sub-area "C"					
Industrial	79.1	(16.0)	63.1	0.40	1,099
Commercial	0.0	0.0	0.0	0.25	0
Sub-area "D"					
Industrial	113.0	(23.0)	90.0	0.40	1,567
Sub-area "E"					
Commercial/ Light Industrial[1]	61.4	-	61.4	0.25	669
Sub-area "F"					
Commercial/ Light Industrial	4.3	(1.0)	3.3	0.25	35
Sub-area "G"					
Commercial	0.6	0.0	0.6	0.25	6
Sub-area "H"					
Commercial	11.6	(2.0)	9.6	0.25	104
Sub-area "I"					
LSA	0.0	0.0	0.0	-	-

[1] The developable land for Sub-area "E" includes a 5.83 acre reduction for utility and ROW land needs based on the Chenoweth Station Subdivision development application dated October 17, 2008.

The trip generation potential for each sub-area was calculated for the weekday p.m. peak hour using the 7th Edition of Trip Generation (Reference 1), published by the Institute of Transportation Engineers (ITE). ITE trip generation rates for General Light Industrial developments were applied to the estimated square footage of buildings that could be constructed on parcels zoned Industrial. ITE's Shopping Center trip generation rates (fitted curve equation) were applied to the estimated building sizes on parcels zoned CG. Parcels zoned CR were estimated by ITE's Specialty Retail rates. Pass-by trip reductions were applied to ITE Shopping Center trip generation rates.

The assumed distribution patterns of trips generated within each sub-area were based on the existing zoning and relative attractions within the overall study area. Trip distribution patterns for Commercial and Industrial uses was developed based on trip distribution patterns developed for the WM3 site and knowledge of existing travel patterns within the City of The Dalles. Figures 4-2 and 4-3 illustrate the estimated trip distribution patterns for commercial and industrial Sub-areas, respectively.

A summary of the estimated net new trip generation potential of vacant and re-developable lands under Scenarios #1 and #2 are shown in Tables 4-4 and 4-5, respectively. Net new trip generation potential reflects pass-by trip reductions. It was assumed that up to 34 percent of new trips generated by commercial developments are pass-by trips as long as the number of pass-by trips did not exceed 10 percent of through volumes at the site access point along River Road or 6th Street. Under Scenario #2 the number of pass-by trips associated with commercial development within sub-area "E" was limited to 24 percent of new trips.

YEAR 2030 TRIP DISTRIBUTION PATTERNS
COMMERCIAL LAND USE
THE DALLES, OREGON

FIGURE 4-2

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YEAR 2030 TRIP DISTRIBUTION PATTERNS
INDUSTRIAL LAND USE
THE DALLES, OREGON

FIGURE **4-3**

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Table 4-4 Forecasted Trip Generation – Scenario #1

Land Use	ITE Code	Size (1,000 sq. feet)	Weekday PM Peak Hour		
			Total	In	Out
Sub-Area "A"					
Industrial	110	1,763	1,730	210	1,520
Sub-Area "B"					
Industrial	110	192	190	25	165
Commercial Recreational	814	58	160	70	90
Sub-Area "C"					
Industrial	110	1,099	1,080	130	950
Sub-Area "D"					
Industrial	110	1,567	1,540	185	1,355
Sub-Area "E"					
Industrial	110	634	620	75	545
Commercial Light Industrial	820	272	1,210	605	605
Pass-By Trip Reduction (34%)			*(410)*	*(205)*	*(205)*
Net New Commercial Trips			800	400	400
Sub-Area "F"					
Commercial Light Industrial	110	35	30	5	25
Sub-Area "G"					
General Commercial	820	6	100	50	50
Pass-By Trip Reduction (34%)			*(30)*	*(15)*	*(15)*
Net New Trips			70	35	35
Sub-Area "H"					
Commercial	820	104	640	320	320
Pass-By Trip Reduction (34%)			*(220)*	*(110)*	*(110)*
Net New Trips			420	210	210
Total New Trips			7,300	1,675	5,625
Pass-By Trip Reduction (34%)			*(660)*	*(330)*	*(330)*
Net New Trips			6,640	1,345	5,300

[1]ITE Land Use 820: Shopping Center was applied for Commercial zoning using the fitted equation provided.
[2]ITE Land Use 110: Light Industrial was applied to Industrial Sub-areas using the average trip generation rate.

As shown in Table 4-4, Scenario #1 assumes that 634,000 square feet of industrial development and 272,000 square feet of commercial could occur in sub-area "E" resulting in a total of 1,420 net new trips generated by sub-area "E." A total of 6,640 net new p.m. peak hour trips are expected to be generated under Scenario #1 from 5,730,000 square feet of development (5,255,000 square feet

of industrial and 475,000 square feet of commercial). Table 4-5 summarizes forecast trip generation for Scenario #2.

Table 4-5 Forecasted Trip Generation – Scenario #2

Land Use	ITE Code	Size (1,000 sq. feet)	Weekday PM Peak Hour		
			Total	In	Out
Sub-Area "A"					
Industrial	110	1,763	1,730	210	1,520
Sub-Area "B"					
Industrial	110	192	190	25	165
Commercial Recreational	814	58	160	70	90
Sub-Area "C"					
Industrial	110	1,099	1,080	130	950
Sub-Area "D"					
Industrial	110	1,567	1,540	185	1,355
Sub-Area "E"					
Commercial Light Industrial	820	669	2,190	1,095	1,095
Pass-By Trip Reduction (24%)			*(530)*	*(265)*	*(265)*
Net New Trips			1,660	830	830
Sub-Area "F"					
Commercial Light Industrial	110	35	30	5	25
Sub-Area "G"					
General Commercial	820	6	100	50	50
Pass-By Trip Reduction (34%)			*(30)*	*(15)*	*(15)*
Net New Trips			70	35	35
Sub-Area "H"					
Commercial	820	104	640	320	320
Pass-By Trip Reduction (34%)			*(220)*	*(110)*	*(110)*
Net New Trips			420	210	210
Total New Trips			7,660	2,090	5,575
Pass-By Trip Reduction (34%)			*(780)*	*(390)*	*(390)*
Net New Trips			6,880	1,700	5,185

1ITE Land Use 820: Shopping Center was applied for Commercial zoning using the fitted equation provided.
2ITE Land Use 110: Light Industrial was applied to Industrial Sub-areas using the average trip generation rate.

As shown in Table 4-5, Scenario #2 assumes that 61.4 acres in sub-area "E" will be developed with commercial uses resulting in a total of 1,660 net new trips generated by sub-area "E." A total of

6,880 net new p.m. peak hour trips are expected to be generated under Scenario #2 from 5,493,000 square feet of development (4,656,000 square feet of industrial and 837,000 square feet of commercial), which reflects an increase of 240 net new trips above Scenario #1.

Background Traffic Growth

The proposed annual growth rates were determined based on a review of ODOT's Future Year Volume Tables, historical ADT counts, and future development assumptions within the study area. The growth was applied to the existing traffic volumes described in Technical Memorandum #3/4 to obtain future year forecast volumes.

Highway 30/ 6th Street

An annual Local Growth rate was applied to the existing through volumes along 6th Street, all turning movements at the Highway 30/River Road intersection, and turning movements to/from I-84 to the west. An annual growth rate was not be applied to local and collector street turning movements along 6th Street as these trips are generated by existing development that is not impacted by regional growth. Given that growth rates were not applied consistently to all study intersections, future volumes were adjusted to address the overlap in trips being generated directly from within the Land Use Sub-Areas and those of a regional nature calculated by the growth rates along I-84 and 6th Street.

Based on a review of ODOT's Future Volume Tables (which are based on historic traffic volumes), a Local Growth rate was estimated for the Chenoweth IAMP study area based on two data points; one north of the US 30/River Road intersection, and one south of the intersection. To estimate a growth rate, volumes for the year 2007 were compared with ODOT's 2027 estimates. Table 4-6 illustrates the estimated Local Growth rates.

Table 4-6 Background Growth Rate Calculations on US 30

Mile Point	Location	Average Annual Daily Traffic		R-Squared Value	Per Year Growth Rate (2007-2027)[1]
		2007	2027		
38.00	0.05 mile north of connection from Columbia River Highway (I-84)	1,700	2,300	0.79	1.76%
38.53	0.13 mile south of connection from Columbia River Highway (I-84)	5,500	8,100	0.97	1.45%
Average					**1.6%**

[1] Per Year Growth Rate = [(2027 AADT– 2007 AADT) / (2007 AADT)] / (2027 – 2007)

The R-Squared Value shown in Table 4-6 indicates the degree of correlation between the dependent variable (historical traffic volume) and the independent variable (time). The APM states that values over 0.75 are preferred, which indicates that the chosen locations are acceptable for this analysis. As shown in Table 4-6, a 1.6% annual growth rate was identified for background traffic volumes in the vicinity of the Chenoweth Interchange. Therefore, through traffic volumes on Highway 30 and 6th Street from 2008 will be increased by 35.2% to the forecast year 2030.

River Road

An annual growth rate will not be applied to intersections on River Road that are east of I-84 because this area has very limited through traffic volumes and all growth will be related to future redevelopment or new development as previously defined.

Interstate-84

The I-84 Traffic Growth rate will be applied to the existing through traffic volumes to forecast future traffic projections for I-84. Review of Traffic Volume Tables on I-84 east and west of the I-84 Chenoweth Interchange indicates that the interstate traffic volume have been steadily increasing over the past 10 years. Based on a review of ODOT's Future Volume Tables (which are based on historic traffic volumes), a background growth rate was estimated for I-84 near the Chenoweth Interchange. Two data points on I-84 were used in the calculation, including one on each side of the interchange. To determine a growth rate estimate, volumes for the year 2005 were compared with ODOT's 2027 estimates. Table 4-7 illustrates the estimated growth rates.

Table 4-7 Background Growth Rate Calculations on I-84

Mile Point	Location	Average Annual Daily Traffic		R-Squared Value	Per Year Growth Rate (2005-2027)[1]
		2005	2027		
77.15	0.05 mile east of Rowena Interchange	19,900	31,300	0.93	2.6%
82.62	Hostetler Way Overcrossing	19,300	30,500	0.92	2.1%
Average					**2.4%**

[1] Per Year Growth Rate = [(2027 AADT– 2005 AADT) / (2005 AADT)] / (2027 – 2005)

The R-Squared Value indicates the degree of correlation between the dependent variable (historical traffic volume) and the independent variable (time). The APM states that values over 0.75 are preferred, which indicates that the chosen locations are acceptable for this analysis. As shown in Table 4-7, a 2.4% annual growth rate was identified for background traffic volumes on I-84 in the vicinity of the Chenoweth Interchange. Therefore, through traffic volumes on I-84 from 2008 will be increased by 52.8% to the forecast year 2030.

PLANNED TRANSPORTATION IMPROVEMENTS

No transportation improvements inside the IAMP study area are identified in ODOT's Statewide Transportation Improvement Plan (STIP) or the City of The Dalles Transportation System Plan. The City of The Dalles TSP identified the need for reconstruction of the River Trail Way Bridge over Chenoweth Creek, which is currently under construction and expected to be operational in spring 2009. However, this improvement will not change the overall capacity along River Road.

Mitigations associated with the 25-acre commercial development approved on the WM3 Property in Sub-area "E" are expected to be completed by 2030. The mitigations associated with the WM3 commercial development, as outlined in the Chenoweth Station subdivision application, are outlined in Table 4-8. These improvements were included in the 2030 No Build scenario analysis. Figure 4-4 illustrates the year 2030 no build lane configurations and traffic control devices.

Table 4-8 WM3 Development Mitigations

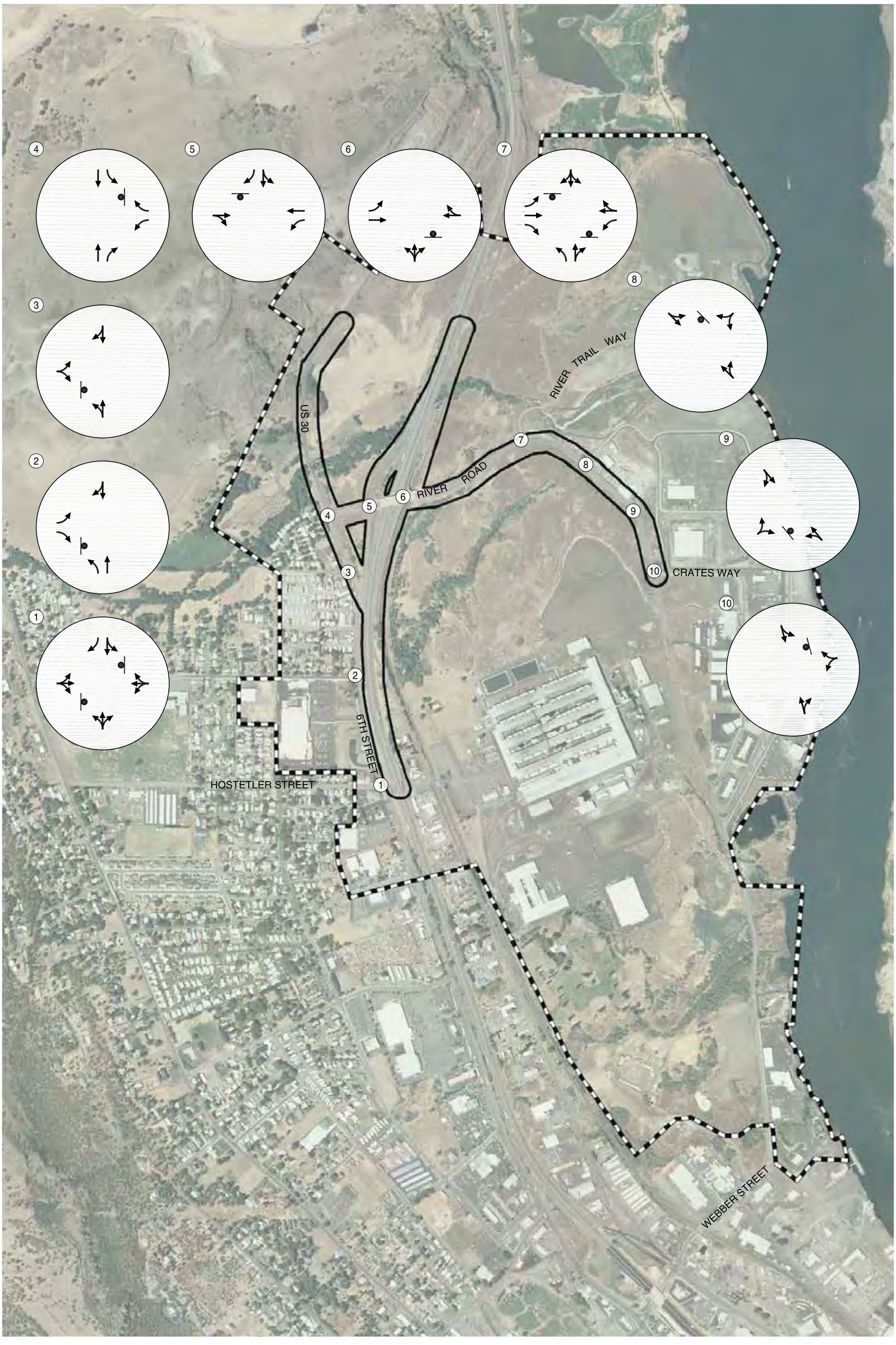
Intersection/ Roadway	Recommended Mitigation	Completion By
River Road/ River Trail Way	Install 75-foot eastbound and westbound left-turn lanes with taper on River Road.	Day of Opening
River Road/ River Trail Way	Install 100-foot eastbound right-turn lane on River Road.	Day of Opening
River Road/ River Trail Way	Install northbound left-turn and shared through/right lanes out of development.	Day of Opening
6th Street (Hwy 30)/ River Road	Restripe northbound 6th Street approach to include a 100-foot right-turn lane with taper at River Road	Year 2027 or Earlier
6th Street (Hwy 30)/ River Road	Restripe westbound left-turn lane on River Road to provide a minimum of 250 feet of storage	Year 2027 or Earlier
I-84 EB Ramp / River Road	Install Traffic Signal	Year 2027 or Earlier
I-84 WB Ramp / River Road	Install Traffic Signal	Year 2027 or Earlier

YEAR 2030 NO-BUILD TRAFFIC CONDITIONS

Future year 2030 No-Build weekday p.m. peak hour traffic volumes were determined for each future scenario by applying growth rates and trip generation estimates to the existing 2008 traffic network. The resulting year 2030 No-Build weekday p.m. peak hour traffic volumes for Scenario #1 and #2 are shown in Figures 4-5 and 4-6, respectively. *Attachment "B" includes a summary of the 2030 No-Build operational analysis worksheets. Attachment "C" includes a summary of net new and pass-by trips generated by each sub-area.*

All level of service analyses were performed in accordance with the procedures stated in the 2000 Highway Capacity Manual (Reference 2). The operational standard for the ramp terminals is a volume-to-capacity ratio of 0.75. The operational standard for all other study intersections is a LOS D. Traffic operations analysis was performed for the study intersections using the forecast year 2030 "No-Build" weekday p.m. peak hour traffic volumes for Scenario #1 and #2, as shown in Figures 4-5 and 4-6, respectively. As shown in the figures, the volume-to-capacity ratios of the ramp terminal intersections exceed 1.0 and all other intersections are forecast to operate with a LOS F under Scenario #1 and Scenario #2.

For comparison purposes, an analysis of Year 2030 Background Traffic Conditions was conducted that assumes background growth on I-84, the ramp terminals, Hwy 30, and 6th Street. The Background Traffic Conditions include planned improvements as well as full build-out of Area "E" under Scenario #1 (commercial and industrial development), but assumes no additional development or redevelopment in any of the other sub-areas. *Figure D-1 in Appendix "D" summarizes the turning movement volumes and operational analysis results of this scenario.*



LEGEND

- STOP SIGN
- TRAFFIC SIGNAL

FUTURE 2030 LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
THE DALLES, OREGON

FIGURE 4-4

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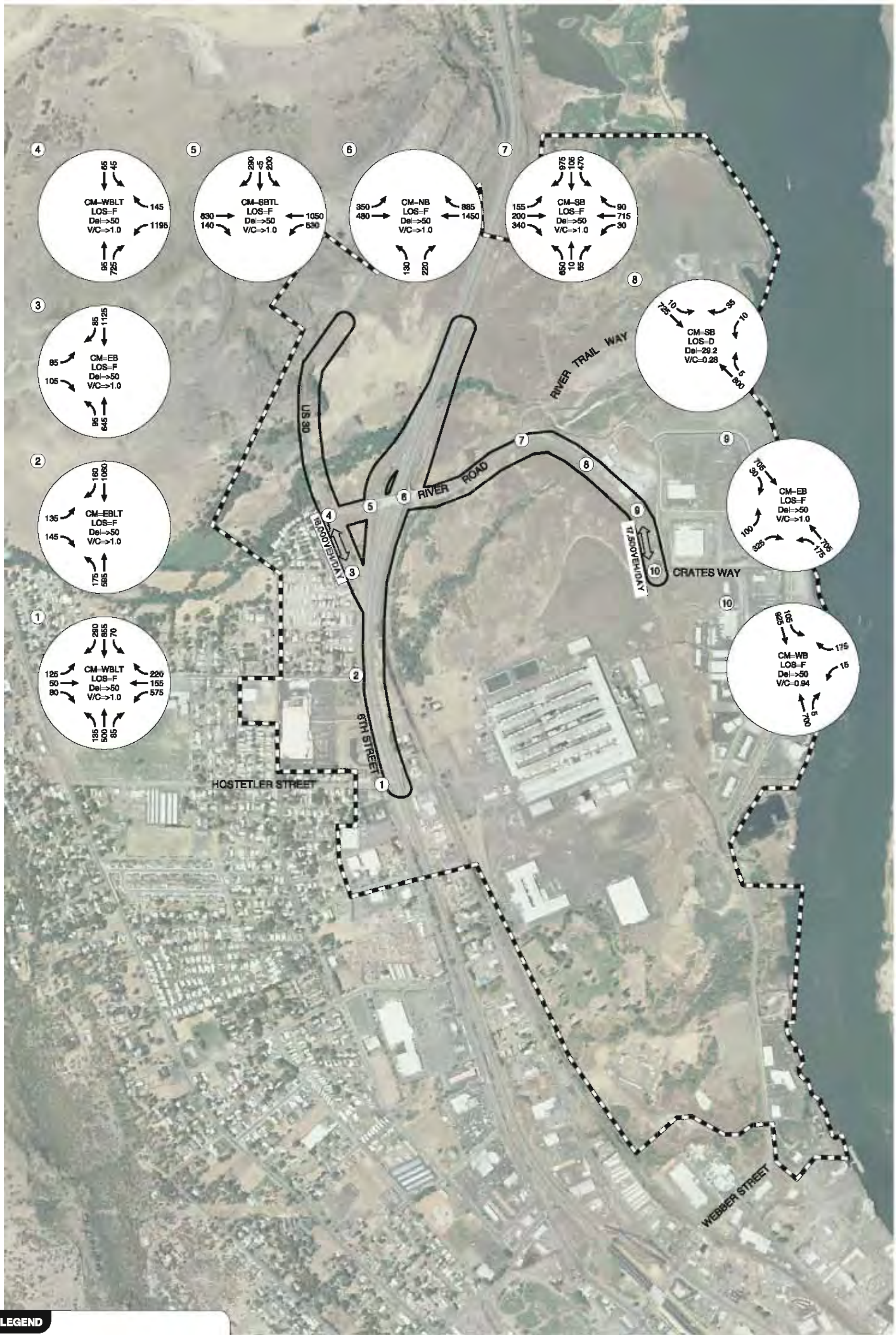

LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

YEAR 2030 TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
LAND USE SCENARIO #1
THE DALLES, OREGON

FIGURE 4-5

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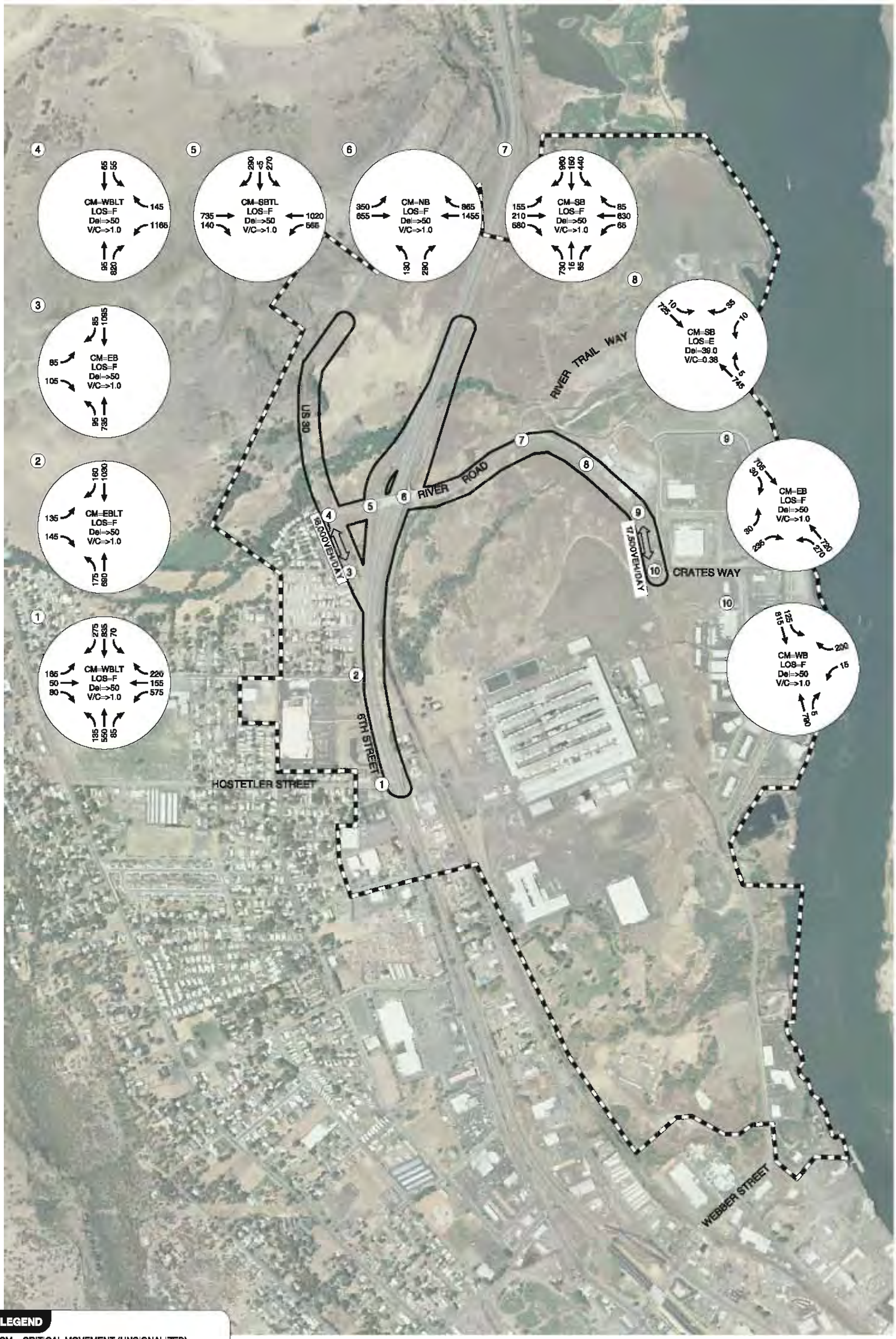

LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

YEAR 2030 TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
LAND USE SCENARIO #2
THE DALLES, OREGON

FIGURE **4-6**

Detailed alternatives for addressing the forecast deficiencies will be provided in Technical Memorandum #7. Preliminary estimates of the likely mitigations that will be required to allow all study intersections to operate acceptably in 2030 are provided in Table 4-9.

Table 4-9 Preliminary Mitigation Estimates

Intersection #	Intersection	Preliminary Estimate of Required Mitigation
1	6th Street/Hostetler Street	Signalization, additional lanes, and/or land-use management strategies
2	6th Street/Chenoweth Loop	Signalization
3	6th Street/Division Street	Signalization, additional lanes, and/or land-use management strategies
4	6th Street (Hwy 30)/River Road	Signalization, additional lanes, and/or land-use management strategies
5	I-84 EB Ramp / River Road	Signalization, additional lanes, and/or land-use management strategies
6	I-84 WB Ramp / River Road	Signalization, additional lanes, and/or land-use management strategies
7	River Road/ River Trail Way/ WM3 North Driveway	Signalization, additional lanes, and/or land-use management strategies
8	River Road/Columbia Road	Signalization
9	River Road/WM3 East Driveway	Signalization
10	River Road/Crates Way	Signalization, additional lanes, and/or land-use management strategies

As shown in Table 4-9, all intersections are expected to need to be signalized by 2030, assuming full build-out of existing vacant and re-developable lands. Additional lanes and implementation of land-use management strategies are expected to be required in order to provide acceptable operations at seven of the ten study intersections. Further assessment of improvement alternatives will also consider system improvements that may alleviate demand at the intersections within the IAMP Operations and Access Study Area.

PRELIMINARY COMPARISION OF LAND USE SCENARIOS

An initial assessment of Land Use Scenarios #1 and #2 shows that the same relative improvements will be required under either scenario. Although there will be an increase in trips generated in Scenario #2, due to an increased proportion of commercial development, the increased number of trips is insignificant compared to the long-term development potential of parcels within the entire Land Use Study Area. However, the specific time at which improvements will be needed and the extent of turn-lane improvements may be influenced to a larger extent under Scenario #2 than Scenario #1. Specific improvement alternatives and recommended timing of each will be examined and summarized in Technical Memorandum #7.

SUMMARY OF YEAR 2030 FUTURE YEAR CONDITIONS

The year 2030 "No-Build" forecasts and analysis resulted in the following findings:

- Based on historic volumes on US 30, local growth is forecast at a rate of 1.6% per year from 2008 to 2030 resulting in a total of 35.2% growth over 22 years. This growth rate was applied to through-traffic volumes on 6th Street, all movements at the 6th Street (Hwy 30)/River Road intersection, and turning movements to/from 6th Street at the I-84 ramp terminal intersections.
- The potential for new development or redevelopment of properties within the Land Use Study Area was accounted for by developing estimates of trip generation for two No-Build scenarios, based on reasonable worst-case development that could occur through 2030. Scenario #1 assumes the WM3 site will be developed with 25 acres of commercial and 36.4 acres of industrial uses. Scenario #2 assumes the WM3 site will be developed entirely as commercial uses. Both scenarios assume development of all other sub-areas will be consistent with existing land use designations in the City of The Dalles Comprehensive Plan and the Wasco County Comprehensive Plan.
    - Land Use Scenario #1 is forecast to generate approximately 6,640 net new trips during the weekday p.m. peak hour associated with 5,255,000 square-feet of industrial space and 475,000 square-feet of commercial space.
    - Land Use Scenario #2 is forecast to generate 6,880 net new trips during the weekday p.m. peak hour associated with 4,656,000 square-feet of industrial space and 837,000 square-feet of commercial space.
- No capacity enhancing transportation improvements were identified inside the IAMP study area in ODOT's Statewide Transportation Improvement Plan (STIP) or the City of The Dalles Transportation System Plan.
- Mitigations associated with the 25-acre commercial development approved on the WM3 Property in Sub-area 'E' are expected to be completed by 2030 and were included in the 2030 No Build scenario analysis.
- Under Scenarios #1 and #2 the I-84 ramp terminal intersections at River Road are forecast to operate with volume-to-capacity ratios greater than 1.0 during the weekday p.m. peak hour. ODOT's volume-to-capacity ratio standard for the interchange ramp terminals is 0.75.
- Under Scenarios #1 and #2 all unsignalized intersections on River Road and on 6th Street within the IAMP Operation and Access Study Area are forecast to operate at LOS F during the weekday p.m. peak hour. The City of The Dalles specifies a LOS D or better be maintained.
- Specific mitigations to address the identified operational issues at all study intersections will be addressed in Technical Memorandum #7; however, a preliminary assessment of the magnitude of the potential improvement needs is summarized below for informational purposes.

- The following intersections are expected to satisfy operational standards if signalized (or a roundabout is installed) over the planning horizon:
  - 6th Street/Chenoweth Loop
  - River Road/Columbia Road
  - River Road/WM3 East Driveway
- The following intersections are expected to satisfy operational standards if signalized (or a roundabout is installed) and additional lanes were constructed, and/or land-use management strategies were employed over the planning horizon:
  - 6th Street/Hostetler Street
  - 6th Street/Division Street
  - 6th Street(US 30)/River Road
  - River Road/I-84 EB Ramp
  - River Road/I-84 WB Ramp
  - River Road/River Trail Way/WM3 North Driveway
  - River Road/Crates Way

REFERENCES

1. Institute of Transportation Engineers. *Trip Generation* (*7th Edition*). 2003.

2. Transportation Research Board. *Highway Capacity Manual*. 2000.

ATTACHMENTS

A. Tax Lot Data

B. 2030 No-Build Operational Analysis Worksheets

C. Crash Data

Attachment A
Tax Lot Data

Vacant Lands

Sub-Area	FID	Tax Lot	Acres	Zoning	Existing Develop	OWNER	CARE_OF	MAILING_AD	MAIL_CITY	MAIL_STA	ZIP_CODE	SITUS_AD	SITUS_CIT	SITUS_ZIP	LEGALACRE
A	16	2N 13E 21 600	22.23	I	Vacant	NORTHWEST ALUMINUM C		3313 W 2ND	THE DALLES	OR	97058	0			22
A	12	2N 13E 21 700	40.93	I	Vacant	DALLES PORT OF THE		3636 KLINDT DR	THE DALLES	OR	97058	4250 RIV	THE DALLE	97058	39
A	13	2N 13E 21 800	42.51	I	Vacant	DALLES PORT OF THE		3636 KLINDT DR	THE DALLES	OR	97058	4350 RIV	THE DALLE	97058	43
A	9	2N 13E 28 701	20.50	I	Vacant	NORTHWEST ALUMINUM C		3313 W 2ND ST	THE DALLES	OR	97058	0			21
B	0	2N 13E 28 900	4.45	I	Vacant	CHENOWITH CREEK DEVEL	ATTN JERRY FRAZIER	409 W 4TH ST	THE DALLES	OR	97058	3825 RIV	THE DALLE	97058	4
B	1	2N 13E 28 901	4.27	I	Vacant	NORTHWEST ALUMINUM C		3313 W 2ND ST	THE DALLES	OR	97058	0			4
B	17	2N 13E 28 A 1200	1.54	I	Vacant	DALLES PORT OF THE	MUNSEN PAVING LLC	1022 W 9TH ST	THE DALLES	OR	97058	160 STEE	THE DALLE	97058	2
B	18	2N 13E 28 A 600	1.54	I	Vacant	DALLES PORT OF THE	MUNSEN PAVING LLC	1022 W 9TH ST	THE DALLES	OR	97058	180 STEE	THE DALLE	97058	2
B	19	2N 13E 28 A 900	0.81	I	Vacant	EVERSUMMER LLC		1401 CROSS CREEK LN	HOOD RIVER	OR	97031	3831 KLIN	THE DALLE	97058	1
B	20	2N 13E 28 D 2500	0.44	CR	Vacant	CRATES POINT DEVELOPM		3775 CRATES WAY	THE DALLES	OR	97058	3601 KLIN	THE DALLE	97058	1
B	15	2N 13E 28 D 2600	0.89	CR	Vacant	CRATES POINT DEVELOPM		3775 CRATES WAY	THE DALLES	OR	97058	3641 KLIN	THE DALLE	97058	0
B	21	2N 13E 28 D 2700	0.86	CR	Vacant	DALLES PORT OF THE		3636 KLINDT DR	THE DALLES	OR	97058	3661 KLIN	THE DALLE	97058	1
B	22	2N 13E 28 D 2800	1.22	CR	Vacant	DALLES PORT OF THE		3636 KLINDT DR	THE DALLES	OR	97058	3691 KLIN	THE DALLE	97058	1
B	23	2N 13E 28 D 3100	1.05	CR	Vacant	DALLES PORT OF THE		3636 KLINDT DR	THE DALLES	OR	97058	3801 KLIN	THE DALLE	97058	1
B	24	2N 13E 28 D 800	1.43	I	Vacant	TUM A LUM LUMBER CO		PO BOX 5008	BEND	OR	97708	3675 CRA	THE DALLE	97058	1
B	7	2N 13E 28 DB 100	0.58	CR	Vacant	TENNESON ENGINEERING		409 LINCOLN ST	THE DALLES	OR	97058	3761 KLIN	THE DALLE	97058	0
B	25	2N 13E 28 DB 200	0.44	CR	Vacant	RIVERFRONT ASSETS LLC		PO BOX 1595	THE DALLES	OR	97058	3741 KLIN	THE DALLE	97058	0
B	2	2N 13E 28 DB 600	0.17	CR	Vacant	RIVERFRONT ASSETS LLC		PO BOX 1595	THE DALLES	OR	97058	3709 KLIN	THE DALLE	97058	0
B	28	2N 13E 28 DB 300	0.34	CR	Vacant	RIVERFRONT ASSETS LLC		PO BOX 1595	THE DALLES	OR	97058	3721 KLIN	THE DALLE	97058	0
B	29	2N 13E 28 DB 700	0.18	CR	Vacant	RIVERFRONT ASSETS LLC		PO BOX 1595	THE DALLES	OR	97058	3725 KLIN	THE DALLE	97058	0
B	27	2N 13E 28 DB 800	0.16	CR	Vacant	RIVERFRONT ASSETS LLC		PO BOX 1595	THE DALLES	OR	97058	3735 KLIN	THE DALLE	97058	0
C	10	2N 13E 33 200	76.91	I	Vacant	NORTHWEST ALUMINUM C		3313 W 2ND	THE DALLES	OR	97058	2650 ROU	THE DALLE	97058	29
C	14	2N 13E 33 A 200	2.16	I	Vacant	BERNERT BARGE LINE INC		170 HARDING BLVD	OREGON CITY	OR	97045	2649 RIV	THE DALLE	97058	2
D	0	2N 13E 28 700	94.27	I	NORTHWEST A	NORTHWEST ALUMINUM C		3313 W 2ND ST	THE DALLES	OR	97058	3313 W 2N	THE DALLE	97058	91
D	1	2N 13E 28 1000	18.68	I	NORTHWEST A	NORTHWEST ALUMINUM C		3313 W 2ND	THE DALLES	OR	97058	0			11
E	7392	2N 13E 28 702	67.17	WM3 IN	Vacant	5277 CHERRY HGTS RD	THE DALLES	OR	97058	0			67		
F	2	2N 13E 28 CC 100	0.34	CLI	Unknown Develo	LEE ERNEST W & MARY L	PEICKERT JR STANLEY A	3112 W 2ND ST	THE DALLES	OR	97058	3118 W 2N	THE DALLE	97058	0
F	3	2N 13E 28 CC 200	0.59	CLI	Unknown	LEE ERNEST W & MARY L	PEICKERT JR STANLEY A	3112 W 2ND ST	THE DALLES	OR	97058	3112 W 2N	THE DALLE	97058	1
F	4	2N 13E 29 DA 1800	0.64	CLI	Unknown	VELADOR AMADO & CHARL		816 FLORAL CT W	THE DALLES	OR	97058	3520 W 2N	THE DALLE	97058	1
F	5	2N 13E 29 DA 1900	0.97	CLI	Unknown	KOOPS DUANE C & JEAN M		3518 W 2ND ST	THE DALLES	OR	97058	3518 W 2N	THE DALLE	97058	1
F	6	2N 13E 29 DD 100	0.59	CLI	Unknown	STEELE CLARA S ET AL		8235 JOHNSON POINT RD	OLYMPIA	WA	98516	3504 W 2N	THE DALLE	97058	1
F	7	2N 13E 29 DD 200	0.57	CLI	SPEE DEE HAU	SPEE DEE HAULERS INC		PO BOX 35	THE DALLES	OR	97058	3416 W 2N	THE DALLE	97058	1
F	8	2N 13E 29 DD 300	0.54	CLI	SPEE DEE HAU	SPEE DEE HAULERS INC		PO BOX 35	THE DALLES	OR	97058	605 HOS	THE DALLE	97058	0
G	9452	2N 13E 29 DD 1100	0.16	CG	Vacant	DEAN SANDY ET AL		207 W 3RD ST	THE DALLES	OR	97058	3210 W 6T	THE DALLE	97058	0
G	9453	2N 13E 29 DD 1200	0.17	CG	Vacant	DEAN SANDY ET AL		PO BOX 237	TROUT LAKE	WA	98650	3214 W 6T	THE DALLE	97058	0
G	9454	2N 13E 29 DD 1300	0.23	CG	Vacant	DEAN SANDY ET AL		PO BOX 237	TROUT LAKE	WA	98650	0			0
H	9	2N 13E 29 DA 400	1.57			ROBINSON JR RAY & DORIS			THE DALLES	OR					0
H	10	2N 13E 29 DA 300	0.19			LEABO JESSE D & WILLETT			THE DALLES	OR				97058	0
H	11	2N 13E 29 DB 200	0.19			BRUCE LARRY W & JOVIA S			THE DALLES	OR				97058	0
H	12	2N 13E 29 DB 100	0.19			HESTER DENNIS R			THE DALLES	OR				97058	0
H	13	2N 13E 29 DA 200	0.19			GAST STEPHEN L			THE DALLES	OR				97058	0
H	14	2N 13E 29 DB 500	0.12			REDLINGSHAFER KENNY R			THE DALLES	OR				97058	0
H	15	2N 13E 29 DB 700	0.20			HELGESON ROBERT E			THE DALLES	OR				97058	0
H	16	2N 13E 29 DB 800	0.20			CARLSON VEDA M			THE DALLES	OR				97058	0
H	17	2N 13E 29 DB 900	0.20			TAYLOR MARY JO			THE DALLES	OR				97058	0
H	18	2N 13E 29 DA 1100	0.20			AKIYAMA FLORENCE			HOOD RIVER	OR				97058	0
H	19	2N 13E 29 DA 1000	0.20			SUTTON AARON R & DONN			THE DALLES	OR				97058	0
H	20	2N 13E 29 DA 900	0.33			MONNER JOSEPH A & ELIZ			THE DALLES	OR				97058	0
H	21	2N 13E 29 DA 800	0.33			HICKS GREG N & KELLY R			THE DALLES	OR				97058	0
H	22	2N 13E 29 DA 700	0.33			ROBINSON JR RAY & DORIS			THE DALLES	OR				97058	0
H	23	2N 13E 29 DA 600	0.51			ROCKHILL CHARLES H			THE DALLES	OR				97058	0
H	24	2N 13E 29 DA 500	0.10			ROBINSON JR RAY & DORIS			THE DALLES	OR					0
H	25	2N 13E 29 DB 600	0.07			MARQUEZ JOHN & CARMEN			THE DALLES	OR				97058	0
H	26	2N 13E 29 DB 1300	0.19			WILLIAMS LEONARD E			THE DALLES	OR				97058	0
H	27	2N 13E 29 DB 1200	0.19			ORNELAS JOSE & TERESA			THE DALLES	OR				97058	0
H	28	2N 13E 29 DB 1100	0.19			CARTER WALTER & MYRTL			THE DALLES	OR				97058	0
H	29	2N 13E 29 DB 1000	0.19			MANNING GINA M			THE DALLES	OR				97058	0
H	30	2N 13E 29 DA 1300	0.19			SMITH CLIFFORD R & ANGE			THE DALLES	OR				97058	0
H	31	2N 13E 29 DA 1200	0.19			KISHI MICHIKO RLT			THE DALLES	OR				97058	0
H	32	2N 13E 29 A 900	1.28			ROBINSON DORIS J FAMILY		3800 W 6TH ST	THE DALLES	OR	97058	751 DIVIS	THE DALLE	97058	1
H	33	2N 13E 29 DA 100	2.39			ROBINSON DORIS J FAMILY		3800 W 6TH ST	THE DALLES	OR	97058	3800 W 6T	THE DALLE	97058	2
H	9251	2N 13E 29 DA 1700	1.65	CG	Vacant	METRO INVESTMENTS LLC	ATTN STREICH HOBY	PO BOX 306	HOOD RIVER	OR	97031	3608 W 6T	THE DALLE	97058	2

Sub-Area	FID	MAP	CALCDACR	OWNER	CARE_OF	MAILING_AD	MAIL_CITY	MAIL_STATE	ZIP_CODE	SITUS_AD	SITUS_CIT	SITUS_ZIP	LEGALACRE		
UnBuildable															
C	8871	2N 13E 28 1100	27.948372	NORTHV		2929 W 2ND ST	THE DALLES	OR	97058	2929 W 2N	THE DALL	97058	22		
C	10317	2N 13E 33 100	19.700319	MARTIN	C/O THOMPSON	PO BOX 8048 BLDG 100 RM	PHILADELPHIA	PA	19101	0			20		
D	8874	2N 13E 28 800	29.165797	MARTIN	C/O THOMPSON	PO BOX 8048 BLDG 100 RM	PHILADELPHIA	PA	19101	0			0		
Developed Areas															
A	132	2N 13E 28 701	20.499801	NORTHV		3313 W 2ND ST	THE DALLES	OR	97058	0			21		
A	8859	2N 13E 21 600	22.232827	NORTHV		3313 W 2ND	THE DALLES	OR	97058	0			22		
A	8860	2N 13E 21 700	40.933457	DALLES		3636 KLINDT DR	THE DALLES	OR	97058	4250 RIV	THE DALL	97058	39		
A	8861	2N 13E 21 800	42.507693	DALLES		3636 KLINDT DR	THE DALLES	OR	97058	4350 RIV	THE DALL	97058	43		
A	8862	2N 13E 21 900	10.333365	UNITED						4300 RIV	THE DALL	97058	10		
B	30	2N 13E 28 B 100	3.330995	DESIGN	C/O SHARTSIS I	ONE MARITIME PLAZA 18TH	SAN FRANCISCO	CA	94111	0			3		
B	31	2N 13E 28 B 600	1.872717	DALLES		3636 KLINDT DR	THE DALLES	OR	97058	0			2		
B	2988	2N 13E 28 900	4.445057	CHENOV	ATTN JERRY FR	409 W 4TH ST	THE DALLES	OR	97058	3825 RIV	THE DALL	97058	4		
B	3440	2N 13E 28 902	4.523631	WEBB W		PO BOX 1550	THE DALLES	OR	97058	0			1		
B	3441	2N 13E 28 901	4.269705	NORTHV		3313 W 2ND ST	THE DALLES	OR	97058	0			4		
B	8634	2N 13E 28 D 2600	0.885543	CRATES		3775 CRATES WAY	THE DALLES	OR	97058	3641 KLIN	THE DALL	97058	0		
B	8864	2N 13E 28 101	31.043476	DESIGN	C/O SHARTSIS I	ONE MARITIME PLAZA 18TH	SAN FRANCISCO	CA	94111	4200 COL	THE DALL	97058	31		
B	8866	2N 13E 28 B 800	6.682164	FLAGST		6605 UNIVERSITY AVE	MIDDLETON	WI	53562	250 STEE	THE DALL	97058	7		
B	8867	2N 13E 28 B 700	2.443623	WATERH		231 STEELHEAD WAY	THE DALLES	OR	97058	231 STEE	THE DALL	97058	2		
B	8869	2N 13E 28 B 400	0.698989	DALLES		3636 KLINDT DR	THE DALLES	OR	97058	150 RIVE	THE DALL	97058	1		
B	8872	2N 13E 28 B 200	4.094612	ROCKLI		3045 VALLEY VIEW DR	THE DALLES	OR	97058	4120 RIV	THE DALL	97058	4		
B	8873	2N 13E 28 B 300	0.973497	WASCO	ANIMAL SHELTE					200 RIVE	THE DALL	97058	1		
B	8875	2N 13E 28 A 1000	1.020712	DALLES	MUNSEN PAVIN	1022 W 9TH ST	THE DALLES	OR	97058	3820 KLIN	THE DALL	97058	1		
B	8876	2N 13E 28 A 1100	1.344234	DALLES	MUNSEN PAVIN	1022 W 9TH ST	THE DALLES	OR	97058	140 STEE	THE DALL	97058	1		
B	8877	2N 13E 28 A 1200	1.537556	DALLES	MUNSEN PAVIN	1022 W 9TH ST	THE DALLES	OR	97058	160 STEE	THE DALL	97058	2		
B	8878	2N 13E 28 A 600	1.539055	DALLES	MUNSEN PAVIN	1022 W 9TH ST	THE DALLES	OR	97058	180 STEE	THE DALL	97058	2		
B	8879	2N 13E 28 A 700	1.351029	DALLES	MUNSEN PAVIN	1022 W 9TH ST	THE DALLES	OR	97058	120 STEE	THE DALL	97058	1		
B	8880	2N 13E 28 A 800	0.995959	DALLES	MUNSEN PAVIN	1022 W 9TH ST	THE DALLES	OR	97058	3840 KLIN	THE DALL	97058	1		
B	8881	2N 13E 28 A 900	0.812047	EVERSU		1401 CROSS CREEK LN	HOOD RIVER	OR	97031	3831 KLIN	THE DALL	97058	1		
B	8886	2N 13E 28 D 1000	1.826097	CRESTL	C/O SCHMIDT R	3775 CRATES WAY	THE DALLES	OR	97058	3775 CRA	THE DALL	97058	2		
B	8887	2N 13E 28 D 1100	1.894102	DML 387		3775 CRATES WAY	THE DALLES	OR	97058	3825 CRA	THE DALL	97058	1		
B	8888	2N 13E 28 D 1200	1.902097	DML 387		3775 CRATES WAY	THE DALLES	OR	97058	3875 CRA	THE DALL	97058	2		
B	8889	2N 13E 28 D 1300	2.014568	BOOZE		5440 LEARY AVE NW UNIT 4	SEATTLE	WA	98107	3840 CRA	THE DALL	97058	2		
B	9045	2N 13E 28 D 1400	3.413411	PAUL HA		7991 SW EDGEWATER E	WILSONVILLE	OR	97070	3800 CRA	THE DALL	97058	3		
B	9046	2N 13E 28 D 1500	1.029353	PAUL HA		7991 SW EDGEWATER E	WILSONVILLE	OR	97070	3700 CRA	THE DALL	97058	1		
B	9047	2N 13E 28 D 1600	2.602981	THE DAL		931 NE HARLOW PL	TROUTDALE	OR	97060	3600 CRA	THE DALL	97058	3		
B	9048	2N 13E 28 D 1700	2.026554	CGT EN		PO BOX 21646	SEATTLE	WA	98111	3500 CRA	THE DALL	97058	2		
B	9049	2N 13E 28 D 1800	0.962415	MID COL		PO BOX 1969	THE DALLES	OR	97058	3400 CRA	THE DALL	97058	1		
B	9050	2N 13E 28 D 1900	0.113121	DALLES		3636 KLINDT DR	THE DALLES	OR	97058	0			0		
B	9051	2N 13E 28 D 2000	4.241157	DALLES		3636 KLINDT DR	THE DALLES	OR	97058	0			1		
B	9052	2N 13E 28 D 2200	3.885801	STATE (	DEPT OF FISH/V	3406 CHERRY AVE NE	KEIZER	OR	97303	3501 KLIN	THE DALL	97058	4		
B	9053	2N 13E 28 D 2400	1.363959	CRATES		3775 CRATES WAY	THE DALLES	OR	97058	3591 KLIN	THE DALL	97058	1		
B	9054	2N 13E 28 D 2500	0.442464	CRATES		3775 CRATES WAY	THE DALLES	OR	97058	3601 KLIN	THE DALL	97058	1		
B	9055	2N 13E 28 D 2700	0.855169	DALLES		3636 KLINDT DR	THE DALLES	OR	97058	3661 KLIN	THE DALL	97058	1		
B	9056	2N 13E 28 D 2800	1.222504	DALLES		3636 KLINDT DR	THE DALLES	OR	97058	3691 KLIN	THE DALL	97058	1		

Sub-Area	FID	MAP	CALCDACR	OWNER	CARE_OF	MAILING_AD	MAIL_CITY	MAIL_STATE	ZIP_CODE	SITUS_AD	SITUS_CIT	SITUS_ZIP	LEGALACRE		
B	9058	2N 13E 28 DB 600	0.1706	RIVERFI		PO BOX 1595	THE DALLES	OR	97058	3709 KLI	THE DALL	97058	0		
B	9059	2N 13E 28 D 3100	1.049353	DALLES		3636 KLINDT DR	THE DALLES	OR	97058	3801 KLI	THE DALL	97058	1		
B	9061	2N 13E 28 D 500	1.994581	WASCO	KROL RONALD	3425 CRATES WAY	THE DALLES	OR	97058	3425 CRA	THE DALL	97058	2		
B	9062	2N 13E 28 D 600	1.437339	THE DAL		2018 STEELE RD	THE DALLES	OR	97058	3525 CRA	THE DALL	97058	1		
B	9063	2N 13E 28 D 700	1.37912	ROSETT		3575 CRATES WAY	THE DALLES	OR	97058	3575 CRA	THE DALL	97058	1		
B	9064	2N 13E 28 D 800	1.427107	TUM A L		PO BOX 5008	BEND	OR	97708	3675 CRA	THE DALL	97058	1		
B	9065	2N 13E 28 D 801	0.645437	ALCO H	AGNEW DAN J	PO BOX 579	CENTRALIA	WA	98531	3625 CRA	THE DALL	97058	1		
B	9066	2N 13E 28 D 900	1.779929	TUM A L		PO BOX 5008	BEND	OR	97708	3725 CRA	THE DALL	97058	2		
B	11186	2N 13E 28 DB 200	0.440304	RIVERFI		PO BOX 1595	THE DALLES	OR	97058	3741 KLI	THE DALL	97058	0		
B	11187	2N 13E 28 DB 400	0.343604	H & H EN		3701 KLINDT DR	THE DALLES	OR	97058	3701 KLI	THE DALL	97058	0		
B	11204	2N 13E 28 DB 300	0.33528	RIVERFI		PO BOX 1595	THE DALLES	OR	97058	3721 KLI	THE DALL	97058	0		
B	11205	2N 13E 28 DB 100	0.584602	TENNES		409 LINCOLN ST	THE DALLES	OR	97058	3761 KLI	THE DALL	97058	0		
B	11206	2N 13E 28 DB 800	0.16375	RIVERFI		PO BOX 1595	THE DALLES	OR	97058	3735 KLI	THE DALL	97058	0		
B	11207	2N 13E 28 DB 700	0.181123	RIVERFI		PO BOX 1595	THE DALLES	OR	97058	3725 KLI	THE DALL	97058	0		
B	11208	2N 13E 28 DB 500	0.151887	RIVERFI		PO BOX 1595	THE DALLES	OR	97058	3705 KLI	THE DALL	97058	0		
C	338	2N 13E 33 200	76.906297	NORTHV		3313 W 2ND	THE DALLES	OR	97058	2650 ROI	THE DALL	97058	29		
C	8871	2N 13E 28 1100	27.948372	NORTHV		2929 W 2ND ST	THE DALLES	OR	97058	2929 W 2N	THE DALL	97058	22		
C	10317	2N 13E 33 100	19.700319	MARTIN	C/O THOMPSON	PO BOX 8048 BLDG 100 RM	PHILADELPHIA	PA	19101	0			20		
C	10320	2N 13E 33 A 100	7.636616	FORT D		59720 TWIN LAKES RD	GRASS VALLEY	OR	97029	0			8		
C	10321	2N 13E 33 A 200	2.158657	BERNER		170 HARDING BLVD	OREGON CITY	OR	97045	2649 RIV	THE DALL	97058	2		
C	10322	2N 13E 33 A 301	5.002438	NORTHE		2345 RIVER RD	THE DALLES	OR	97058	2345 RIV	THE DALL	97058	5		
C	10323	2N 13E 33 A 300	1.886529	DALLES		3636 KLINDT DR	THE DALLES	OR	97058	0			2		
C	10324	2N 13E 33 A 400	0.84307	BENTON		39302 HWY 20 EAST	BURNS	OR	97720	0			1		
C	10325	2N 13E 33 A 500	0.793108	BENTON		39302 HWY 20 EAST	BURNS	OR	97720	2325 RIV	THE DALL	97058	1		
C	10326	2N 13E 33 A 600	0.895243	DEVLAE		1539 BARGEWAY RD	THE DALLES	OR	97058	1539 BAR	THE DALL	97058	2		
C	10327	2N 13E 33 A 700	1.221631	BINGMA		PO BOX 654	THE DALLES	OR	97058	1535 BAR	THE DALL	97058	1		
C	10329	2N 13E 33 A 900 L 1	0.999774	DALLES	C/O MID COLUM	PO BOX 344	MORO	OR	97039	0			1		
C	11316	2N 13E 33 A 601	0.991949	MK PRO		1008 E 10TH ST	THE DALLES	OR	97058	2221 RIV	THE DALL	97058	0		
D	7332	2N 13E 28 700	94.270112	NORTHV		3313 W 2ND ST	THE DALLES	OR	97058	3313 W 2N	THE DALL	97058	91		
D	8863	2N 13E 28 1000	18.683056	NORTHV		3313 W 2ND	THE DALLES	OR	97058	0			11		
D	8874	2N 13E 28 800	29.165797	MARTIN	C/O THOMPSON	PO BOX 8048 BLDG 100 RM	PHILADELPHIA	PA	19101	0			24		
F	8882	2N 13E 28 CC 100	0.344139	LEE ERN	PEICKERT JR S	3112 W 2ND ST	THE DALLES	OR	97058	3118 W 2N	THE DALL	97058	0		
F	8883	2N 13E 28 CC 200	0.585953	LEE ERN	PEICKERT JR S	3112 W 2ND ST	THE DALLES	OR	97058	3112 W 2N	THE DALL	97058	1		
F	9252	2N 13E 29 DA 1800	0.644559	VELADO		816 FLORAL CT W	THE DALLES	OR	97058	3520 W 2N	THE DALL	97058	1		
F	9253	2N 13E 29 DA 1900	0.972026	KOOPS		3518 W 2ND ST	THE DALLES	OR	97058	3518 W 2N	THE DALL	97058	1		
F	9450	2N 13E 29 DD 100	0.591008	STEELE		8235 JOHNSON POINT RD N	OLYMPIA	WA	98516	3504 W 2N	THE DALL	97058	1		
F	9461	2N 13E 29 DD 200	0.574482	SPEE DE		PO BOX 35	THE DALLES	OR	97058	3416 W 2N	THE DALL	97058	1		
F	9471	2N 13E 29 DD 300	0.541613	SPEE DE		PO BOX 35	THE DALLES	OR	97058	605 HOS	THE DALL	97058	0		
F	9482	2N 13E 29 DD 400	0.890028	HOVDA		PO BOX 394	THE DALLES	OR	97058	3302 W 2N	THE DALL	97058	1		
F	9493	2N 13E 29 DD 500	0.832798	HUNT ST		3226 W 2ND	THE DALLES	OR	97058	3226 W 2N	THE DALL	97058	1		
F	9502	2N 13E 29 DD 600	0.347792	TESCH I		3224 W 2ND	THE DALLES	OR	97058	3224 W 2N	THE DALL	97058	0		
F	9503	2N 13E 29 DD 700	0.969018	TBN PR		1617 E 18TH	THE DALLES	OR	97058	3202 W 2N	THE DALL	97058	1		
G	9451	2N 13E 29 DD 1000	0.581681	DEAN J		PO BOX 237	TROUT LAKE	WA	98650	3206 W 6T	THE DALL	97058	0		
G	9452	2N 13E 29 DD 1100	0.161394	DEAN S		207 W 3RD ST	THE DALLES	OR	97058	3210 W 6T	THE DALL	97058	0		
G	9453	2N 13E 29 DD 1200	0.166129	DEAN S		PO BOX 237	TROUT LAKE	WA	98650	3214 W 6T	THE DALL	97058	0		
G	9454	2N 13E 29 DD 1300	0.229629	DEAN S		PO BOX 237	TROUT LAKE	WA	98650	0			0		
G	9455	2N 13E 29 DD 1400	1.170891	INDUST	C/O BI MART C	PO BOX 2310	EUGENE	OR	97402	3300 W 6T	THE DALL	97058	1		
G	9456	2N 13E 29 DD 1500	1.090084	SPOOK	C/O STANEK B	416 E 8TH ST	THE DALLES	OR	97058	3320 W 6T	THE DALL	97058	1		
G	9457	2N 13E 29 DD 1600	0.824784	OREGO		200 N ADAMS ST	COQUILLE	OR	97423	701 HOS	THE DALL	97058	1		
G	9484	2N 13E 29 DD 4100	0.171841	LOPEZ L		738 PLEASANT CT	THE DALLES	OR	97058	738 PLE	THE DALL	97058	0		
G	9485	2N 13E 29 DD 4200	0.272491	LINDHO	LINDHORST LA	732 PLEASANT CT	THE DALLES	OR	97058	732 PLE	THE DALL	97058	0		
G	9486	2N 13E 29 DD 4300	2.551704	INDUST	C/O BI MART C	PO BOX 2310	EUGENE	OR	97402	3300 W 6T	THE DALL	97058	3		
G	9501	2N 13E 29 DD 5700	3.265371	MALEY		731 POMONA	THE DALLES	OR	97058	731 POM	THE DALL	97058	3		
G	9504	2N 13E 29 DD 800	0.531424	MORINV		5033 CHERRY HGTS RD	THE DALLES	OR	97058	3100 W 6T	THE DALL	97058	1		
H	130	2N 13E 29 DD 2001	0.502563	METRO	ATTN STREICH	PO BOX 306	HOOD RIVER	OR	97031	0			0		
H	131	2N 13E 29 DD 2000	1.996174	HOME D	PROPERTY TA	PO BOX 105842	ATLANTA	GA	30348	0			2		
H	149	2N 13E 29 DA 1500	0.766362	HOME D	PROPERTY TA	PO BOX 105842	ATLANTA	GA	30348	3600 W 6T	THE DALL	97058	1		
H	341	2N 13E 29 DA 1501	0.955472	MAGID F		PO BOX 1004	LAKE OSWEGO	OR	97034	3560 W 6T	THE DALL	97058	1		
H	9072	2N 13E 29 A 1000	0.251276	LINDLEY		3838 W 6TH	THE DALLES	OR	97058	3838 W 6T	THE DALL	97058	0		
H	9073	2N 13E 29 A 1100	0.374605	LONG S		PO BOX 320	MOSIER	OR	97040	3830 W 6T	THE DALL	97058	0		
H	9074	2N 13E 29 A 1200	0.135268	LITTLE C		5003 ALLEN PL	THE DALLES	OR	97058	3826 W 6T	THE DALL	97058	0		
H	9075	2N 13E 29 A 200	1.643037	HATTEN		PO BOX 1397	THE DALLES	OR	97058	3902 W 6T	THE DALL	97058	2		
H	9076	2N 13E 29 A 300	4.953418	OAKWO		3800 W 6TH ST	THE DALLES	OR	97058	750 DIVI	THE DALL	97058	5		
H	9077	2N 13E 29 A 400	0.417672	OAKWO		3800 W 6TH ST	THE DALLES	OR	97058	751 DIVI	THE DALL	97058	0		

Sub-Area	FID	MAP	CALCDACR	OWNER	CARE_OF	MAILING_AD	MAIL_CITY	MAIL_STATE	ZIP_CODE	SITUS_AD	SITUS_CIT	SITUS_ZIP	LEGALACRE		
H	9084	2N 13E 29 A 800	3.887031	ROBINS		3800 W 6TH #30	THE DALLES	OR	97058	751 DIVIS	THE DALL	97058	4		
H	9085	2N 13E 29 A 900	1.281552	ROBINS		3800 W 6TH ST	THE DALLES	OR	97058	751 DIVIS	THE DALL	97058	1		
H	9244	2N 13E 29 DA 100	2.385397	ROBINS		3800 W 6TH ST	THE DALLES	OR	97058	3800 W 6T	THE DALL	97058	2		
H	9245	2N 13E 29 DA 1000	0.196131	SUTTON		78938 N LOOP RD	STANFIELD	OR	97875	730 LEE S	THE DALL	97058	0		
H	9246	2N 13E 29 DA 1100	0.195994	AKIYAM		2420 BELMONT	HOOD RIVER	OR	97031	734 LEE S	THE DALL	97058	0		
H	9247	2N 13E 29 DA 1200	0.19061	ELLETT		3815 BROWNS CREEK RD	THE DALLES	OR	97058	731 CHEN	THE DALL	97058	0		
H	9248	2N 13E 29 DA 1300	0.191394	SMITH C		735 CHENOWITH LOOP	THE DALLES	OR	97058	735 CHEN	THE DALL	97058	0		
H	9249	2N 13E 29 DA 1400	9.39399	HOME D	PROPERTY TAX	PO BOX 105842	ATLANTA	GA	30348	3600 W 6T	THE DALL	97058	9		
H	9250	2N 13E 29 DA 1600	0.597639	COLUMB		PO BOX 13042	SALEM	OR	97309	3506 W 6T	THE DALL	97058	1		
H	9251	2N 13E 29 DA 1700	1.647679	METRO	ATTN STREICH	PO BOX 306	HOOD RIVER	OR	97031	3608 W 6T	THE DALL	97058	2		
H	9254	2N 13E 29 DA 200	0.187916	GAST ST	COMBS PATRIC	733 LEE ST	THE DALLES	OR	97058	733 LEE S	THE DALL	97058	0		
H	9255	2N 13E 29 DA 300	0.185375	MEDINA		729 LEE ST	THE DALLES	OR	97058	729 LEE S	THE DALL	97058	0		
H	9256	2N 13E 29 DA 400	1.576962	ROBINS		3800 W 6TH ST	THE DALLES	OR	97058	3800 W 6T	THE DALL	97058	2		
H	9257	2N 13E 29 DA 500	0.098602	ROBINS		3800 W 6TH ST	THE DALLES	OR	97058	0			0		
H	9258	2N 13E 29 DA 600	0.510948	DONNEL		2628 E 14TH ST	THE DALLES	OR	97058	705 CHEN	THE DALL	97058	1		
H	9259	2N 13E 29 DA 700	0.333283	ROBINS		3800 W 6TH ST	THE DALLES	OR	97058	715 CHEN	THE DALL	97058	0		
H	9260	2N 13E 29 DA 800	0.332009	AGUILAR		719 CHENOWITH LOOP RD	THE DALLES	OR	97058	719 CHEN	THE DALL	97058	0		
H	9261	2N 13E 29 DA 900	0.319044	POFF DA		725 CHENOWITH LOOP RD	THE DALLES	OR	97058	725 CHEN	THE DALL	97058	0		
H	9262	2N 13E 29 DB 100	0.189451	HESTER		PO BOX 792	THE DALLES	OR	97058	739 LEE S	THE DALL	97058	0		
H	9263	2N 13E 29 DB 1000	0.191691	KIDNER		741 CHENOWITH LOOP RD	THE DALLES	OR	97058	741 CHEN	THE DALL	97058	0		
H	9264	2N 13E 29 DB 1100	0.190324	MALL DA		1111 E 9TH ST	THE DALLES	OR	97058	747 CHEN	THE DALL	97058	0		
H	9265	2N 13E 29 DB 1200	0.191139	ORNELA		753 CHENOWITH LOOP RD	THE DALLES	OR	97058	753 CHEN	THE DALL	97058	0		
H	9266	2N 13E 29 DB 1300	0.192622	WILLIAM		4109 CHENOWITH RD #E14	THE DALLES	OR	97058	757 CHEN	THE DALL	97058	0		
H	9273	2N 13E 29 DB 200	0.18915	BRUCE		745 LEE ST	THE DALLES	OR	97058	745 LEE S	THE DALL	97058	0		
H	9284	2N 13E 29 DB 300	0.18833	SMITH D		751 LEE ST	THE DALLES	OR	97058	751 LEE S	THE DALL	97058	0		
H	9296	2N 13E 29 DB 400	0.188796	BARNHA		755 LEE ST	THE DALLES	OR	97058	755 LEE S	THE DALL	97058	0		
H	9307	2N 13E 29 DB 500	0.123319	DOMING	ALDANA NOEMI	756 LEE ST	THE DALLES	OR	97058	756 LEE S	THE DALL	97058	0		
H	9318	2N 13E 29 DB 600	0.073862	MARQUI		1812 MT HOOD ST	THE DALLES	OR	97058	3711 W 7T	THE DALL	97058	0		
H	9329	2N 13E 29 DB 700	0.197297	HELGES		752 LEE ST	THE DALLES	OR	97058	752 LEE S	THE DALL	97058	0		
H	9334	2N 13E 29 DB 7400	1.729113	SCOTT C		2846 VICK AVE NW	SALEM	OR	97304	816 CHEN	THE DALL	97058	2		
H	9335	2N 13E 29 DB 7500	1.69516	SHANNO		PO BOX 784	TERREBONNE	OR	97760	802 CHEN	THE DALL	97058	2		
H	9338	2N 13E 29 DB 800	0.196757	CARLSO		13669 GAFFNEY LN APT 3	OREGON CITY	OR	97045	746 LEE S	THE DALL	97058	0		
H	9339	2N 13E 29 DB 900	0.197121	TAYLOR		PO BOX 1253	THE DALLES	OR	97058	740 LEE S	THE DALL	97058	0		
H	9458	2N 13E 29 DD 1700	0.3171	BLOOM		3190 ODELL HWY	HOOD RIVER	OR	97031	3400 W 6T	THE DALL	97058	0		
H	9459	2N 13E 29 DD 1800	0.384972	BLOOM		3190 ODELL HWY	HOOD RIVER	OR	97031	0			0		
H	9460	2N 13E 29 DD 1900	0.750048	COLUMB		PO BOX 13042	SALEM	OR	97309	3504 W 6T	THE DALL	97058	1		
H	9071	2N 13E 29 A 100	3.615	NORTHV	ATTN ENGINEE	3313 W 2ND	THE DALLES	OR	97058	0					
I	8852	2N 13E 20 800	10.854878	STATE C						0			11		
I	8853	2N 13E 20 900	20.28416	NORTHV		3313 W 2ND	THE DALLES	OR	97058	0			19		
I	9071	2N 13E 29 A 100	27.2	NORTHV	ATTN ENGINEE	3313 W 2ND	THE DALLES	OR	97058	0					
I	9067	2N 13E 29 100	22.26	SPEE DE		PO BOX 35	THE DALLES	OR	97058	0					

Attachment B
2030 No-Build
Operational Analysis
Worksheets

Kittelson & Associates, Inc. - Project #9600
Chenoweth IAMP - the City of The Dalles, OR
Year xxxx Total Traffic Conditions, Weekday PM Peak Hour-Scenario 1

Scenario Report

Scenario:	TT Scenario 1
Command:	TT Scenario 1
Volume:	TT Scenario 1
Geometry:	TT
Impact Fee:	Default Impact Fee
Trip Generation:	TT Scenario 1
Trip Distribution:	TT
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

Kittelson & Associates, Inc. - Project #9600
Chenoweth IAMP - the City of The Dalles, OR
Year xxxx Total Traffic Conditions, Weekday PM Peak Hour-Scenario 1

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 6th Street/Hostetler Way	C	21.3	0.000	F	OVRFL	0.000	+ 1.8E+0308
# 2 6th Street/Chenoweth Lp	C	15.3	0.000	F	OVRFL	0.000	+1045.963 D/
# 3 6th Street/Division St	B	12.3	0.000	F	OVRFL	0.000	+1041.087 D/
# 4 US 30/River Rd	B	14.4	0.000	F	426.5	0.000	+412.178 D/V
# 5 I-84 EB Ramp/River Rd	B	10.7	0.000	F	OVRFL	0.000	+6190.096 D/
# 6 I-84 WB Ramp/River Rd	B	14.5	0.000	F	OVRFL	0.000	+ 1.8E+0308
# 7 River Trail/River Rd	A	9.8	0.000	F	OVRFL	0.000	+ 1.6E+0308
# 8 Columbia Rd/River Rd	A	9.3	0.000	D	29.2	0.000	+19.951 D/V
# 9 River Rd/Crates Way	A	9.2	0.000	F	89.6	0.000	+80.452 D/V

Kittelson & Associates, Inc. - Project #9600
Chenoweth IAMP - the City of The Dalles, OR
Year xxxx Total Traffic Conditions, Weekday PM Peak Hour-Scenario 1

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 6th Street/Hostetler Way

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Street Name:	6th Street						Hostetler Way					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 1 0 0 1			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	24	237	25	36	236	8	33	31	59	18	15	45
Growth Adj:	1.00	1.35	1.00	1.00	1.35	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	24	320	25	36	319	8	33	31	59	18	15	45
Added Vol:	111	224	62	36	534	280	94	19	21	558	138	176
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	135	544	87	72	853	288	127	50	80	576	153	221
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	150	605	97	80	948	320	141	56	89	640	170	246
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	150	605	97	80	948	320	141	56	89	640	170	246
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	1268	xxxx	xxxxx	702	xxxx	xxxxx	2269	2109	948	2293	2381	653
Potent Cap.:	545	xxxx	xxxxx	891	xxxx	xxxxx	29	51	318	28	34	467
Move Cap.:	545	xxxx	xxxxx	891	xxxx	xxxxx	0	33	318	0	22	467
Volume/Cap:	0.28	xxxx	xxxx	0.09	xxxx	xxxx	xxxx	1.70	0.28	xxxx	7.82	0.53
Level Of Service Module:												
2Way95thQ:	1.1	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	14.1	xxxx	xxxxx	9.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	B	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	0	xxxxx	xxxx	0	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	9.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			F			F		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #9600
Chenoweth IAMP - the City of The Dalles, OR
Year xxxx Total Traffic Conditions, Weekday PM Peak Hour-Scenario 1

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 6th Street/Chenoweth Lp

Average Delay (sec/veh): 131.8 Worst Case Level Of Service: F[1061.3]

Street Name:	6th Street						Chenoweth Lp					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 1 0 0			0 0 0 1 0			1 0 0 0 1			0 0 0 0 0		
Volume Module:												
Base Vol:	94	134	0	0	221	81	68	0	54	0	0	0
Growth Adj:	1.00	1.35	1.00	1.00	1.35	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	94	181	0	0	299	81	68	0	54	0	0	0
Added Vol:	55	439	0	0	795	46	42	0	55	0	0	0
Pass By:	25	-25	0	0	-35	35	25	0	35	0	0	0
Initial Fut:	174	595	0	0	1059	162	135	0	144	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	193	661	0	0	1176	180	150	0	160	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	193	661	0	0	1176	180	150	0	160	0	0	0
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1356	xxxx	xxxxx	xxxx	xxxx	xxxxx	2314	xxxx	1266	xxxx	xxxx	xxxxx
Potent Cap.:	507	xxxx	xxxxx	xxxx	xxxx	xxxxx	42	xxxx	206	xxxx	xxxx	xxxxx
Move Cap.:	507	xxxx	xxxxx	xxxx	xxxx	xxxxx	29	xxxx	206	xxxx	xxxx	xxxxx
Volume/Cap:	0.38	xxxx	xxxx	xxxx	xxxx	xxxx	5.12	xxxx	0.78	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	1.8	xxxx	xxxxx	xxxx	xxxx	xxxxx	18.2	xxxx	5.4	xxxx	xxxx	xxxxx
Control Del:	16.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2124	xxxx	65.0	xxxxx	xxxx	xxxxx
LOS by Move:	C	*	*	*	*	*	F	*	F	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			1061.3			xxxxxx		
ApproachLOS:	*			*			F			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #3 6th Street/Division St

Average Delay (sec/veh): 95.6 Worst Case Level Of Service: F[1053.4]

Street Name:	6th Street									Division St								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	1	0	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	0	0
Volume Module:																				
Base Vol:	28	171		0		0	266		6		12		0		28		0		0	
Growth Adj:	1.00	1.35		1.00		1.00	1.35		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	28	231		0		0	360		6		12		0		28		0		0	
Added Vol:	44	437		0		0	798		45		49		0		44		0		0	
Pass By:	25	-25		0		0	-35		35		25		0		35		0		0	
Initial Fut:	97	643		0		0	1123		86		86		0		107		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	0.90	0.90		0.90		0.90	0.90		0.90		0.90		0.90		0.90		0.90		0.90	
PHF Volume:	108	715		0		0	1247		96		96		0		119		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	108	715		0		0	1247		96		96		0		119		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4		6.5		6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5		4.0		3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	1343	xxxx	xxxxx	xxxx	xxxx	xxxxx					2225		2225		1295	xxxx	xxxx	xxxxx		
Potent Cap.:	507	xxxx	xxxxx	xxxx	xxxx	xxxxx					47		43		197	xxxx	xxxx	xxxxx		
Move Cap.:	507	xxxx	xxxxx	xxxx	xxxx	xxxxx					39		33		197	xxxx	xxxx	xxxxx		
Volume/Cap:	0.21	xxxx	xxxx	xxxx	xxxx	xxxx					2.46		0.00		0.60	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.8	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx		70	xxxxx		xxxx	xxxx	xxxxx		
Control Del:	14.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
LOS by Move:	B	*	*	*	*	*	*	*	*		*	*	*							
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx		70	xxxxx	xxxx	xxxx	xxxxx							
SharedQueue:	0.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx		21.7	xxxxx	xxxxx	xxxx	xxxxx							
Shrd ConDel:	14.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx		1053	xxxxx	xxxxx	xxxx	xxxxx							
Shared LOS:	B	*	*	*	*	*	*		F	*	*	*	*							
ApproachDel:	xxxxxx			xxxxxx			1053.4				xxxxxx									
ApproachLOS:	*			*			F				*									

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 30/River Rd

Average Delay (sec/veh): 253.9 Worst Case Level Of Service: F[426.5]

Street Name:	US 30									River Rd								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1
Volume Module:																				
Base Vol:	0	51		200		10	42		0		0		0		291		0		12	
Growth Adj:	1.35	1.35		1.35		1.35	1.35		1.35		1.35		1.35		1.35		1.35		1.35	
Initial Bse:	0	69		270		14	57		0		0		0		393		0		16	
Added Vol:	0	28		457		30	10		0		0		0		832		0		130	
PasserByVol:	0	0		0		0	0		0		0		0		0		0		0	
Initial Fut:	0	97		727		44	67		0		0		0		1225		0		146	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	0.91	0.91		0.91		0.91	0.91		0.91		0.91		0.91		0.91		0.91		0.91	
PHF Volume:	0	107		799		48	73		0		0		0		1347		0		161	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	0	107		799		48	73		0		0		0		1347		0		161	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx				6.5	xxxx			6.3	
FollowUpTim:	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx				3.6	xxxx			3.4	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx			906	xxxx	xxxxx		xxxx	xxxxx				276	xxxx			107	
Potent Cap.:	xxxx	xxxx	xxxxx			751	xxxx	xxxxx		xxxx	xxxxx				704	xxxx			934	
Move Cap.:	xxxx	xxxx	xxxxx			751	xxxx	xxxxx		xxxx	xxxxx				669	xxxx			934	
Volume/Cap:	xxxx	xxxx	xxxx			0.06	xxxx	xxxx		xxxx	xxxx				2.01	xxxx			0.17	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx		xxxx	xxxxx				90.3	xxxx			0.6	
Control Del:	xxxxx	xxxx	xxxxx			10.1	xxxx	xxxxx		xxxxx	xxxxx				476.3	xxxx			9.7	
LOS by Move:	*	*	*			B	*	*		*	*	*			F	*			A	
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		xxxx	xxxxx				xxxx	xxxx	xxxxx			
SharedQueue:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		xxxxx	xxxxx				xxxxx	xxxx	xxxxx			
Shrd ConDel:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		xxxxx	xxxxx				xxxxx	xxxx	xxxxx			
Shared LOS:	*	*	*			*	*	*		*	*	*			*	*	*			
ApproachDel:	xxxxxx					xxxxxx				xxxxxx					426.5					
ApproachLOS:	*					*				*					F					

Note: Queue reported is the number of cars per lane.

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Intersection #5 I-84 EB Ramp/River Rd

Average Delay (sec/veh): 1097.9 Worst Case Level Of Service: F[6200.8]

Street Name:	I-84 EB Ramp								River Rd							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0
Volume Module:																				
Base Vol:	0	0	0	17	1	162	0	149	61	27	141	0								
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.35	1.00	1.00	1.35	1.00	1.00	1.00								
Initial Bse:	0	0	0	17	1	219	0	149	82	27	141	0								
Added Vol:	0	0	0	184	0	69	0	431	57	505	894	0								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	0	0	0	201	1	288	0	580	139	532	1035	0								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94								
PHF Volume:	0	0	0	214	1	306	0	617	148	566	1101	0								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	0	0	0	214	1	306	0	617	148	566	1101	0								
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx	6.5	6.6	6.3	xxxxx	xxxx	xxxxx	4.2	xxxx	xxxxx								
FollowUpTim:	xxxxx	xxxx	xxxxx	3.6	4.1	3.4	xxxxx	xxxx	xxxxx	2.3	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx	2924	2998	1101	xxxx	xxxx	xxxxx	765	xxxx	xxxxx								
Potent Cap.:	xxxx	xxxx	xxxxx	15	12	245	xxxx	xxxx	xxxxx	826	xxxx	xxxxx								
Move Cap.:	xxxx	xxxx	xxxxx	7	4	245	xxxx	xxxx	xxxxx	826	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	xxxx	31.22	0.27	1.25	xxxx	xxxx	xxxx	0.69	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	15.2	xxxx	xxxx	xxxxx	5.6	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	183.1	xxxxx	xxxx	xxxxx	18.3	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	F	*	*	*	C	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	7	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	28.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	14781	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			6200.8			xxxxxx			xxxxxx										
ApproachLOS:	*			F			*			*										

Note: Queue reported is the number of cars per lane.

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2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 I-84 WB Ramp/River Rd

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Street Name:	I-84 WB Ramp								River Rd							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0	1!	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1
Volume Module:																				
Base Vol:	53	2	12	0	0	0	117	49	0	0	115	17								
Growth Adj:	1.35	1.00	1.00	1.00	1.00	1.00	1.35	1.00	1.00	1.00	1.00	1.00								
Initial Bse:	72	2	12	0	0	0	158	49	0	0	115	17								
Added Vol:	56	0	206	0	0	0	190	425	0	0	1343	870								
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0								
Initial Fut:	128	2	218	0	0	0	348	474	0	0	1458	887								
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90								
PHF Volume:	142	2	242	0	0	0	387	527	0	0	1620	986								
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0								
FinalVolume:	142	2	242	0	0	0	387	527	0	0	1620	986								
Critical Gap Module:																				
Critical Gp:	6.5	6.6	6.3	xxxxx	xxxx	xxxxx	4.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
FollowUpTim:	3.6	4.1	3.4	xxxxx	xxxx	xxxxx	2.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	3413	3906	527	xxxx	xxxx	xxxxx	2606	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Potent Cap.:	8	3	538	xxxx	xxxx	xxxxx	146	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Move Cap.:	0	0	538	xxxx	xxxx	xxxxx	146	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Volume/Cap:	xxxx	xxxx	0.45	xxxx	xxxx	xxxx	2.65	xxxx	xxxx	xxxx	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	34.3	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	808.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	*	F	*	*	*	*	*								
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	0	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx										
ApproachLOS:	F			*			*			*										

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 River Trail/River Rd

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Street Name:	River Trail							River Rd							
Approach:	North Bound				South Bound			East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled				
Rights:	Include					Include					Include				
Lanes:	1	0	0	1	0	0	0	1!	0	0	1	0	1	0	1
Volume Module:															
Base Vol:	0	0	0	13	0	17	18	43	0	0	115	27			
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Initial Bse:	0	0	0	13	0	17	18	43	0	0	115	27			
Added Vol:	499	0	48	471	0	1049	145	183	303	31	665	65			
Pass-By:	155	10	15	-15	105	-90	-10	-25	35	0	-65	0			
Initial Fut:	654	10	63	469	105	976	153	201	338	31	715	92			
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
PHF Adj:	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
PHF Volume:	769	12	74	552	124	1148	180	236	398	36	841	108			
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0			
FinalVolume:	769	12	74	552	124	1148	180	236	398	36	841	108			
Critical Gap Module:															
Critical Gp:	7.1	6.5	6.2	7.2	6.6	6.3	4.4	xxxx	xxxxx	4.3	xxxx	xxxxx			
FollowUpTim:	3.5	4.0	3.3	3.6	4.1	3.4	2.5	xxxx	xxxxx	2.4	xxxx	xxxxx			
Capacity Module:															
Cnflict Vol:	2201	1619	236	1806	1962	895	949	xxxx	xxxxx	634	xxxx	xxxxx			
Potent Cap.:	33	104	807	57	59	324	625	xxxx	xxxxx	877	xxxx	xxxxx			
Move Cap.:	0	71	807	35	40	324	625	xxxx	xxxxx	877	xxxx	xxxxx			
Volume/Cap:	xxxx	0.17	0.09	15.97	3.06	3.54	0.29	xxxx	xxxx	0.04	xxxx	xxxx			
Level Of Service Module:															
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1.2	xxxx	xxxxx	0.1	xxxx	xxxxx			
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	13.1	xxxx	xxxxx	9.3	xxxx	xxxxx			
LOS by Move:	*	*	*	*	*	*	B	*	*	A	*	*			
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT					
Shared Cap.:	xxxx	xxxx	334	xxxx	81	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			
SharedQueue:	xxxxx	xxxx	1.0	xxxxx	221	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			
Shrd ConDel:	xxxxx	xxxx	19.5	xxxxx	9806	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			
Shared LOS:	*	*	C	*	F	*	*	*	*	*	*	*			
ApproachDel:	xxxxxx			9806.0			xxxxxx			xxxxxx					
ApproachLOS:	F			F			*			*					

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Columbia Rd/River Rd

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: D[29.2]

Street Name:	Columbia Rd							River Rd							
Approach:	North Bound				South Bound			East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled				
Rights:	Include					Include					Include				
Lanes:	0	0	0	0	0	0	0	1!	0	0	0	1	0	0	0
Volume Module:															
Base Vol:	0	0	0	10	0	37	8	48	0	0	105	3			
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Initial Bse:	0	0	0	10	0	37	8	48	0	0	105	3			
Added Vol:	0	0	0	0	0	0	0	702	0	0	760	0			
Pass By:	0	0	0	0	0	0	0	-25	0	0	-65	0			
Initial Fut:	0	0	0	10	0	37	8	725	0	0	800	3			
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
PHF Adj:	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
PHF Volume:	0	0	0	12	0	44	9	853	0	0	941	4			
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0			
FinalVolume:	0	0	0	12	0	44	9	853	0	0	941	4			
Critical Gap Module:															
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	4.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx			
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	2.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx			
Capacity Module:															
Cnflict Vol:	xxxx	xxxx	xxxxx	1815	1815	943	945	xxxx	xxxxx	xxxx	xxxx	xxxxx			
Potent Cap.:	xxxx	xxxx	xxxxx	87	79	321	669	xxxx	xxxxx	xxxx	xxxx	xxxxx			
Move Cap.:	xxxx	xxxx	xxxxx	86	78	321	669	xxxx	xxxxx	xxxx	xxxx	xxxxx			
Volume/Cap:	xxxx	xxxx	xxxx	0.14	0.00	0.14	0.01	xxxx	xxxx	xxxx	xxxx	xxxx			
Level Of Service Module:															
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx			
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	10.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx			
LOS by Move:	*	*	*	*	*	*	B	*	*	*	*	*			
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT					
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	203	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	1.1	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx			
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	29.2	xxxxx	10.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx			
Shared LOS:	*	*	*	*	D	*	B	*	*	*	*	*			
ApproachDel:	xxxxxx			29.2			xxxxxx			xxxxxx					
ApproachLOS:	*			D			*			*					

Note: Queue reported is the number of cars per lane.

```
TT Scenario 1              Sun Mar 22, 2009 20:05:59               Page 11-1
--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #9600
                  Chenoweth IAMP - the City of The Dalles, OR
     Year xxxx Total Traffic Conditions,  Weekday PM Peak Hour-Scenario 1
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #9 River Rd/Crates Way
********************************************************************************
Average Delay (sec/veh):      9.4       Worst Case Level Of Service: F[ 89.6]
********************************************************************************
Street Name:             River Rd                        Crates Way
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  1  0    0  1  0  0  0    0  0  0  0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0   90     2    14   44     0     0    0     0     6    0    18
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0   90     2    14   44     0     0    0     0     6    0    18
Added Vol:      0  606     3    89  887     0     0    0     0     8    0   158
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  696     5   103  931     0     0    0     0    14    0   176
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.85 0.85  0.85  0.85 0.85  0.85  0.85 0.85  0.85  0.85 0.85  0.85
PHF Volume:     0  819     6   121 1095     0     0    0     0    16    0   207
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0  819     6   121 1095     0     0    0     0    16    0   207
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   4.3 xxxx xxxxx xxxxx xxxx xxxxx   6.5  6.6   6.3
FollowUpTim:xxxxx xxxx xxxxx   2.4 xxxx xxxxx xxxxx xxxx xxxxx   3.6  4.1   3.4
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx   825 xxxx xxxxx  xxxx xxxx xxxxx  2159 2159   822
Potent Cap.: xxxx xxxx xxxxx   744 xxxx xxxxx  xxxx xxxx xxxxx    50   46   365
Move Cap.:   xxxx xxxx xxxxx   744 xxxx xxxxx  xxxx xxxx xxxxx    43   38   365
Volume/Cap:  xxxx xxxx  xxxx  0.16 xxxx  xxxx  xxxx xxxx  xxxx  0.38 0.00  0.57
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx   0.6 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx  10.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     B    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  236 xxxxx
SharedQueue:xxxxx xxxx xxxxx   0.6 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  8.4 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx  10.8 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 89.6 xxxxx
Shared LOS:     *    *     *     B    *     *     *    *     *     *    F     *
ApproachDel:    xxxxxx           xxxxxx           xxxxxx             89.6
ApproachLOS:         *                *                *               F
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
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Scenario 2              Sun Mar 22, 2009 20:05:25                Page 1-1
--------------------------------------------------------------------------------
                 Kittelson & Associates, Inc. - Project #9600
                  Chenoweth IAMP - the City of The Dalles, OR
    Year xxxx Total Traffic Conditions,  Weekday PM Peak Hour - Scenario 2
--------------------------------------------------------------------------------
                                Scenario Report
Scenario:             TT Scenario 2

Command:              TT Scenario 2
Volume:               TT Scenario 2
Geometry:             TT
Impact Fee:           Default Impact Fee
Trip Generation:      TT Scenario 2
Trip Distribution:    TT
Paths:                Default Path
Routes:               Default Route
Configuration:        Default Configuration
```

Kittelson & Associates, Inc. - Project #9600
Chenoweth IAMP - the City of The Dalles, OR
Year xxxx Total Traffic Conditions, Weekday PM Peak Hour - Scenario 2

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Veh Del/	Base V/C	Future LOS	Future Veh Del/	Future V/C	Change in
# 1 6th Street/Hostetler Way	C	22.9	0.000	F	OVRFL	0.000	+ 1.8E+0308
# 2 6th Street/Chenoweth Lp	C	15.5	0.000	F	OVRFL	0.000	+1246.194 D/
# 3 6th Street/Division St	B	12.5	0.000	F	OVRFL	0.000	+1315.922 D/
# 4 US 30/River Rd	B	14.4	0.000	F	449.2	0.000	+434.898 D/V
# 5 I-84 EB Ramp/River Rd	B	10.7	0.000	F	OVRFL	0.000	+15803.063 D
# 6 I-84 WB Ramp/River Rd	B	14.7	0.000	F	OVRFL	0.000	+ 1.8E+0308
# 7 River Trail/River Rd	A	9.8	0.000	F	OVRFL	0.000	+ 1.5E+0308
# 8 Columbia Rd/River Rd	A	9.5	0.000	E	39.0	0.000	+29.571 D/V
# 9 River Rd/Crates Way	A	9.4	0.000	F	828.8	0.000	+819.402 D/V

Kittelson & Associates, Inc. - Project #9600
Chenoweth IAMP - the City of The Dalles, OR
Year xxxx Total Traffic Conditions, Weekday PM Peak Hour - Scenario 2

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 6th Street/Hostetler Way

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Street Name:	6th Street						Hostetler Way					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 1	0 0	1	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	24	237	25	36	236	8	33	31	59	18	15	45
Growth Adj:	1.00	1.35	1.00	1.00	1.35	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	24	320	25	36	319	8	33	31	59	18	15	45
Added Vol:	111	281	62	36	516	269	130	19	21	558	138	176
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	135	601	87	72	835	277	163	50	80	576	153	221
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
PHF Volume:	155	691	100	83	960	318	187	57	92	662	176	254
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	155	691	100	83	960	318	187	57	92	662	176	254
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	1278	xxxx	xxxxx	791	xxxx	xxxxx	2392	2227	960	2411	2495	741
Potent Cap.:	540	xxxx	xxxxx	825	xxxx	xxxxx	24	43	313	23	29	416
Move Cap.:	540	xxxx	xxxxx	825	xxxx	xxxxx	0	27	313	0	18	416
Volume/Cap:	0.29	xxxx	xxxx	0.10	xxxx	xxxx	xxxx	2.16	0.29	xxxx	9.90	0.61
Level Of Service Module:												
2Way95thQ:	1.2	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	14.3	xxxx	xxxxx	9.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	B	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	0	xxxxx	xxxx	0	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	9.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			F			F		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #9600
Chenoweth IAMP - the City of The Dalles, OR
Year xxxx Total Traffic Conditions, Weekday PM Peak Hour - Scenario 2

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 6th Street/Chenoweth Lp

Average Delay (sec/veh): 152.1 Worst Case Level Of Service: F[1261.7]

Street Name:	6th Street								Chenoweth Lp							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	1	0	1	0 0	0	0	0	1 0	1	0	0	0 1	0	0	0	0 0
Volume Module:																
Base Vol:	94	134		0	0	221		81	68		0	54	0		0	0
Growth Adj:	1.00	1.35		1.00	1.00	1.35		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Initial Bse:	94	181		0	0	299		81	68		0	54	0		0	0
Added Vol:	55	532		0	0	766		46	42		0	55	0		0	0
Pass By:	25	-25		0	0	-35		35	25		0	35	0		0	0
Initial Fut:	174	688		0	0	1030		162	135		0	144	0		0	0
User Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Adj:	0.89	0.89		0.89	0.89	0.89		0.89	0.89		0.89	0.89	0.89		0.89	0.89
PHF Volume:	196	773		0	0	1157		182	152		0	162	0		0	0
Reduct Vol:	0	0		0	0	0		0	0		0	0	0		0	0
FinalVolume:	196	773		0	0	1157		182	152		0	162	0		0	0
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.4	xxxx		6.2	xxxxx	xxxx		xxxxx	
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	xxxx		3.3	xxxxx	xxxx		xxxxx	
Capacity Module:																
Cnflict Vol:	1339	xxxx	xxxxx	xxxx	xxxx	xxxxx		2412	xxxx		1248	xxxx	xxxx		xxxxx	
Potent Cap.:	515	xxxx	xxxxx	xxxx	xxxx	xxxxx		36	xxxx		211	xxxx	xxxx		xxxxx	
Move Cap.:	515	xxxx	xxxxx	xxxx	xxxx	xxxxx		25	xxxx		211	xxxx	xxxx		xxxxx	
Volume/Cap:	0.38	xxxx	xxxx	xxxx	xxxx	xxxx		5.97	xxxx		0.77	xxxx	xxxx		xxxx	
Level Of Service Module:																
2Way95thQ:	1.8	xxxx	xxxxx	xxxx	xxxx	xxxxx		18.8	xxxx		5.3	xxxx	xxxx		xxxxx	
Control Del:	16.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		2541	xxxx		62.3	xxxxx	xxxx		xxxxx	
LOS by Move:	C	*	*	*	*	*		F	*		F	*	*		*	
Movement:	LT - LTR - RT				LT - LTR - RT				LT - LTR - RT				LT - LTR - RT			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*	*	*	*		*	*	*		*	*	*		
ApproachDel:	xxxxxx			xxxxxx				1261.7				xxxxxx				
ApproachLOS:	*			*				F				*				

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #9600
Chenoweth IAMP - the City of The Dalles, OR
Year xxxx Total Traffic Conditions, Weekday PM Peak Hour - Scenario 2

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #3 6th Street/Division St

Average Delay (sec/veh): 116.8 Worst Case Level Of Service: F[1328.4]

Street Name:	6th Street								Division St							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Lanes:	0	1	0	0 0	0	0	0	1 0	0	0	1!	0 0	0	0	0	0 0
Volume Module:																
Base Vol:	28	171		0	0	266		6	12		0	28	0		0	0
Growth Adj:	1.00	1.35		1.00	1.00	1.35		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Initial Bse:	28	231		0	0	360		6	12		0	28	0		0	0
Added Vol:	44	530		0	0	769		45	49		0	44	0		0	0
Pass By:	25	-25		0	0	-35		35	25		0	35	0		0	0
Initial Fut:	97	736		0	0	1094		86	86		0	107	0		0	0
User Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
PHF Adj:	0.88	0.88		0.88	0.88	0.88		0.88	0.88		0.88	0.88	0.88		0.88	0.88
PHF Volume:	110	837		0	0	1243		98	98		0	122	0		0	0
Reduct Vol:	0	0		0	0	0		0	0		0	0	0		0	0
FinalVolume:	110	837		0	0	1243		98	98		0	122	0		0	0
Critical Gap Module:																
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		6.4	6.5		6.2	xxxxx	xxxx		xxxxx	
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5	4.0		3.3	xxxxx	xxxx		xxxxx	
Capacity Module:																
Cnflict Vol:	1340	xxxx	xxxxx	xxxx	xxxx	xxxxx		2349	2349		1292	xxxx	xxxx		xxxxx	
Potent Cap.:	508	xxxx	xxxxx	xxxx	xxxx	xxxxx		39	36		198	xxxx	xxxx		xxxxx	
Move Cap.:	508	xxxx	xxxxx	xxxx	xxxx	xxxxx		32	27		198	xxxx	xxxx		xxxxx	
Volume/Cap:	0.22	xxxx	xxxx	xxxx	xxxx	xxxx		3.02	0.00		0.61	xxxx	xxxx		xxxx	
Level Of Service Module:																
2Way95thQ:	0.8	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx		xxxxx	
Control Del:	14.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx		xxxxx	
LOS by Move:	B	*	*	*	*	*		*	*	*		*	*		*	
Movement:	LT - LTR - RT				LT - LTR - RT				LT - LTR - RT				LT - LTR - RT			
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	60	xxxxx		xxxx	xxxx	xxxxx		
SharedQueue:	0.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	23.4	xxxxx		xxxxx	xxxx	xxxxx		
Shrd ConDel:	14.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	1328	xxxxx		xxxxx	xxxx	xxxxx		
Shared LOS:	B	*	*	*	*	*		*	F	*		*	*	*		
ApproachDel:	xxxxxx			xxxxxx				1328.4				xxxxxx				
ApproachLOS:	*			*				F				*				

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #9600
Chenoweth IAMP - the City of The Dalles, OR
Year xxxx Total Traffic Conditions, Weekday PM Peak Hour - Scenario 2

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 US 30/River Rd

Average Delay (sec/veh): 253.2 Worst Case Level Of Service: F[449.2]

Street Name:	US 30									River Rd		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1 0	1	1 0	1 0	0	0 0	0 0	0	1 0	0 0	1
Volume Module:												
Base Vol:	0	51	200	10	42	0	0	0	0	291	0	12
Growth Adj:	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
Initial Bse:	0	69	270	14	57	0	0	0	0	393	0	16
Added Vol:	0	28	551	41	10	0	0	0	0	803	0	127
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	97	821	55	67	0	0	0	0	1196	0	143
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	0	107	903	60	73	0	0	0	0	1315	0	157
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	107	903	60	73	0	0	0	0	1315	0	157
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.5	xxxx	6.3
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.6	xxxx	3.4
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	1009	xxxx	xxxxx	xxxx	xxxx	xxxxx	300	xxxx	107
Potent Cap.:	xxxx	xxxx	xxxxx	687	xxxx	xxxxx	xxxx	xxxx	xxxxx	681	xxxx	934
Move Cap.:	xxxx	xxxx	xxxxx	687	xxxx	xxxxx	xxxx	xxxx	xxxxx	636	xxxx	934
Volume/Cap:	xxxx	xxxx	xxxx	0.09	xxxx	xxxx	xxxx	xxxx	xxxx	2.07	xxxx	0.17
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx	90.3	xxxx	0.6
Control Del:	xxxxx	xxxx	xxxxx	10.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	501.9	xxxx	9.6
LOS by Move:	*	*	*	B	*	*	*	*	*	F	*	A
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			449.2		
ApproachLOS:	*			*			*			F		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #9600
Chenoweth IAMP - the City of The Dalles, OR
Year xxxx Total Traffic Conditions, Weekday PM Peak Hour - Scenario 2

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 I-84 EB Ramp/River Rd

Average Delay (sec/veh): 3009.6 Worst Case Level Of Service: F[15813.8]

Street Name:	I-84 EB Ramp									River Rd		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0 0	0	0 1	0 0	1	0 0	0 1	0	1 0	1 0	0
Volume Module:												
Base Vol:	0	0	0	17	0	162	0	149	61	27	141	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.35	1.00	1.00	1.35	1.00	1.00	1.00
Initial Bse:	0	0	0	17	0	219	0	149	82	27	141	0
Added Vol:	0	0	0	255	0	69	0	534	57	536	861	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	272	0	288	0	683	139	563	1002	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	0	0	0	289	0	306	0	727	148	599	1066	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	289	0	306	0	727	148	599	1066	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.5	6.6	6.3	xxxxx	xxxx	xxxxx	4.2	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.6	4.1	3.4	xxxxx	xxxx	xxxxx	2.3	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	3065	3139	1066	xxxx	xxxx	xxxxx	875	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	12	10	257	xxxx	xxxx	xxxxx	751	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	4	2	257	xxxx	xxxx	xxxxx	751	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	69.17	0.00	1.19	xxxx	xxxx	xxxx	0.80	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	14.2	xxxx	xxxx	xxxxx	8.3	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	159.1	xxxxx	xxxx	xxxxx	25.9	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	F	*	*	*	D	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	4	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	38.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	32391	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	F	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			F			*			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #9600
Chenoweth IAMP - the City of The Dalles, OR
Year xxxx Total Traffic Conditions, Weekday PM Peak Hour - Scenario 2

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 I-84 WB Ramp/River Rd

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Street Name:	I-84 WB Ramp						River Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 0	0 0	0	1 0	1 0	0	0 0	1 0	1
Volume Module:												
Base Vol:	53	2	12	0	0	0	117	49	0	0	115	17
Growth Adj:	1.35	1.00	1.00	1.00	1.00	1.00	1.35	1.00	1.00	1.00	1.00	1.00
Initial Bse:	72	2	12	0	0	0	158	49	0	0	115	17
Added Vol:	56	0	277	0	0	0	190	600	0	0	1342	847
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	128	2	289	0	0	0	348	649	0	0	1457	864
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	145	2	328	0	0	0	396	738	0	0	1656	982
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	145	2	328	0	0	0	396	738	0	0	1656	982
Critical Gap Module:												
Critical Gp:	6.5	6.6	6.3	xxxxx	xxxx	xxxxx	4.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.6	4.1	3.4	xxxxx	xxxx	xxxxx	2.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	3675	4166	738	xxxx	xxxx	xxxxx	2638	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	5	2	407	xxxx	xxxx	xxxxx	142	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	0	0	407	xxxx	xxxx	xxxxx	142	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	0.81	xxxx	xxxx	xxxx	2.79	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	35.9	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	873.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	F	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	0	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	F			*			*			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #9600
Chenoweth IAMP - the City of The Dalles, OR
Year xxxx Total Traffic Conditions, Weekday PM Peak Hour - Scenario 2

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #7 River Trail/River Rd

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Street Name:	River Trail						River Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0 1	0	0 0	1! 0	0	1 0	1 0	1	1 0	0 1	0
Volume Module:												
Base Vol:	0	0	0	13	0	17	18	43	0	0	115	27
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	13	0	17	18	43	0	0	115	27
Added Vol:	546	0	63	471	0	1049	145	186	546	63	593	65
PasserByVol:	185	15	20	-45	150	-105	-15	-20	35	0	-70	-10
Initial Fut:	731	15	83	439	150	961	148	209	581	63	638	82
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
PHF Volume:	870	18	99	523	179	1144	176	249	692	75	760	98
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	870	18	99	523	179	1144	176	249	692	75	760	98
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.2	6.6	6.3	4.4	xxxx	xxxxx	4.3	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.6	4.1	3.4	2.5	xxxx	xxxxx	2.4	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	2221	1608	249	1964	2251	808	857	xxxx	xxxxx	940	xxxx	xxxxx
Potent Cap.:	31	106	795	44	39	364	680	xxxx	xxxxx	668	xxxx	xxxxx
Move Cap.:	0	70	795	23	25	364	680	xxxx	xxxxx	668	xxxx	xxxxx
Volume/Cap:	xxxx	0.26	0.12	22.61	7.04	3.14	0.26	xxxx	xxxx	0.11	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1.0	xxxx	xxxxx	0.4	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	12.1	xxxx	xxxxx	11.1	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	B	*	*	B	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	306	xxxx	56	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	1.7	xxxxx	227	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	23.8	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	C	*	F	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	F			F			*			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #9600
Chenoweth IAMP - the City of The Dalles, OR
Year xxxx Total Traffic Conditions, Weekday PM Peak Hour - Scenario 2

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 Columbia Rd/River Rd

Average Delay (sec/veh): 1.3 Worst Case Level Of Service: E[39.0]

Street Name:	Columbia Rd						River Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0 0	0	0 0	1! 0	0	0 1	0 0	0	0 0	0 1	0
Volume Module:												
Base Vol:	0	0	0	10	0	37	8	48	0	0	105	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	10	0	37	8	48	0	0	105	3
Added Vol:	0	0	0	0	0	0	0	720	0	0	722	0
PasserByVol:	0	0	0	0	0	0	0	-45	0	0	-80	0
Initial Fut:	0	0	0	10	0	37	8	723	0	0	747	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
PHF Volume:	0	0	0	14	0	50	11	977	0	0	1009	4
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	14	0	50	11	977	0	0	1009	4
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	4.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	2.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	2010	2010	1011	1014	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	66	60	293	629	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	65	59	293	629	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.21	0.00	0.17	0.02	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	10.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	B	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	168	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	1.6	xxxxx	0.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	39.0	xxxxx	10.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	E	*	B	*	*	*	*	*
ApproachDel:	xxxxxx			39.0			xxxxxx			xxxxxx		
ApproachLOS:	*			E			*			*		

Note: Queue reported is the number of cars per lane.

Kittelson & Associates, Inc. - Project #9600
Chenoweth IAMP - the City of The Dalles, OR
Year xxxx Total Traffic Conditions, Weekday PM Peak Hour - Scenario 2

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 River Rd/Crates Way

Average Delay (sec/veh): 90.8 Worst Case Level Of Service: F[828.8]

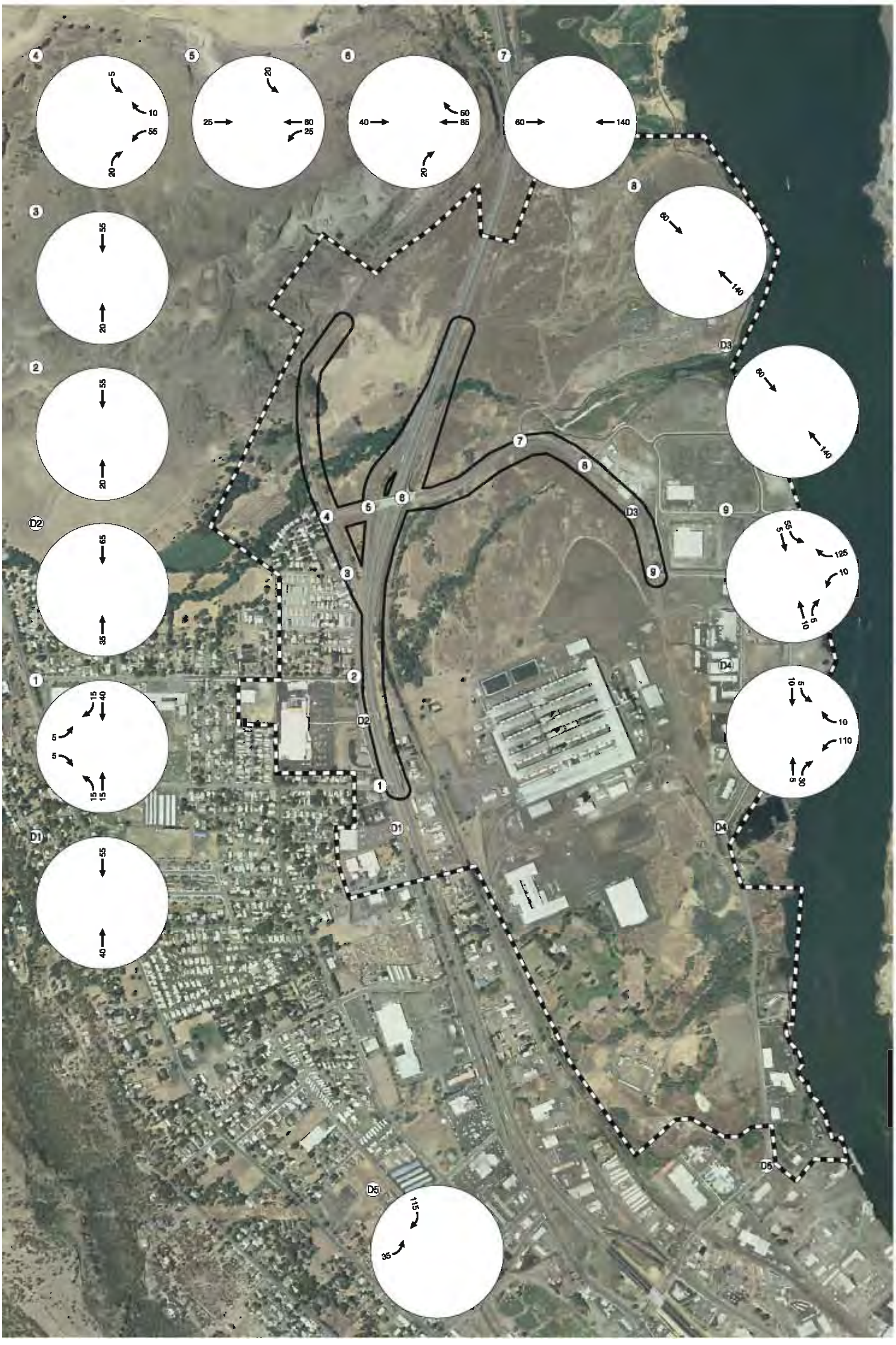
Street Name:	River Rd						Crates Way					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0 1	0	0 1	0 0	0	0 0	0 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	0	90	2	14	44	0	0	0	0	6	0	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	90	2	14	44	0	0	0	0	6	0	18
Added Vol:	0	706	3	110	774	0	0	0	0	8	0	180
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	796	5	124	818	0	0	0	0	14	0	198
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
PHF Volume:	0	1171	7	182	1203	0	0	0	0	21	0	291
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	1171	7	182	1203	0	0	0	0	21	0	291
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.5	6.6	6.3
FollowUpTim:	xxxxx	xxxx	xxxxx	2.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.6	4.1	3.4
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	1178	xxxx	xxxxx	xxxx	xxxx	xxxxx	2742	2742	1174
Potent Cap.:	xxxx	xxxx	xxxxx	543	xxxx	xxxxx	xxxx	xxxx	xxxxx	21	19	227
Move Cap.:	xxxx	xxxx	xxxxx	543	xxxx	xxxxx	xxxx	xxxx	xxxxx	15	12	227
Volume/Cap:	xxxx	xxxx	xxxx	0.34	xxxx	xxxx	xxxx	xxxx	xxxx	1.38	0.00	1.28
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	1.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	15.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	117	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	1.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	28.4	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	15.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	829	xxxxx
Shared LOS:	*	*	*	B	*	*	*	*	*	*	F	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			828.8		
ApproachLOS:	*			*			*			F		

Note: Queue reported is the number of cars per lane.

Attachment C
Net New Trip Generation
by Sub-Area

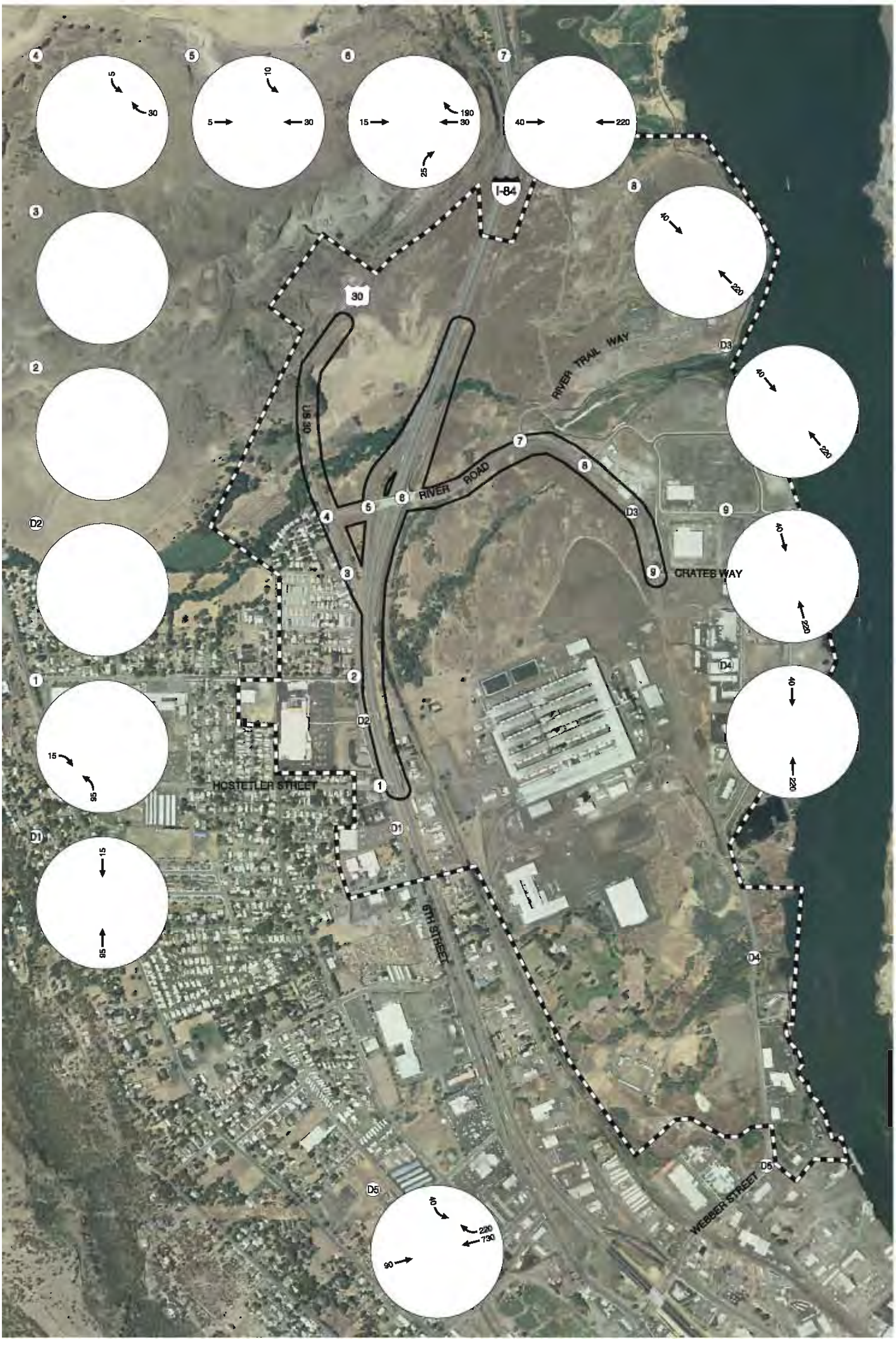
YEAR 2030 TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
NET NEW TRIPS, SUB-AREA "A"
THE DALLES, OREGON

FIGURE **C-1**



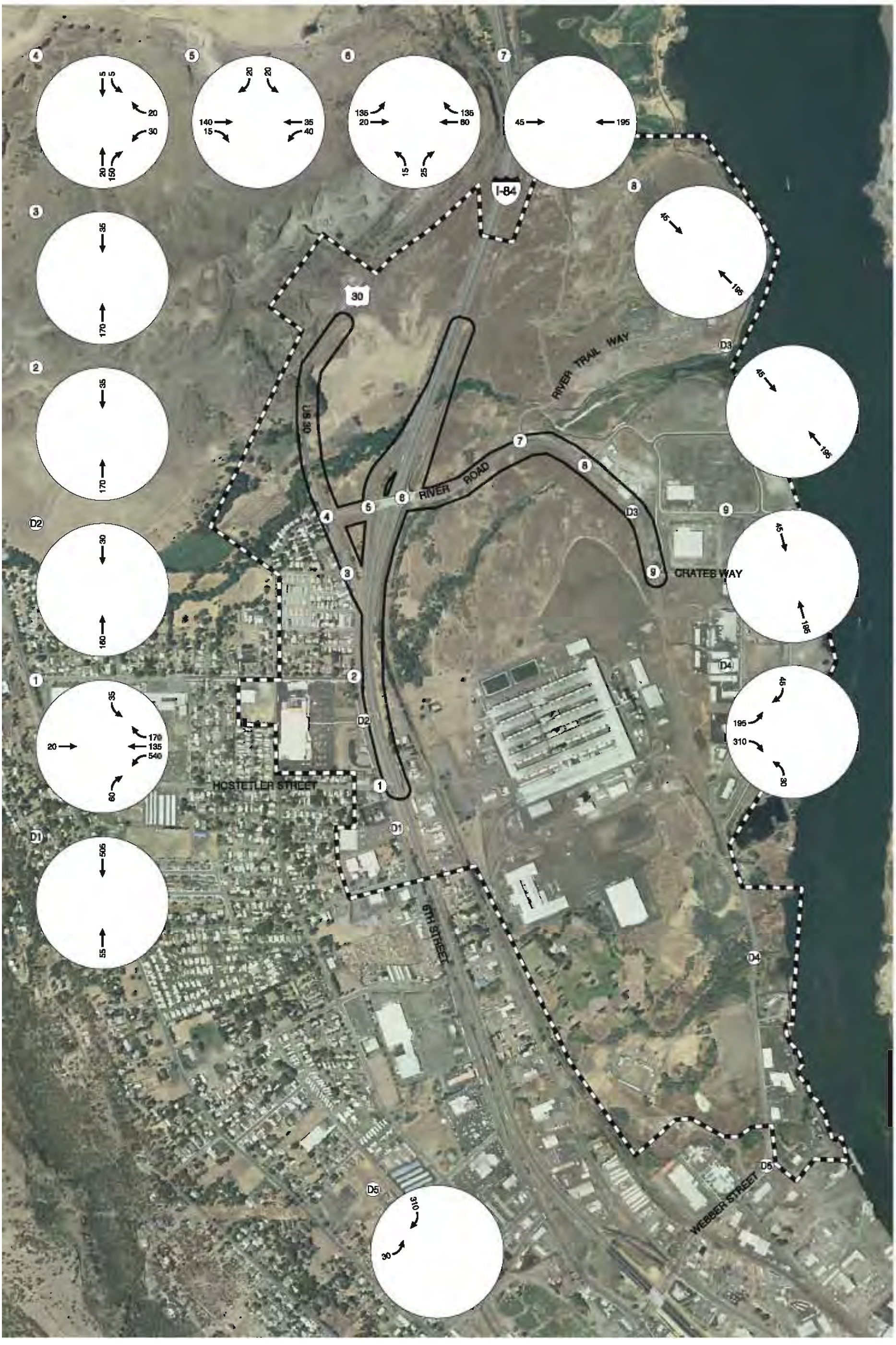
YEAR 2030 TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
NET NEW TRIPS, SUB-AREA "B"
THE DALLES, OREGON

FIGURE C-2



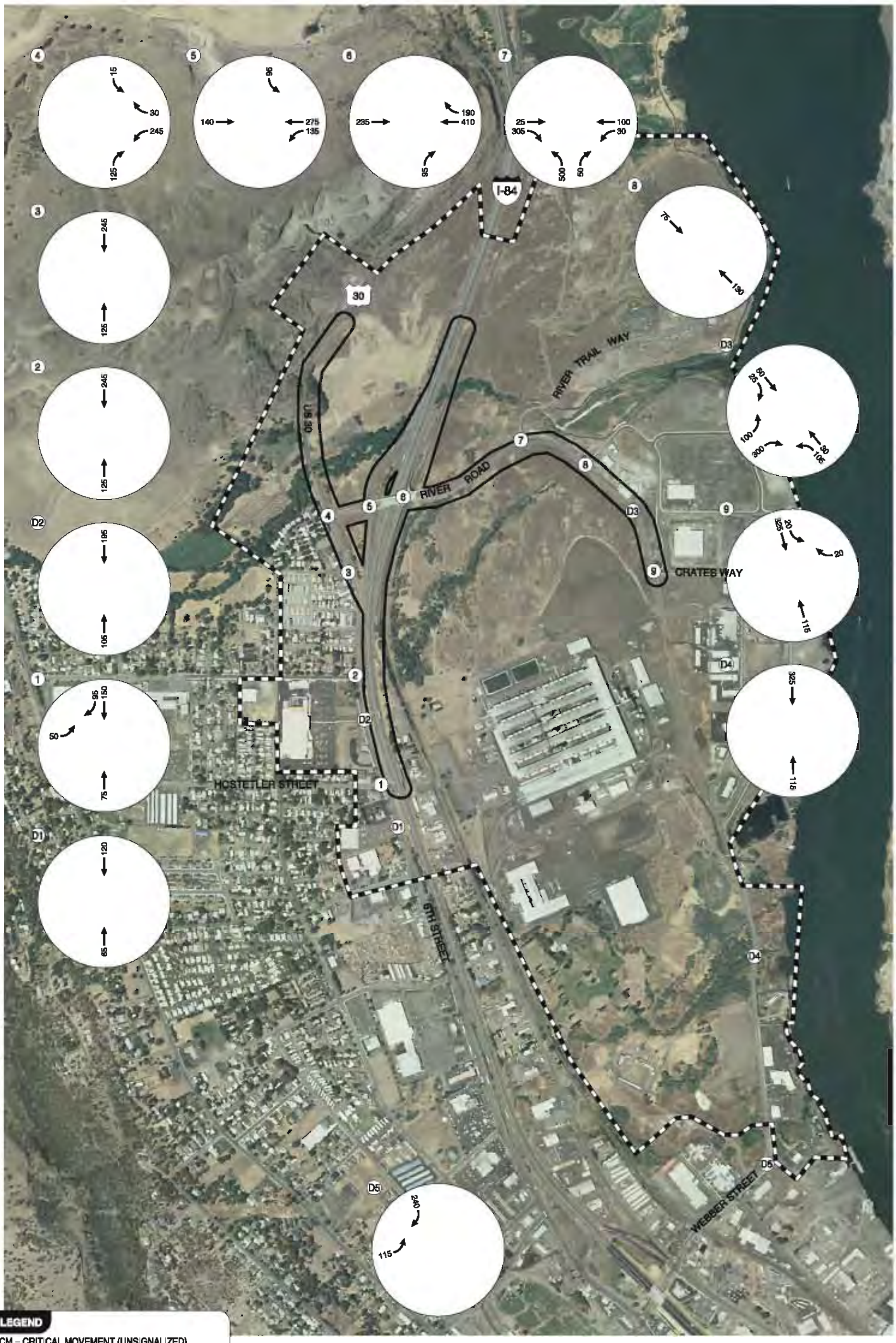
YEAR 2030 TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
NET NEW TRIPS, SUB-AREA "C"
THE DALLES, OREGON

FIGURE **C-3**



YEAR 2030 TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
NET NEW TRIPS, SUB-AREA "D"
THE DALLES, OREGON

FIGURE **C-4**



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

YEAR 2030 TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
NET NEW TRIPS, SUB-AREA "E", SCENARIO #1
THE DALLES, OREGON

FIGURE **C-5**

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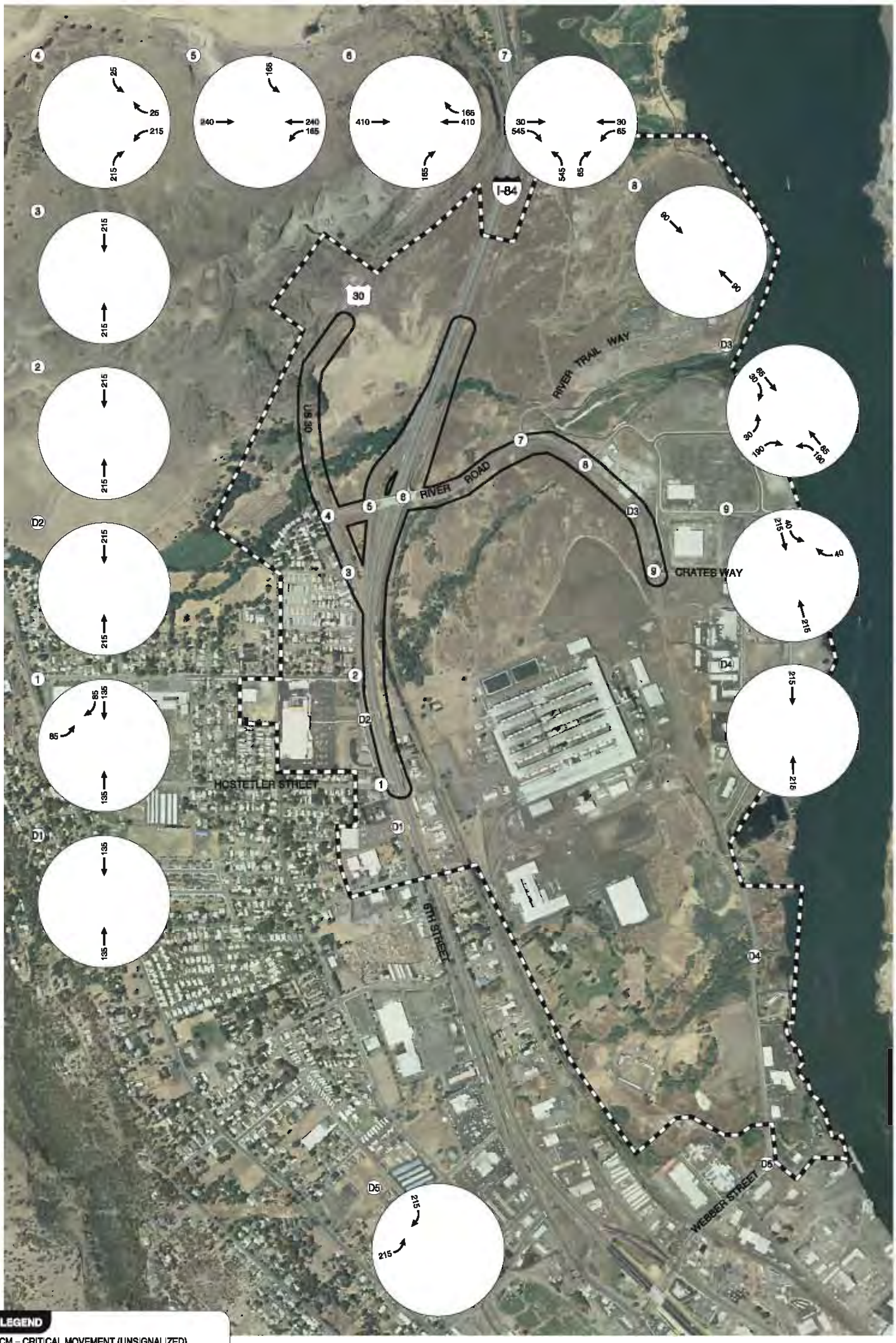


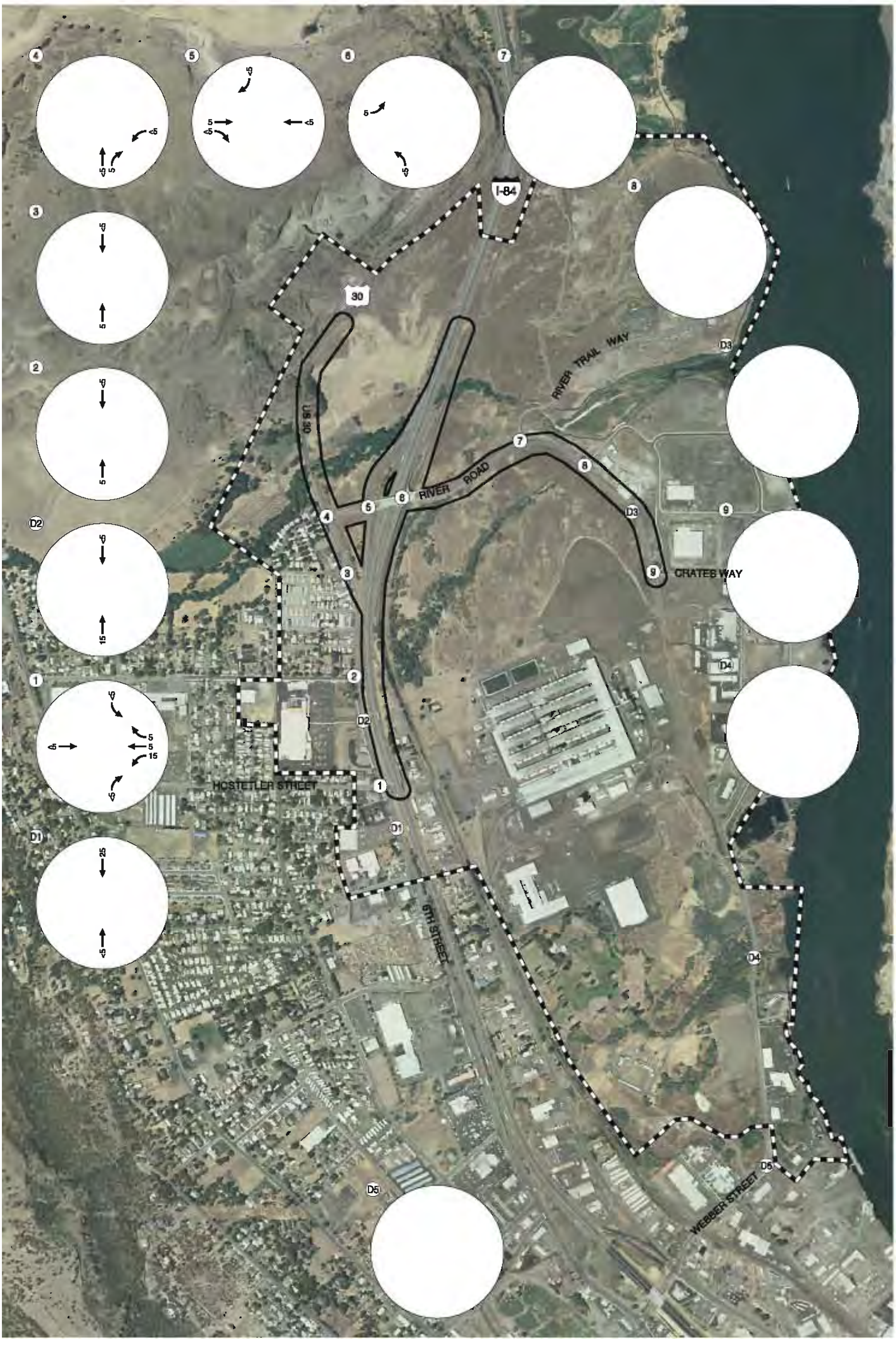
LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

YEAR 2030 TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
NET NEW TRIPS, SUB-AREA "E", SCENARIO #2
THE DALLES, OREGON

FIGURE **C-6**

H:\projfile\9600 - I-84 Chenoweth IAMP\dwgs\figures\9600AddedFigs.dwg Mar 15, 2009 - 8:28pm - cbergh Layout Tab: E-2



YEAR 2030 TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
NET NEW TRIPS, SUB-AREA "F"
THE DALLES, OREGON

FIGURE **C-7**

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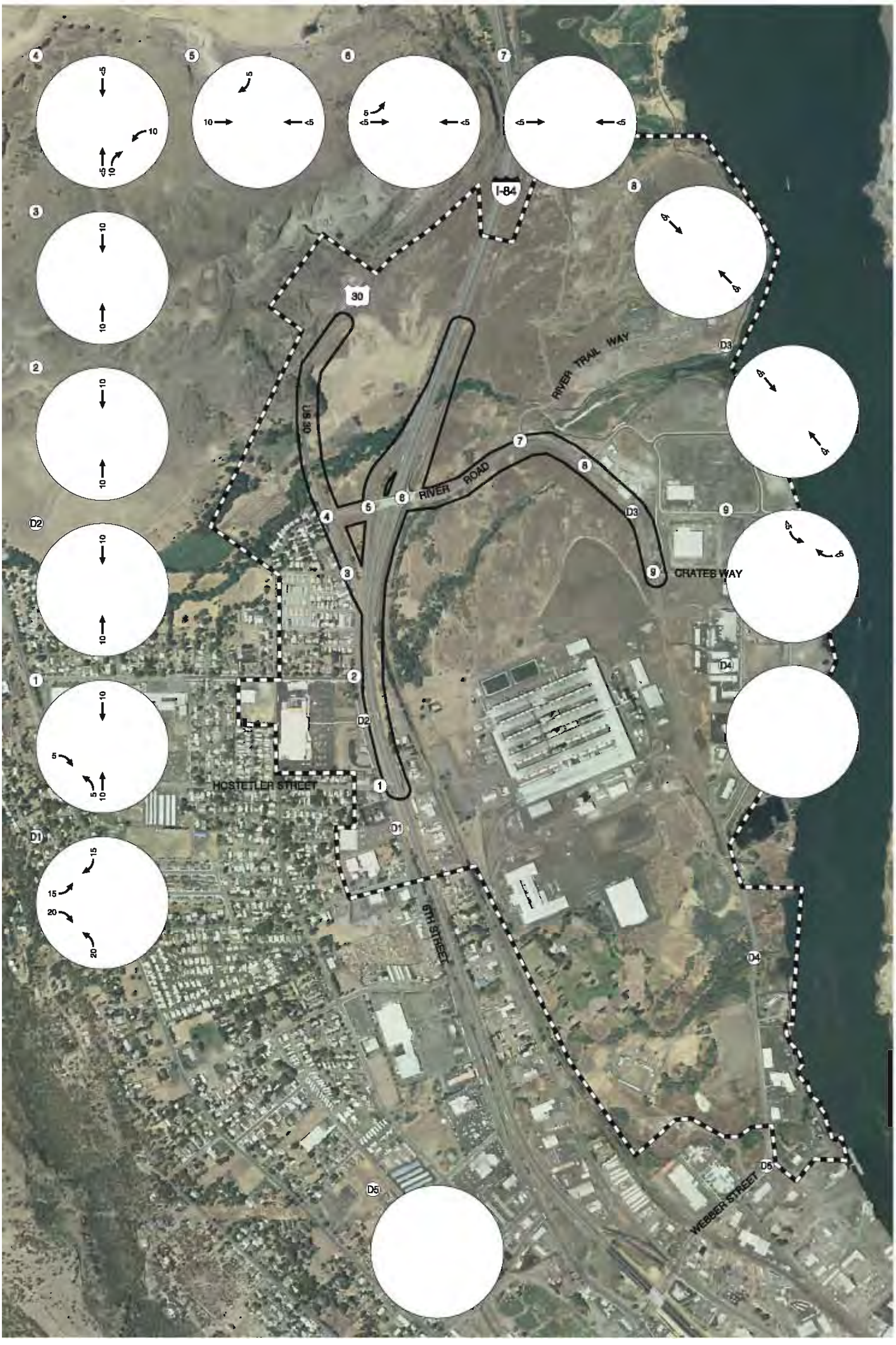

YEAR 2030 TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
NET NEW TRIPS, SUB-AREA "G"
THE DALLES, OREGON

FIGURE **C-8**

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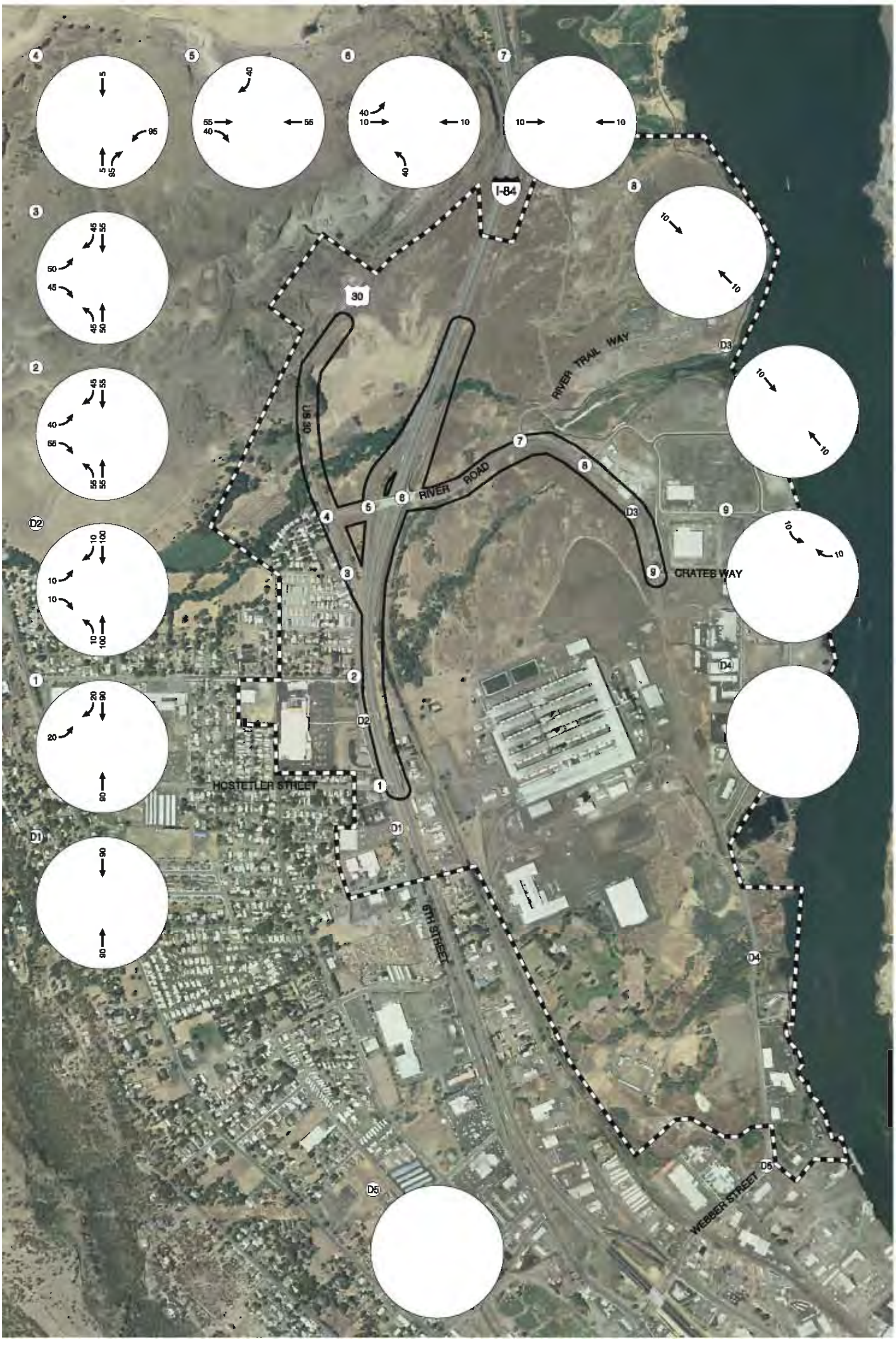

YEAR 2030 TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
NET NEW TRIPS, SUB-AREA "H"
THE DALLES, OREGON

FIGURE **C-9**

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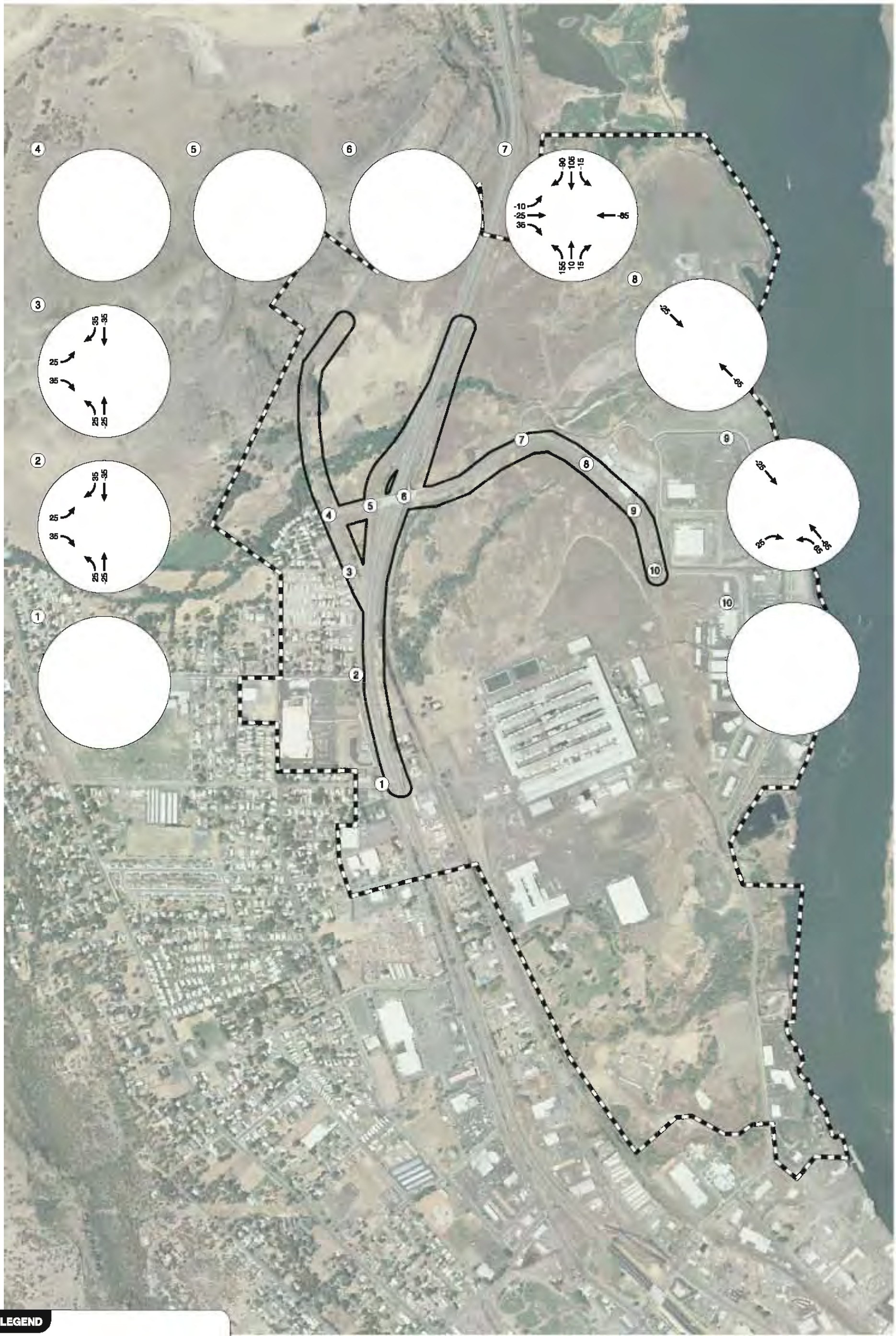

LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

YEAR 2030 TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
PASS-BY TRIPS - LAND USE SCENARIO #1
THE DALLES, OREGON

FIGURE **C-10**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

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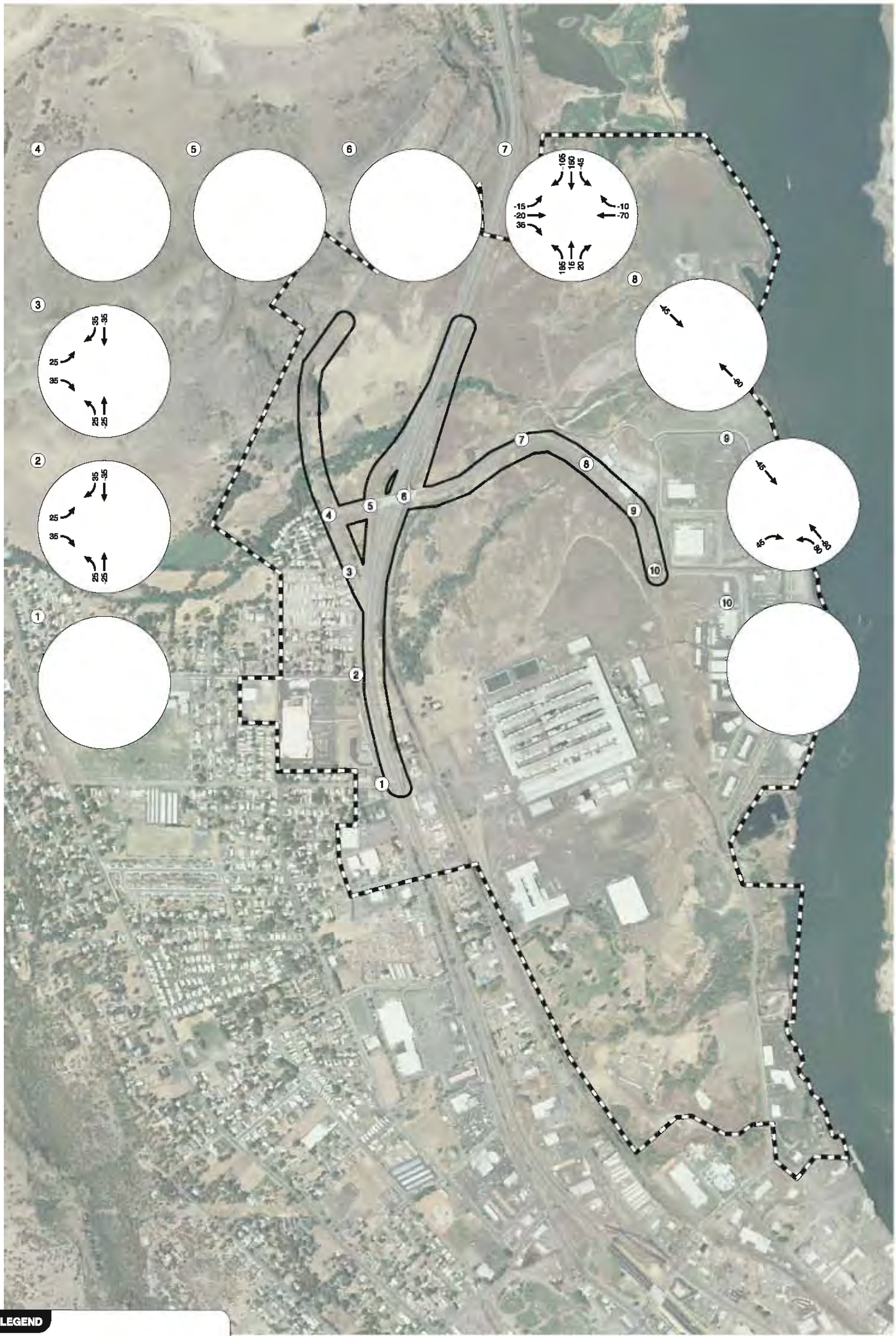

LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

YEAR 2030 TRAFFIC CONDITIONS, WEEKDAY PM PEAK HOUR
PASS-BY TRIPS - LAND USE SCENARIO #2
THE DALLES, OREGON

FIGURE **C-11**

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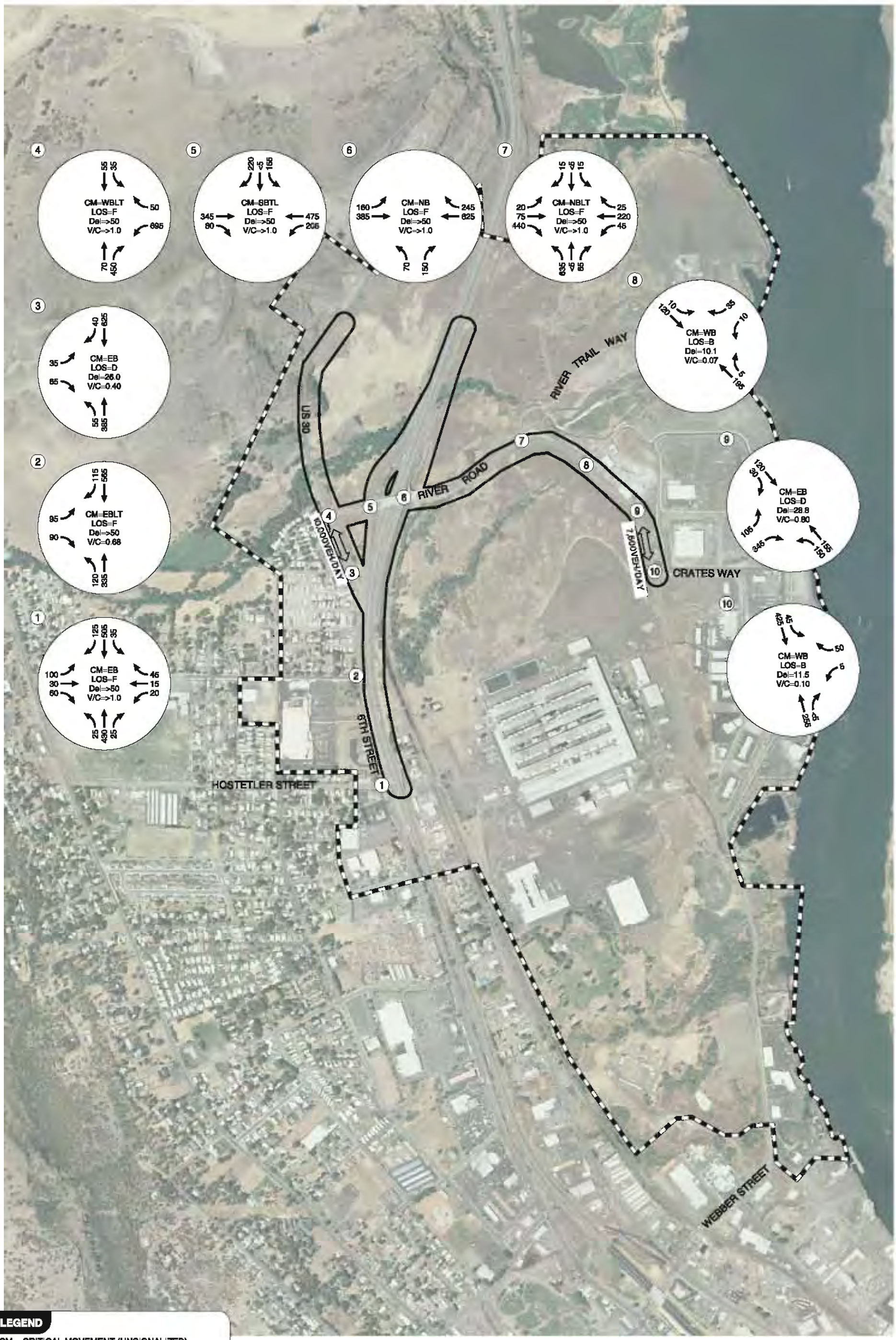
Attachment D
2030 Background Traffic Conditions



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

YEAR 2030 BACKGROUND TRAFFIC CONDITIONS
WEEKDAY PM PEAK HOUR
THE DALLES, OREGON

FIGURE **D-1**

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Appendix E

Technical Memorandum #7: Local Circulation and Design Concept Analysis

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DRAFT TECHNICAL MEMORANDUM #7

I-84 Chenoweth IAMP

Local Circulation and Access Design Concept Analysis

Date: April 28, 2009 Project #: 9600.0

To: Technical Advisory Committee and Steering Committee Members

From: Susan Wright, PE; Casey Bergh, and Marc Butorac, PE, PTOE

This memorandum documents the development and evaluation of the local circulation and access concepts as part of the IAMP process. Twenty-one concepts were developed and taken through a thorough screening process that included input from Technical Advisory Committee (TAC) and Steering Committee (SC) members. Based on results of the initial screening, a refined analysis was conducted that resulted in the identification of a recommended preferred alternative. The following documents the concepts that were evaluated and the results of the preliminary and refined screening process.

CONCEPT DEVELOPMENT PROCESS

The development of the initial local circulation and access concepts for the I-84 Chenoweth IAMP began with a design workshop at a joint meeting of the TAC and SC on February 11th, 2009. Additional concepts were developed at a public open house workshop that was attended by local agency representatives, interested citizens, business owners, and landowners on March 5, 2009.

Workshop participants were presented with an overview of applicable design parameters and local circulation/access management techniques. Following these presentation overviews, participants were asked to sketch their ideas for improving the future transportation network. Participants were encouraged to consider improvement opportunities at all intersections within the IAMP Study Area, including the I-84 Chenoweth Interchange, and opportunities to create new connections to support the collector/local street circulation network.

Following the completion of the public open house workshop, the consultant team refined the ideas generated during the workshops to develop a series of individual local circulation and access concepts in the north, south, and east regions of the interchange study area. These concepts are described in the following sections.

LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS

Based on the general design ideas developed as part of the workshop exercises, the consultant team developed a set of local circulation and access concepts and grouped them by geographic location. A total of 21 concepts were developed, including: 6 to the west of I-84; 12 to the east of I-84 and south of the River Road; and, 3 to the north of River Road. These concepts represent a culmination of the individual design ideas developed by the workshop participants. Each of the concepts and key design components are described below.

Westerly Local Circulation and Access Design Concepts

Local Circulation and Access Design Concepts developed for the portion of the study area west of I-84 include: access control along 6th Street (US 30) and modifications to traffic control at the intersections on 6th Street (US 30) at River Road, Division Street, Chenoweth Loop, and Hostetler Street. Each westerly (W-X) concept is described below and illustrated in Figures W-1 through W-6.

Concept W-1 (Combined 6th Street and I-84 EB Ramp Terminal Roundabout)

- Combine adjacent intersections of 6th Street (US 30)/River Road and I-84 Eastbound Ramp Terminals/River Road at a single roundabout.
- Convert the intersections of Chenoweth Loop and Hostetler Way at 6th Street to signal control.
- Restrict access on 6th Street between River Road and Chenoweth Loop to public streets including Division Street, Irvine Street, and Lee Street. The existing private approaches on 6th Street would be routed via backage roads and/or cross-over easements to 6th Street via Division Street and Irvine Street.
- Provide a local street access from Division Street to property in the northwest quadrant of the 6th Street/Division Street intersection.
- Relocate the private driveway on the west side of US 30 (just north of Chenoweth Creek) to a location further north of the 6th Street (US 30)/River Road intersection to meet the 1,320 access spacing standard.

Concept W-2 (6th Street/River Road Roundabout)

- Convert 6th Street (US 30)/River Road intersection from stop control to a roundabout.
- Convert the intersections of Chenoweth Loop and Hostetler Way at 6th Street from stop control to signal control.
- Restrict eastbound left-turn movements from Division Street to 6th Street.
- Restrict access on 6th Street between River Road and Chenoweth Loop to public streets, including Division Street, Irvine Street, and Lee Street. The existing private approaches on 6th Street would be routed to 6th Street via Division Street and Irvine Street.

- Provide a local street access from Division Street to property in the northwest quadrant of the 6th Street/Division Street intersection.
- Relocate the private driveway on the west side of US 30 (just north of Chenoweth Creek) to a location further north of the 6th Street (US 30)/River Road intersection to meet the 1,320 access spacing standard.

Concept W-3 (Dual Roundabouts with 6th Street Center Median)

- Convert 6th Street (US 30)/River Road and 6th Street/Chenoweth Loop intersections from stop control to roundabouts.
- Construct a median on 6th Street from River Road to Chenoweth Loop.
- Convert the intersection of 6th Street/Hostetler Way from stop control to signal control.
- Relocate the private driveway on the west side of US 30 (just north of Chenoweth Creek) to a location further north of the 6th Street (US 30)/River Road intersection to meet the 1,320 access spacing standard.

Concept W-4 (Reconfigured 6th Street/River Road Intersection)

- Modify geometry of 6th Street (US 30)/River Road intersection to provide continuous through movements between River Road and 6th Street to the south. US 30 would be realigned to intersect River Road as a perpendicular, stop-controlled approach.
- Convert the intersections of Chenoweth Loop and Hostetler Way at 6th Street to signal control.
- Restrict access on 6th Street between River Road and Chenoweth Loop to public streets, including Division Street, Irvine Street, and Lee Street. The existing private approaches on 6th Street would be routed to 6th Street via access to Division Street and Irvine Street.
- Provide a local street access from Division Street to property in the northwest quadrant of the 6th Street/Division Street intersection.
- Relocate the private driveway on the west side of US 30 (just north of Chenoweth Creek) to a location further north of the 6th Street (US 30)/River Road intersection to meet the 1,320 access spacing standard.

Concept W-5 (Traffic Signals with 6th Street Center Median)

- Convert the following intersections from stop control to signal control:
    - 6th Street (US 30)/River Road
    - 6th Street/Division Street
    - 6th Street/Irvine Street
    - 6th Street/Chenoweth Loop
    - 6th Street/Hostetler Street

- Construct median on 6th Street from River Road to Irvine Street.

Concept W-6 (Local Frontage Road on 6th Street)

- Convert the following intersections from stop control to signal control:
    - 6th Street (US 30)/River Road
    - 6th Street/Division Street
    - 6th Street/Chenoweth Loop
    - 6th Street/Hostetler Street
- Restrict access on 6th Street between River Road and Irvine Street and develop a frontage road that would provide access to commercial and residential properties.
- Extend W. 7th Street from Irvine Street to Division Street to improve local connectivity and provide a connection from Division Street to 6th street.
- Relocate the private driveway on the west side of US 30 (just north of Chenoweth Creek) to a location further north of the 6th Street (US 30)/River Road intersection to meet the 1,320 access spacing standard.

LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT W-1: COMBINED 6TH ST AND I-84 EB RAMP TERMINAL ROUNDABOUT
THE DALLES, OREGON

FIGURE W-1

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT W-2: 6TH ST / RIVER RD ROUNDABOUT
THE DALLES, OREGON

FIGURE **W-2**

H:\proj\ts\9600 - I-84 Chenoweth IAMP\Dwgs\Figures\9600Figs-WEST.dwg Apr 06, 2009 - 5:01pm - mdowell Layout Tab: Fig-W-02

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT W-3: DUAL ROUNDABOUTS WITH 6TH ST CENTER MEDIAN
THE DALLES, OREGON

FIGURE W-3

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT W-4: RECONFIGURED 6TH ST / RIVER RD INTERSECTION
THE DALLES, OREGON

FIGURE W-4

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT W-5 TRAFFIC SIGNALS WITH 6TH ST CENTER MEDIAN
THE DALLES, OREGON

FIGURE W-5

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
LOCAL FRONTAGE RD ON 6TH ST
THE DALLES, OREGON

FIGURE W-6

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Easterly Local Circulation and Access Design Concepts

Local Circulation and Access Design Concepts developed for the portion of the study area in the southeast quadrant of the interchange include: constructing additional connections from River Road to 2nd Street and ultimately to 6th Street; modifications to traffic control at the River Road/River Trail Way intersection; and, construction of local streets to improve connectivity and circulation between 2nd street and River Road. Each easterly (E-X) concept is described below and illustrated in Figures E-1 through E-7.

Concept E-1 (New Interchange)

- Construct a new fly-over style interchange with I-84 between the existing Chenoweth and Webber interchanges. The new interchange would provide connections from River Road (at River Trail Way and Crates Way) to I-84.

Concepts E-2A through E-2C (Two Grade-Separated Crossings of the Union Pacific (UP) railroad at 2nd Street and Hostetler Street)

- Construct an overpass crossing of the UP railroad to provide access from River Road to 2nd Street (Concepts E-2A through E-2C).
- Construct an underpass crossing of the UP railroad at Hostetler Street to provide access from River Road to 2nd Street
- Develop a local street network to provide circulation and improve connectivity between 2nd street and River Road.
- Convert stop control at River Road/River Trail Way intersection to a roundabout or a signal.

Concept E-3A through E-3C (One Northern Grade-Separated Crossing of the UP)

- Construct an overpass crossing of the UP railroad at 2nd Street or an underpass of the UP at Hostetler Street to provide access from River Road to 2nd Street and ultimately 6th Street.
- Develop a collector and local street network that will alleviate congestion on River Road by providing an alternative north-south route between the River Road/River Trail Way intersection and Webber Street.

Concept E-4A and E-4B (Two Grade-Separated Crossings of the UP at Hostetler Street and Snipes Street)

- Construct a grade-separated crossing (overpass or underpass) of the UP Railroad at Hostetler Street and Snipes Street.
- Construct a grade-separated crossing (overpass or underpass) of I-84 at Snipes Street. (Concept E-4A only).

- Develop a local street network to provide circulation and improve connectivity between 2nd street and River Road.

Concept E-5 (One Southern Grade-Separated Crossing of the UP)

- Construct a grade-separated crossing (overpass or underpass) of the UP Railroad on the south side of 2nd Street (north of Webber Street).
- Develop a local street network to provide circulation and improve connectivity between 2nd Street and River Road.

Concept E-6 (At-grade Crossings of the UP at Hostetler Street)

- Maintain the existing at-grade crossing of the UP at Hostetler Street and enhance it's connections to River Road. The intersection will be signal or roundabout controlled.
- Develop a local street network to provide circulation and improve connectivity between the 2nd Street/Hostetler Street intersection and River Road.

Concept E-7 (Close At-Grade Crossing of the UP at Hostetler Street)

- Restrict access to Hostetler and 2nd Street from the existing Northwest Aluminum property.
- Develop a collector and local street network west of River Road

LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-1: NEW INTERCHANGE
THE DALLES, OREGON

FIGURE
E-1

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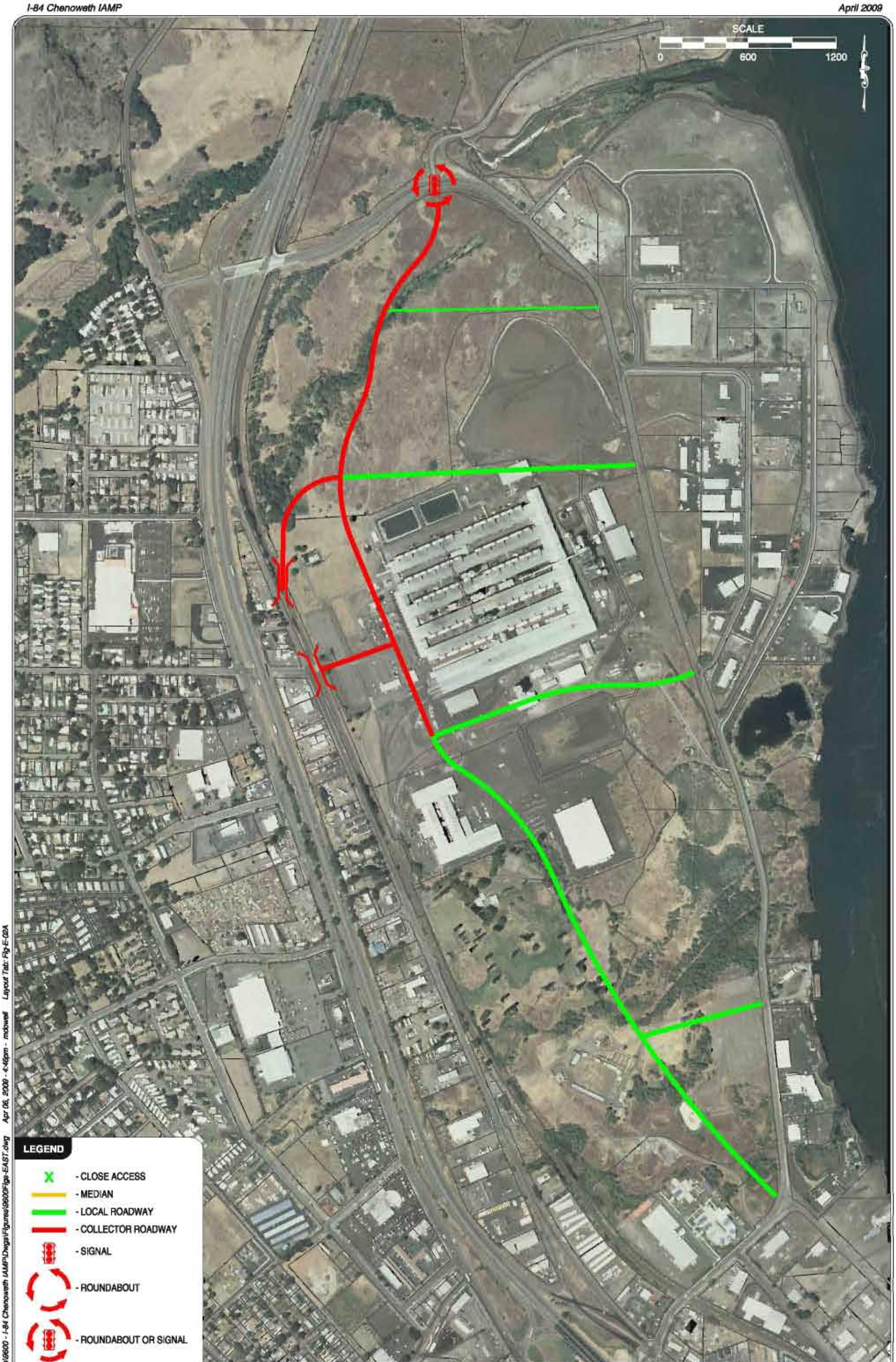

LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-2A: TWO GRADE-SEPARATED CROSSINGS OF THE BNSF AT 2ND ST AND HOSTETLER ST
THE DALLES, OREGON

FIGURE
E-2A

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-2B: TWO GRADE-SEPARATED CROSSINGS OF THE BNSF AT 2ND ST AND HOSTETLER ST
THE DALLES, OREGON

FIGURE
E-2B

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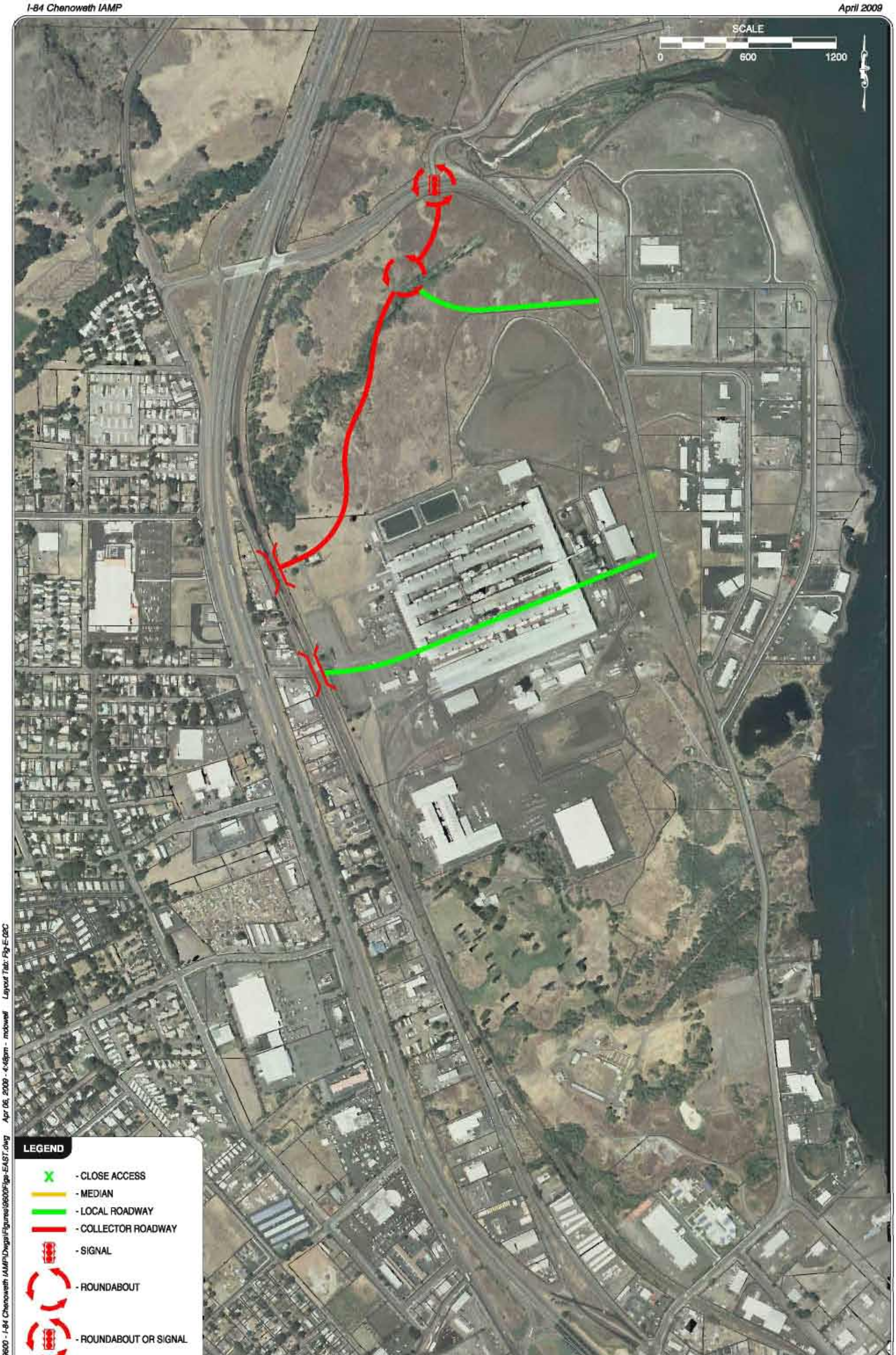

LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-2C: TWO GRADE-SEPARATED CROSSINGS OF THE BNSF AT 2ND ST AND HOSTETLER ST
THE DALLES, OREGON

FIGURE
E-2C

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-3A: ONE NORTHERN GRADE-SEPERATED CROSSING OF THE BNSF
THE DALLES, OREGON

FIGURE **E-3A**

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-3B: ONE NORTHERN GRADE-SEPERATED CROSSING OF THE BNSF
THE DALLES, OREGON

FIGURE
E-3B

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-3C: ONE NORTHERN GRADE-SEPERATED CROSSING OF THE BNSF
THE DALLES, OREGON

FIGURE E-3C

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-4A: TWO GRADE-SEPARATED CROSSINGS OF THE BNSF AT HOSTETLER ST AND SNIPES ST
THE DALLES, OREGON

FIGURE **E-4A**

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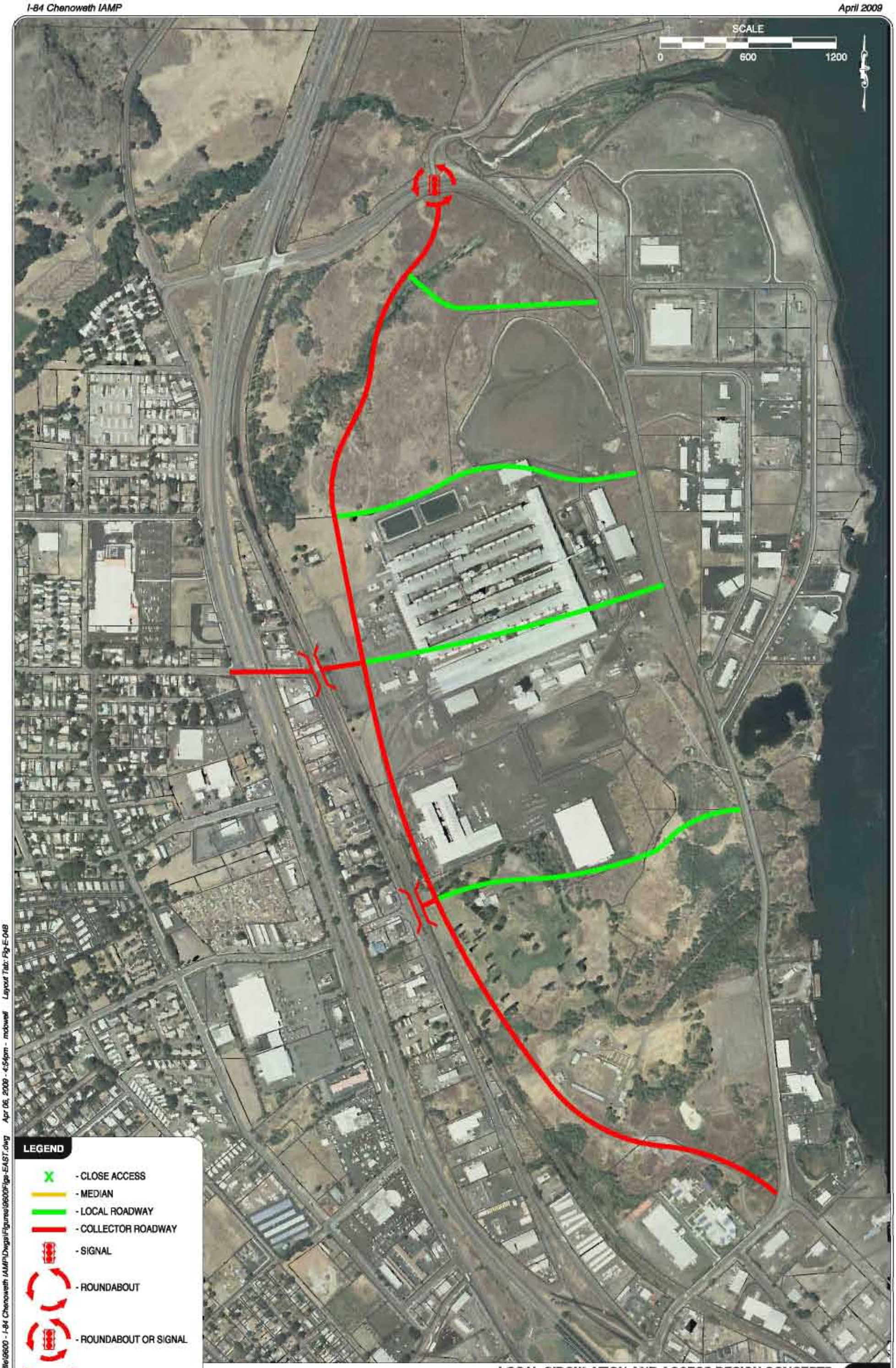

LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-4B: TWO GRADE-SEPARATED CROSSINGS OF THE BNSF AT HOSTETLER ST AND SNIPES ST
THE DALLES, OREGON

FIGURE
E-4B

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-5: ONE SOUTHERN GRADE-SEPERATED CROSSING OF THE BNSF
THE DALLES, OREGON

FIGURE
E-5

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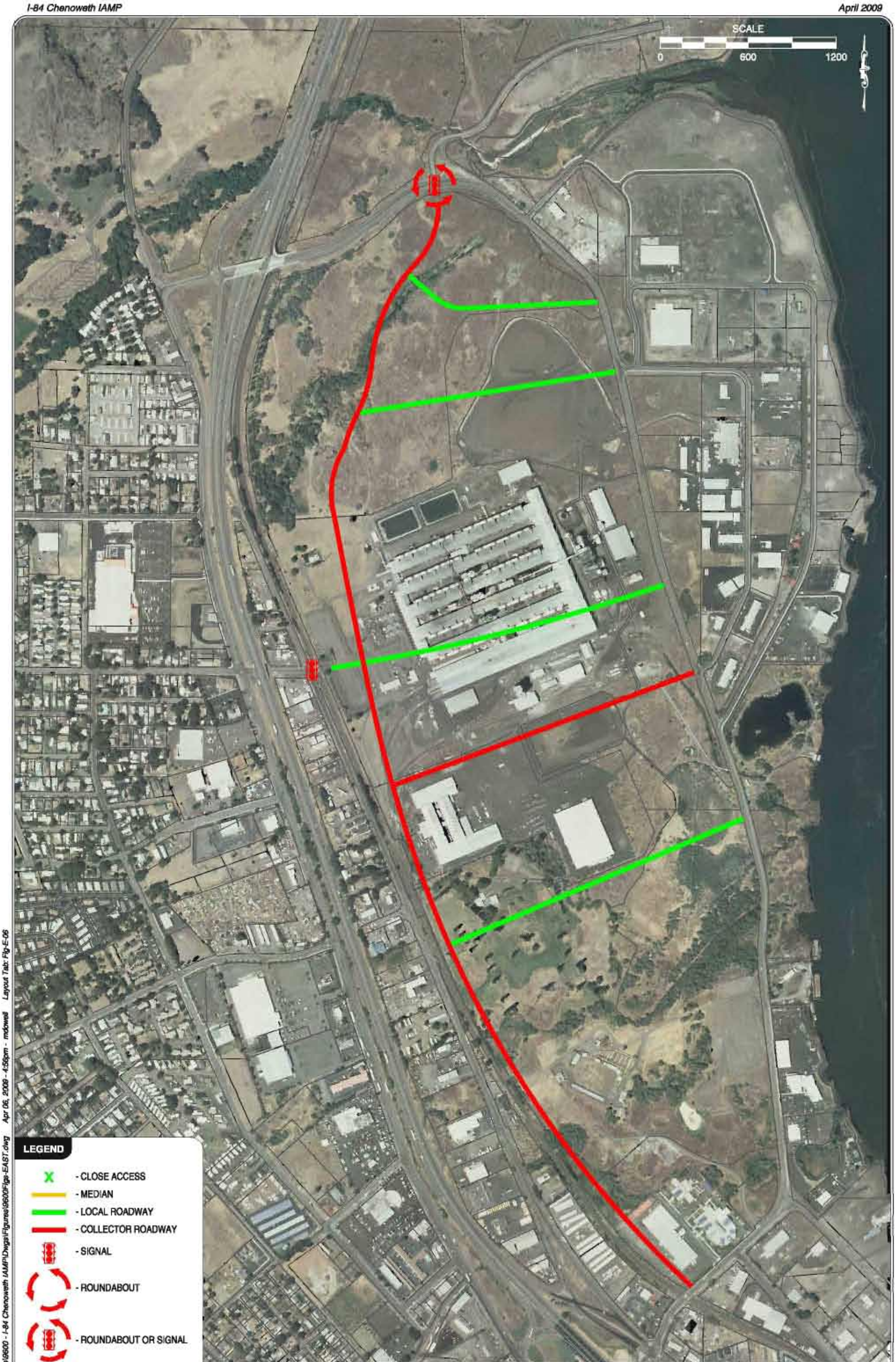

LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-6: AT-GRADE CROSSING OF THE BNSF AT HOSTETLER ST
THE DALLES, OREGON

FIGURE
E-6

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-7: CLOSE AT-GRADE OF THE BNSF AT HOSTETLER ST
THE DALLES, OREGON

FIGURE
E-7

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Northerly Local Circulation and Access Design Concepts

Local Circulation and Access Design Concepts developed for the portion of the study area to the north of River Road and east of I-84 include: developing a collector and local street network; constructing an I-84 overpass north of the existing Chenoweth interchange to connect to US 30 on the west side of I-84; and, constructing a bridge over Chenoweth Creek to connect River Trail Way to Columbia Road. Each northerly (N-X) concept is described below and illustrated in Figures N-1 through N-3.

Concept N-1 (Local Street Network Only)

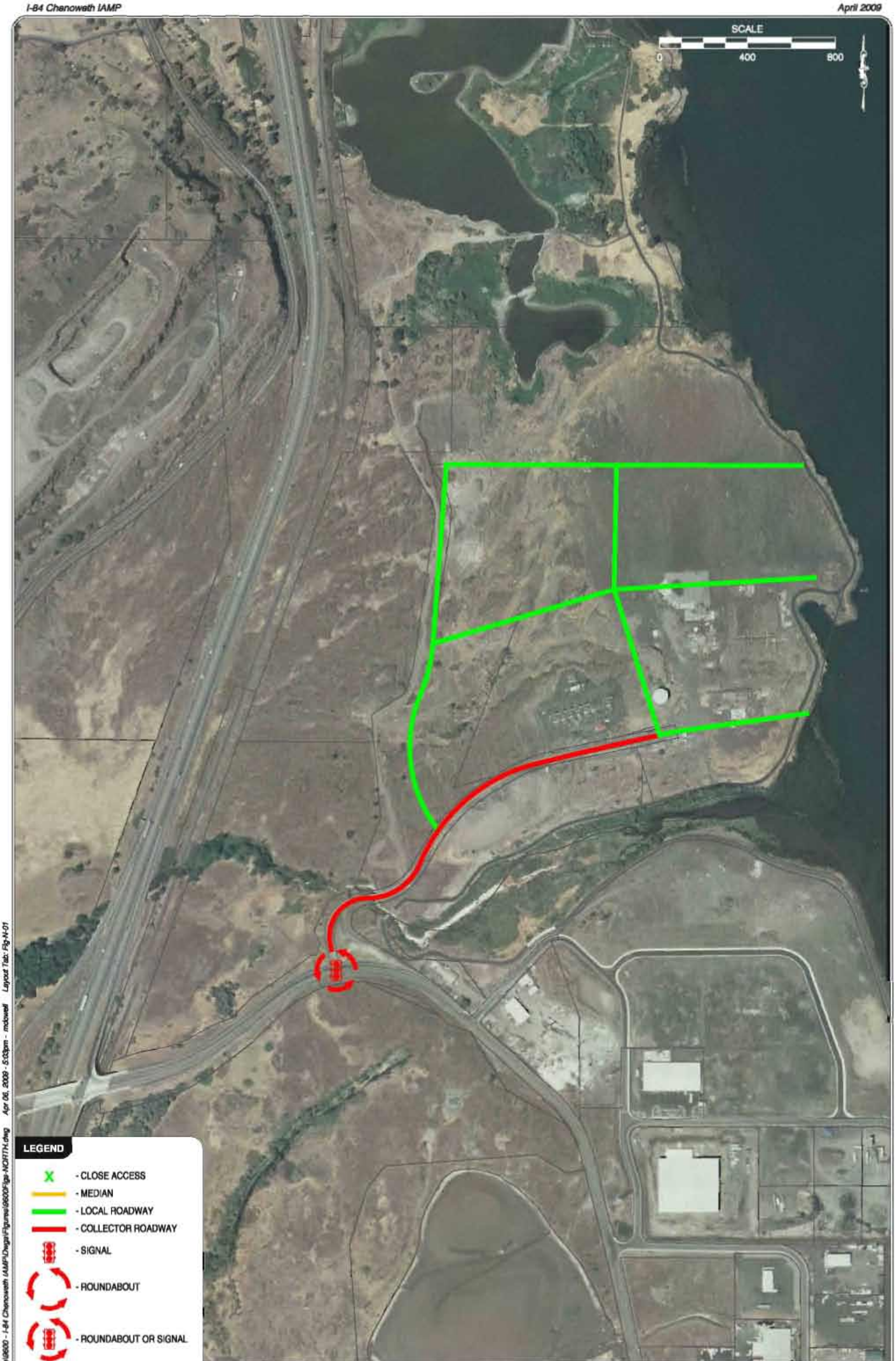
- Develop a collector and local street network

Concept N-2 (I-84 Overpass)

- Construct an I-84 overpass north of the existing Chenoweth interchange to connect to US 30 on the west side of I-84.
- Develop a collector and local street network.

Concept N-3 (Chenoweth Creek Bridge)

- Construct a bridge over Chenoweth Creek to connect River Trail Way to Columbia Road
- Develop a collector and local street network



LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT N-1: LOCAL STREET NETWORK ONLY
THE DALLES, OREGON

FIGURE
N-1

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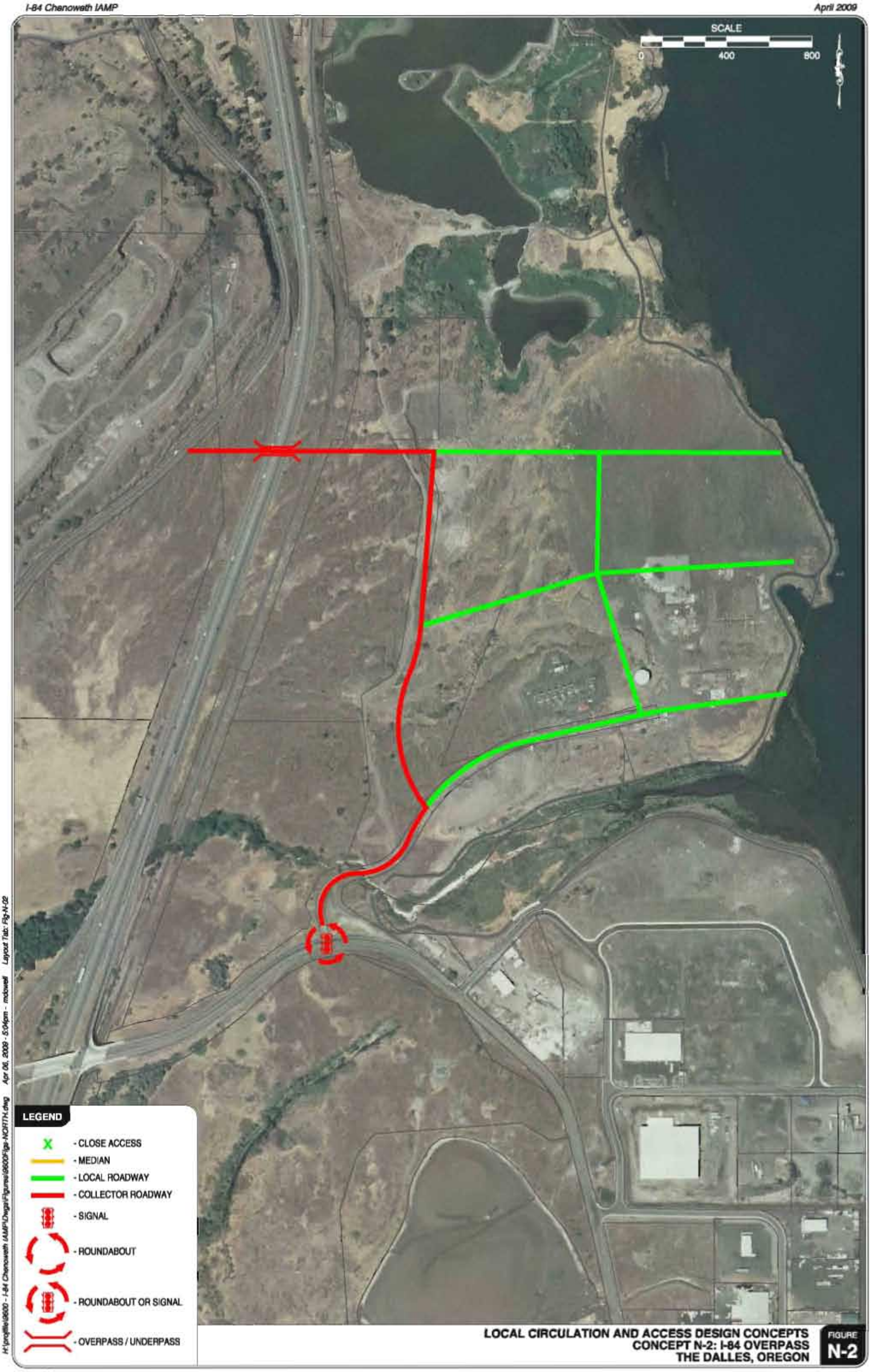

LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT N-2: I-84 OVERPASS
THE DALLES, OREGON

FIGURE
N-2

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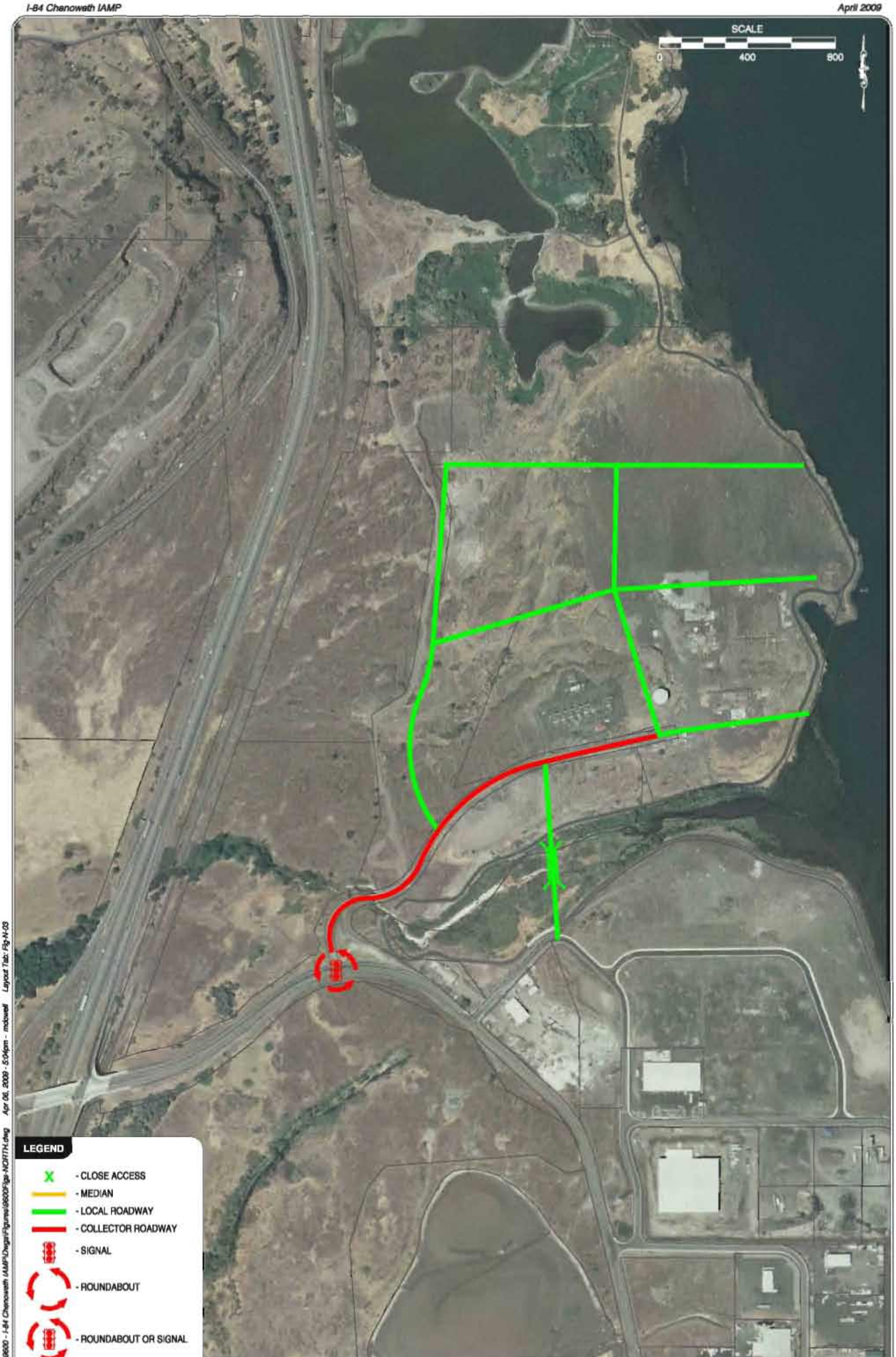

LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT N-3: CHENOWETH CREEK BRIDGE
THE DALLES, OREGON

FIGURE **N-3**

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PRELIMINARY SCREENING ANALYSIS

A screening analysis was conducted to separate those concepts that warrant further evaluation from those that do not. The screening process was conducted at a qualitative level and was based on a relative comparison of each concept. The concepts were compared based on the extent of the improvements needed to accommodate forecasted land use projections. The following section provides detailed explanation of this analysis with respect to roadway cross-sections and intersection operations, and provides a recommendation of which concepts warrant further evaluation.

All analysis of future conditions was based on traffic volumes developed for Land Use Scenario #2, as outlined in Memorandum #5/6. Land Use Scenario #2 assumes that the WM3 property will be developed as General Commercial land, which generates more net new trips than Land Use Scenario #1 and is expected to provide a conservative analysis of future conditions.

Roadway Cross-Section Comparison

Memorandum #5/6 summarized the forecast traffic conditions analysis, which assumed no capacity improvements to the existing facilities. The analysis showed that future development, in accordance with existing land use designations, would increase traffic demand beyond capacity of the existing network. Further analysis shows that if no land use restrictions are imposed, no alternative mobility standards are adopted, and no geometric changes are made to the study area roadways, the resulting theoretical cross-section need on the River Road overpass at I-84 would require nine lanes, including:

- Three westbound through lanes
- Two westbound left-turn lanes to I-84 eastbound
- Two eastbound left-turn lanes to I-84 westbound
- Two eastbound through lanes

A nine-lane cross-section on River Road is not expected to be a feasible option when taking into account the surrounding street network, construction costs, and right-of-way impacts. A six-lane section on the River Road overpass is expected to be the widest structure that could feasibly be constructed. A bridge structure with more than six lanes would include two-lane ramps to support dual left-turn lanes to I-84 westbound, which is infeasible to construct without moving the entire interchange. Railroad lines on the east side of I-84 limit the ability to increase the width of westbound off and on-ramps and relocating the interchange was not considered due to interchange spacing requirements. Additionally, providing more than two through lanes in each direction on the River Road overpass at I-84 would require greater cross-sections on 6th Street and River Road than are suitable for their intended function.

A feasible future scenario will likely require the use of a combination of: system-wide improvements, alternative mobility standards, and/or trip cap/trip budget alternatives. System-wide improvements include a new connection to 2nd street from River Road and other localized

improvements, as shown in the local circulation and access design concepts. Use of a combination of these measures could be implemented as an overlay zone.

In order to evaluate and compare roadway improvements to alternative development measures, a development threshold analysis was completed based on cross-sections of the River Road overpass and 6th Street. Table 7-1 provides a summary of the minimum cross-sections required to minimize queuing and satisfy ODOT mobility standards, based on incremental levels of development. Full development in accordance with Land Use Scenario #2 is assumed, except where a trip cap/trip budget is shown to limit development. For example, a trip cap/trip budget of 85 percent reflects a 15-percent reduction from full development (or a corresponding alternative mobility standard that would allow for the additional 15 percent of forecasted development).

Table 7-1 Development Threshold Analysis of Study Roadways

Cross-Section			I-84 Interchange Cross-Section Feasible (Yes/No)	Connection to 2nd Street	Trip Cap/Trip Budget or Alternative Mobility Standards
I-84 Interchange (Between Ramp Terminals)	6th Street (North of Hostetler Street)	Hostetler Street (Under I-84)			
9-lanes	5-lanes	-	No	No	None
6-lanes	5-lanes	-	No	No	50%
8-lanes	5-lanes	5-lanes	No	Yes	None
7-lanes	5-lanes	5-lanes	No	Yes	85%
6-lanes	5-lanes	5-lanes	Yes	Yes	70%
6-lanes	5-lanes	5-lanes	Yes	Yes	65%
4-lanes	5-lanes	4-lanes	Yes	Yes	50%

As shown in Table 7-1, a connection from River Road to 2nd Street is needed in order to reduce the cross-section of River Road from nine lanes to eight lanes at the I-84 Interchange. In order to further reduce the cross-section, trip cap/trip budget or alternative mobility standards are needed in combination with the 2nd Street Connection.

Alternative interchange forms were considered, but due to the location of the interchange with respect to existing rail lines, Chenoweth creek, and 6th Street it was determined that other interchange forms are not feasible. The most likely alternative interchange form would include loop ramps as they provide free-flow turning movements. However loop ramps require a large amount of right-of-way which is not available to the east or west of I-84. Memo #8 will identify specific modifications recommended for the existing interchange.

The cross-section of 6th Street is shown as a 5-lane section, which includes: two southbound lanes, two northbound lanes, and a northbound left-turn lane. Two through lanes are only required in the southbound direction at the 6th Street/River Road and the 6th Street/Hostetler Street intersections; however, for continuity purposes a continuous section is assumed. Given that analysis was performed on the evening peak hour, an equal lane configuration is assumed in the

northbound direction to serve morning peak hour traffic, in order to account for directional distributions during the peak hours.

A connection to 2nd Street is shown to reduce traffic demand on River Road at the I-84 Interchange. Although the design concepts show connections to 2nd Street at various locations (see Concepts E-4 and E-5), all screening analysis assumed the benefits of a connection at Hostetler Street. It is expected that the reduction in traffic on the River Road overpass will not be as great if a connection to 2nd Street is south of Hostetler. If concepts E-4 and E-5 are selected for further evaluation, traffic volumes within the study area will be redistributed to account for the connection location. Traffic is more likely to redistribute from the Chenoweth Interchange if a new connection to 2nd Street is closer to the Chenoweth Interchange than the Webber Street Interchange.

Based on the identified benefits of a new connection to 2nd street, **Concept E-7 was removed from further evaluation because the concept does not include new connections to 2nd Street**. All other concepts are compatible with the analysis shown in Table 7-1.

The appropriate balance between system improvements or reducing allowed future development will be explored further by the Technical Advisory Committee (TAC) and the Steering Committee (SC) and will be summarized in Memorandum #8.

Intersection Operations

As summarized in Memorandum #5/6, all study intersections are forecast to exceed capacity during the forecasted year 2030 peak hour, except the River Road/Columbia Road intersection. Mitigations to the intersections include installation of roundabouts or traffic signals at unsignalized intersections.

Operational analysis of roundabouts was conducted during the preliminary screening process at the following locations where design concepts suggested single-lane or double-lane roundabouts:

- River Road/River Trail Way
- 6th Street/River Road
- 6th Street/Chenoweth Loop

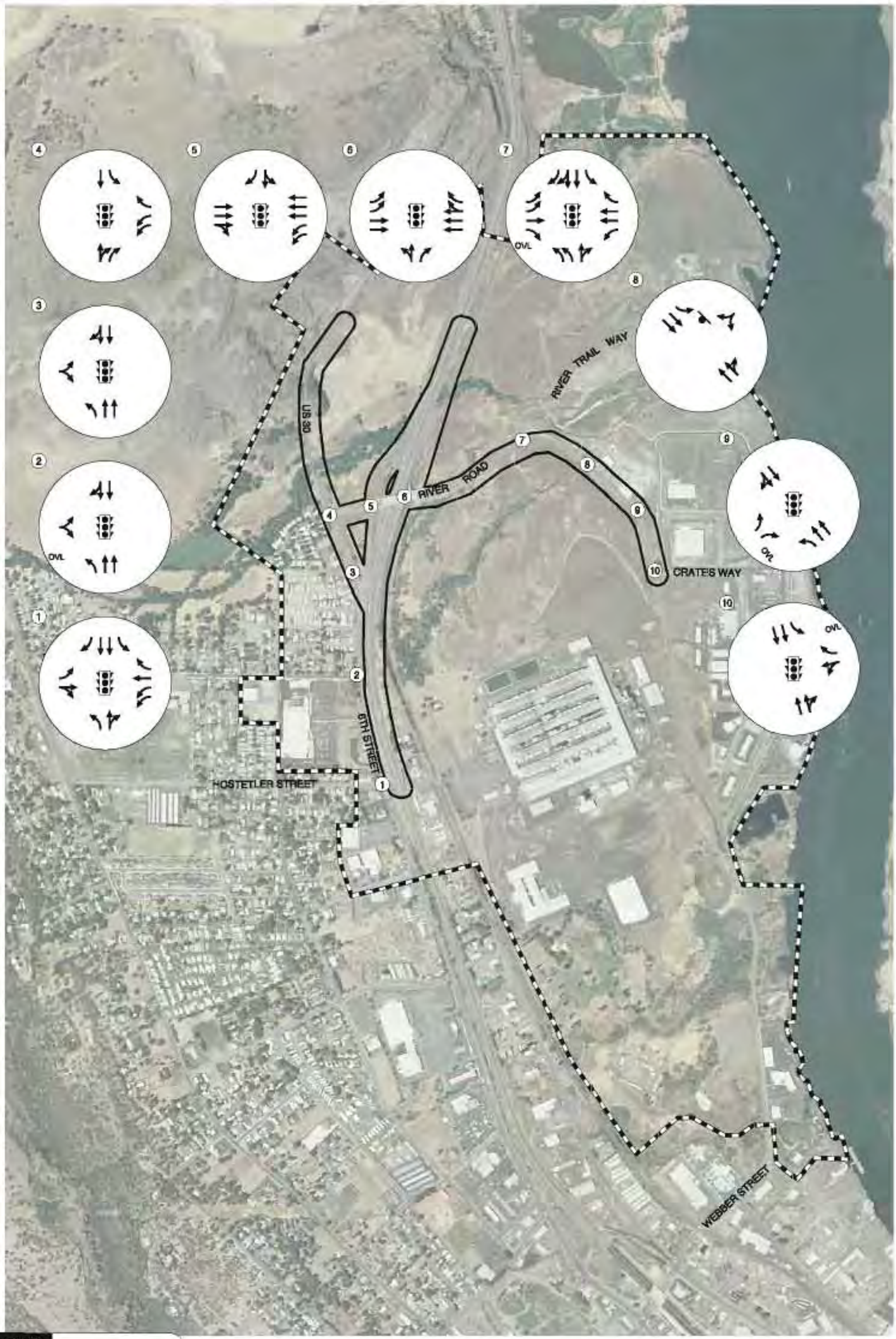
The operational analysis of roundabout alternatives is summarized in Table 7-2, based on NCHRP Report 572 methodology for single-lane and double-lane roundabouts. Attachment "A" provides a summary of the lane geometry assumed on each approach and summarizes the operational analysis.

Table 7-2 Roundabout Operational Analysis Summary

Geometry Information	6th Street/Chenoweth Loop			6th Street/River Road			River Road/River Trail Way			
	North Leg	West Leg	South Leg	East Leg	North Leg	South Leg	East Leg	North Leg	West Leg	South Leg
Number of Entry/Exit Lanes	2/2	1/1	2/2	2/2	1/1	2/2	2/1	2/1	2/2	2/2
Right Turn By-Pass	No	No	No	No	No	No	No	Yes	No	No
Circulating Lanes	1	2	1	1	2	1	2	2	2	2
Performance Measure	**2030 Operations without New Connection to 2nd Street**									
Critical Lane Volume / Capacity	0.63	0.51	0.70	0.64	0.24	0.75	0.65	0.71	0.81	0.65
Critical Lane Average Delay (sec)	10.0	13.2	11.6	9.4	9.5	12.7	16.3	27	23	15.2
95% Queue Length (ft)	125	75	150	125	25	200	125	150	225	125
	2030 Operations with New Connection to 2nd Street									
Critical Lane Volume / Capacity	0.54	0.46	0.60	0.56	0.22	0.67	0.55	0.75	0.83	0.52
Critical Lane Average Delay (sec)	8.2	10.6	9.0	7.9	8.3	9.7	13.1	28.2	25.7	9.3
95% Queue Length (ft)	100	75	125	100	25	150	100	175	250	100

As shown in Table 7-2, the roundabouts are forecast to operate acceptably under Land Use Scenario #2 volume conditions, with or without a new connection to 2nd Street. However, with a connection to 2nd Street the average delay is reduced at the 6th Street/Chenoweth Loop and 6th Street/River Road intersections. The operational analysis shows that a two-lane roundabout is needed at the River Road/River Trail Way intersection. At the 6th Street/River Road intersection a partial two-lane roundabout is needed, which includes a two-lane circulatory roadway on the north approach and a single-lane circulatory roadway at the south and east approaches.

Signalized intersection alternatives were analyzed using Highway Capacity Manual procedures (Reference 1). Two signalized scenarios were evaluated; without a new connection to 2nd Street, and with a new connection. Lane configurations were developed to provide acceptable operations at all study intersections. Given the directionality of the PM peak hour volumes, through lanes were assumed to be equal in each direction of major traffic flow. A summary of mitigated lane configurations and traffic control devices are shown in Figures 7-1 and 7-2. Figures 7-3 and 7-4 summarize the operational analysis of the signalized mitigated scenarios.



LEGEND

OVL - OVERLAP

- STOP SIGN

- TRAFFIC SIGNAL

2030 MITIGATED LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES
WEEKDAY PM PEAK HOUR, LAND USE SCENARIO #2
THE DALLES, OREGON

FIGURE 7-1

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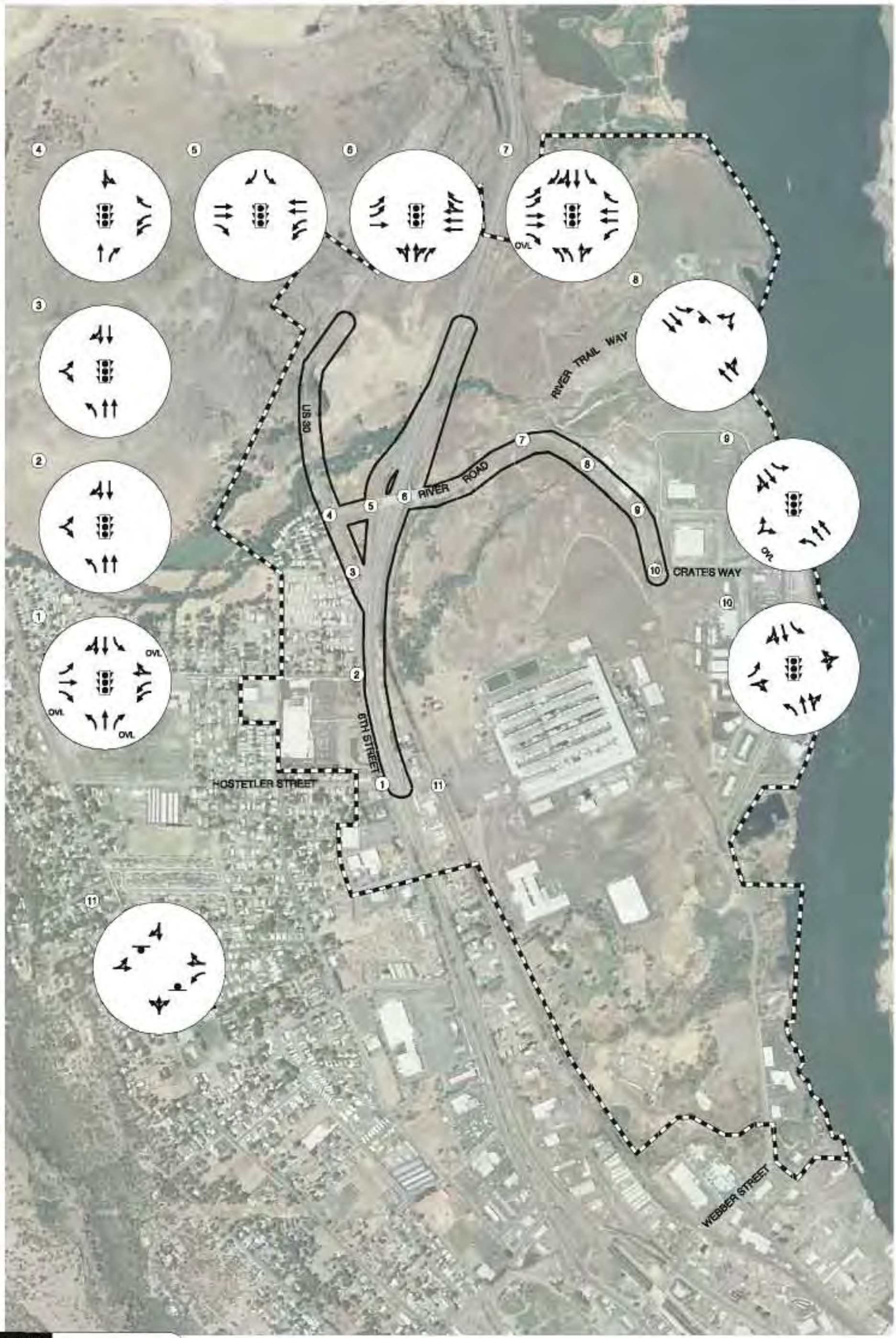
H:\projfiles\9600 - I-84 Chenoweth IAMP\dwg\all\figures\Task 03\9600Figs_Alternatives.dwg Apr 07, 2009 - 11:43am - dbergh Layout Tab: FIG 7-1



LEGEND

OVL - OVERLAP

- STOP SIGN

- TRAFFIC SIGNAL

2030 MITIGATED LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES - NEW CONNECTION
WEEKDAY PM PEAK HOUR, LAND USE SCENARIO #2
THE DALLES, OREGON

FIGURE 7-2

KITTELSON & ASSOCIATES, INC.
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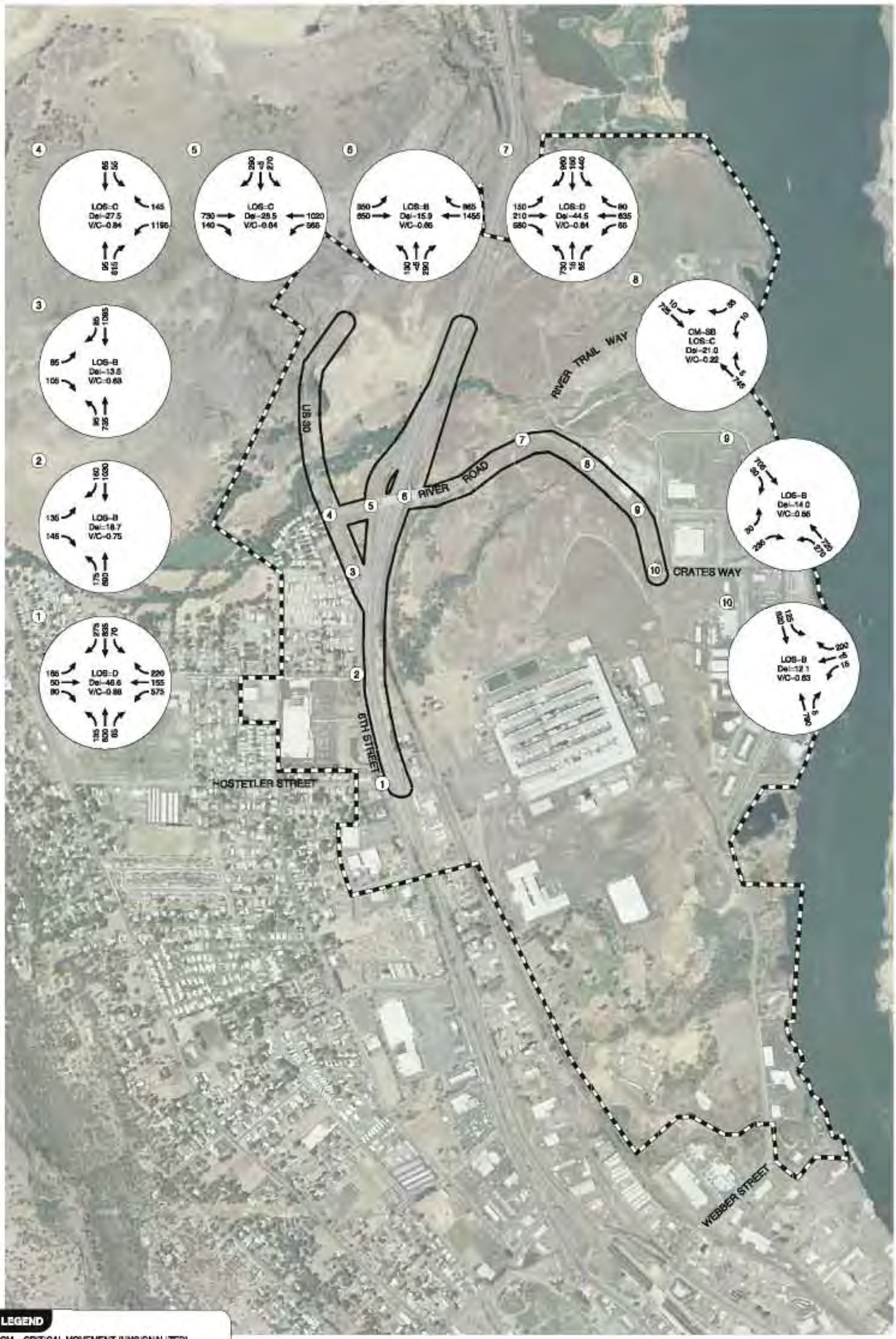
H:\projfiles\8600 - I-84 Chenoweth IAMP\dwgs\figures\Task 6\8600Figs_Alternatives.dwg Apr 07, 2009 - 11:44am - dbergh Layout Tab: FIG 7-2



LEGEND

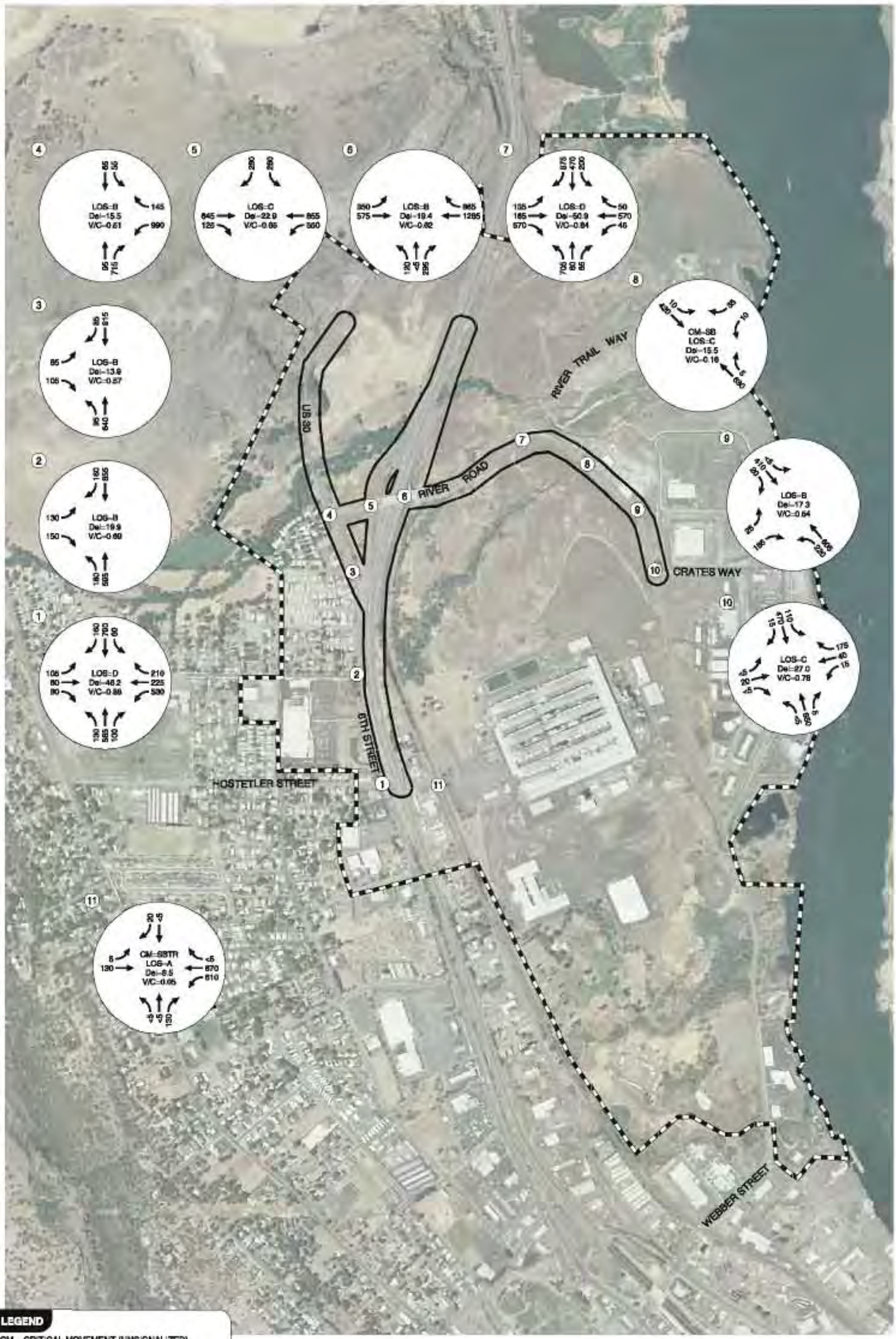
CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

2030 MITIGATED TRAFFIC CONDITIONS
WEEKDAY PM PEAK HOUR, LAND USE SCENARIO #2
THE DALLES, OREGON

FIGURE **7-3**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

H:\projfile\6600 - I-84 Chenoweth IAMP\dwgs\figures\Task 6\6600Fig2_Alternatives.dwg Apr 07, 2009 - 11:47am - dbergh Layout Tab: FIG 7-3



YEAR 2030 MITIGATED TRAFFIC CONDITIONS - NEW CONNECTION AT HOSTETLER
WEEKDAY PM PEAK HOUR, LAND USE SCENARIO #2
THE DALLES, OREGON

FIGURE 7-4

KITTELSON & ASSOCIATES, INC.
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Table 7-3 provides a summary of roadway cross-section for the critical approach to the three roundabout intersections as compared to the signalized options. The lane configurations are based on a maximum V/C ratio of 0.85 and future concepts with a new connection to 2nd Street.

Table 7-3 Intersection Control Cross-Section Comparisons

Intersection	Intersection Control	Critical Approach	Entering Lanes	Exiting Lanes	Total
River Road/ River Trail Way	Roundabout	Eastbound	2	2	4
	Traffic Signal		5	2	7
6th Street/ River Road	Roundabout	Westbound	2	1	3
	Traffic Signal		3	1	4
6th Street/ Chenoweth Loop	Roundabout	Eastbound	1	1	2
	Traffic Signal		1	1	2

As shown in Table 7-3, roundabouts can effectively minimize the width of intersection approaches as compared to signalized alternatives. At the River Road/River Trail Way intersection a roundabout is expected to reduce the number of lanes by 3 on the critical approach. If the intersection were to operate with a traffic signal, the eastbound approach would require two left-turn lanes, two through lanes, and an exclusive right-turn lane. Roundabouts are evaluated in greater detail in the Detailed Concept Evaluation later in this memorandum.

Concept W-1 included a roundabout option that combines the intersections of River Road at 6th Street and I-84 Eastbound. Operational analysis of this roundabout option showed that this design could not provide adequate capacity. Therefore, **Concept W-1 was excluded from further study.** *Attachment "B" includes a sketch of the roundabout alternative.*

PRELIMINARY QUALITATIVE EVALUATION

An initial comparison of the remaining 19 concepts was conducted based on qualitative measures. The comparison is intended to identify those concepts that do not have any "'fatal flaws" and warrant detailed evaluation.

To help determine how to rank each of the concepts according to the evaluation criteria, a scoring system was developed. In essence, each evaluation criterion was assigned a range of numerical values (+2, +1, 0, -1, or -2). The concepts that achieve each metric better than others receive a "+2", those that do not impact the metric receive a "0", those that underperform compared to other concepts receive a "-2" score, and those that fall in between receive a "+1" or "-1" score. The following outlines the elements considered in the initial evaluation and aspects of each that characterized the variations between concepts:

Operations

- Ability to develop land within the study area per existing zoning designations, with little or no restrictions.
- Additional connection to 2nd Street is expected to reduce through traffic on River Road and 6th Street.
- Additional connection to 6th Street over/under I-84 (at Hostetler Street or Snipes Street) is expected to reduce the number of lanes and congestion on the River Road overpass of I-84.

Cost

- Overpass/underpass crossing(s) of railroad.
- Overpass/underpass crossing of I-84.
- Bridge structure required for crossing Chenoweth Creek.

Property Impacts

- Non-perpendicular crossing of 2nd Street impacts existing development more than perpendicular crossing.
- Crossings of 2nd Street require retaining walls and extended length of roadway to return from above or below grade to existing grade.
- Collector or local roadways run parallel to 2nd street and impact existing businesses.

Environmental

- Roadway location conflicts with existing natural resource (Chenoweth Creek).
- Multiple local roadways increase the amount of paved roadway within the area and impact the amount of storm water runoff.

Table 7-4 provides a summary of the initial evaluation of concepts based on these elements.

Table 7-4 Initial Qualitative Concept Evaluation

Concept	Operations	Cost	Property Impacts	Environmental	Average Score	Recommended for Additional Evaluation?
E-1	1	-2	-2	0	-0.75	No
E-2A	1	-2	-1	0	-0.50	No
E-2B	1	-2	-2	-1	-1.00	No
E-2C	1	-2	-1	0	-0.50	No
E-3A	1	-1	-1	0	-0.25	Yes
E-3B	1	-1	-1	-1	-0.50	Yes – combine with E-3C
E-3C	1	-1	-1	0	-0.25	Yes – combine with E-3B
E-4A	2	-2	-2	-1	-0.75	Yes – modify to include Snipes Street underpass only
E-4B	2	-2	-1	-1	-0.50	No
E-5	0	-1	-1	-1	-0.75	No
E-6	1	0	-2	-2	-0.75	No
W-2	1	-1	0	0	0.00	Yes
W-3	1	-1	0	0	0.00	Yes
W-4	1	-1	0	0	0.00	Yes
W-5	0	-1	0	0	-0.25	Yes
W-6	0	-1	-1	0	-0.50	No
N-1	-1	0	0	0	-0.25	Yes
N-2	1	-1	0	0	0.00	Yes
N-3	0	-1	0	-1	-0.50	No

Each concept was compared to other concepts within each sub-area of the study area and the lowest scoring concepts were removed from further consideration. Each concept that scored an average of -0.50 or less was not recommended for additional evaluation with two exceptions (E-3C and E-4A which are recommended with modifications to improve their viability). Three easterly, four westerly, and two northerly concepts were recommended for additional evaluation based on this criteria. Table 7-5 provides additional information on the primary reason a concept was recommended for elimination or modification.

Table 7-5 Primary Reason for Concept Elimination or Modification

Concept	Average Score	Recommended for Additional Evaluation?	Primary Reason for Concept Elimination or Modification
E-1	-0.75	No	Proposed interchange would not meet interchange spacing standards and would not provide new local east-west connectivity.
E-2A	-0.50	No	There is no significant operational benefit of providing two grade-separated crossings to 2nd Street as compared to one as provided in Concept E-3A, B, and C.
E-2B	-1.00	No	There is no significant operational benefit of providing two grade-separated crossings to 2nd Street as compared to one as provided in Concept E-3A, B, and C.
E-2C	-0.50	No	There is no significant operational benefit of providing two grade-separated crossings to 2nd Street as compared to one as provided in Concept E-3A, B, and C.
E-3A	-0.25	Yes	
E-3B	-0. 50	Yes	Concept E-3B and E-3C are similar in that they both include one grade-separated crossing located at Hostetler Street and are recommended to be combined into one alternative (E-3D) that reduces the property impacts at Webber Street and the proposed collector roadway and combines the intersections of River Trail Way, the proposed north-south collector roadway, and River Road as the intersection spacing in Concept E3-C is undesirable.
E-3C	-0.25	Yes	
E-4A	-0.75	Yes	Modify to remove the Hostetler Street underpass as there is no significant operational benefit of providing two grade-separated crossings and Concept E-3 presents the Hostetler Street grade-separation Concept.
E-4B	-0.50	No	A grade-separated crossing of the UP line to 2nd Street is infeasible due to the constraints of distance for grade-transition and property access.
E-5	-0.75	No	Does not provide operational relief to the Chenoweth Interchange and directs additional traffic to the Webber Street Interchange.
E-6	-0.75	No	An at-grade crossing of the UP line with a public roadway is unlikely to be permitted.
E-7	N/A	No	Does not provide necessary connectivity to 2nd Street and results in the need for severe reduction of development potential.
W-1	N/A	No	Operational analysis indicated the roundabout operations would not meet mobility standards.
W-2	-0.50	Yes	
W-3	0.00	Yes	
W-4	0.00	Yes	
W-5	-0.25	Yes	
W-6	-0.50	No	Property impacts too severe.
N-1	-0.25	Yes	
N-2	0.00	Yes	
N-3	-0.50	No	Bridge structure would have environmental impacts and would provide no significant operational benefit.

N/A – concept removed prior to qualitative evaluation.

Based on the initial screening of the concepts, the following concepts are recommended to be refined and evaluated in greater detail:

East concepts

- E-3A
- E-3B/C (Hybrid)
- E-4A (Modified)

West Concepts

- W-2
- W-3
- W-4
- W-5

North Concepts

- N-1
- N-2

In order to identify a preferred alternative, the design of each concept above will be refined and analyzed in detail. The analysis of refined concepts will focus on a preferred local circulation and access design solution determined by the TAC and SC that balances the extent to which improvements are needed and/or development is restricted through a trip cap/budget or an alternative mobility standard.

The initial screening process led to a preliminary consultant recommendation to further evaluate and refine local circulation and access designs for three easterly concepts (E-3A, E-3B/C Hybrid renamed as E-3D, and a Modified E-4A renamed as E-4B), four westerly concepts (W-2, W-3, W-4, and W-5), and two northerly concepts (N-1 and N-2). The two new modified concepts are shown in Figures E-3D and E-4B. Each of the above concepts will be evaluated in greater detail based on a development scenario that may or may not include land-use management and/or alternative mobility standards.

LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-4C: TWO GRADE-SEPARATED CROSSINGS OF THE BNSF AT HOSTETLER ST AND SNIPES ST
THE DALLES, OREGON

FIGURE E-4C

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LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
CONCEPT E-3D: ONE NORTHERN GRADE-SEPERATED CROSSING OF THE BNSF
THE DALLES, OREGON

FIGURE E-3D

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REFINED CONCEPT EVALUATION

Given the remaining alternatives within each geographic region of the interchange area, the refined analysis will focus on identifying a preferred design concept within each region. The selection of a preferred concept in each region is impacted by the selected design concepts within the other regions. Therefore, the preferred concept in the region that is least impacted by others will be selected first.

The magnitude and cost of potential improvements are greatest within the easterly concept area, while the westerly concepts are most impacted by the other concept areas; therefore, the preferred concept will be identified for the northerly area (recognized as the most independent) and then the easterly area prior to identifying the preferred concept for the westerly area. Evaluation and selection of a preferred concept will consider: the preferred location of a new east-west crossing of I-84, preliminary project cost estimates, and intersection operations.

Northerly Concept Refinement

Two concepts were qualitatively compared north of River Road and east of I-84: N-1 and N-2. The primary differentiator between the two concepts is a new crossing of I-84 approximately 2000 feet north of the Chenoweth Interchange, as shown in Concept N-2. Given that the forecast distribution of trips to/from this portion of the study area (Sub-area "A") is primarily to the south of the Chenoweth Interchange and along the I-84 corridor, it is not expected that much traffic would divert to the north in order to return south on 6th Street. Ultimately, the new connection would also increase the needs at the Highway 30/River Road/6th Street intersection. There would be operational benefits at the River Road/River Trail Way intersection but not sufficient to outweigh the cost of the potential overpass. **Therefore, the northerly concept without a new crossing of I-84, as shown in Concept N-1, will be incorporated into a preferred circulation and access design concept.**

However, it is recommended that right-of-way be preserved that would provide the option for a future overpass. This overpass could have significant system benefits if the city were to expand its urban growth boundary in the future in the area northwest of the interchange along Highway 30.

Easterly Concept Refinement

As discussed previously and as summarized in Table 7-1, providing a new east-west connection across I-84 allows more development per the existing comprehensive plan to occur while maintaining a feasible cross-section on the River Road overpass of I-84. Three locations were proposed for a new east-west connection: north of Hostetler Street (Concept E-3A); at Hostetler Street (Concept E-3D); and, south of Hostetler Street at Snipes Street (Concept E-4B). An evaluation of the crossing locations was conducted that considered the preliminary cost of each crossing and the impacts on traffic operations.

Cost Estimates

Cost estimates were prepared to evaluate the financial impacts of each alternative location. Table 7-6 summarizes the cost estimates for each proposed crossing location. *Attachment "C" includes the detailed summary of the preliminary cost estimates.*

Table 7-6 Preliminary Cost Estimates of East-West Crossing Locations

Crossing Location	Cost Estimate[1]
North of Hostetler Street (E-3A)	$19,750,000
Hostetler Street Extension (E-3D)	$14,100,100
Snipes Street Crossing (E-4B)	$32,150,000

[1]Includes 40-percent contingency

The order of magnitude of the preliminary cost estimates shown in Table 7-6 are primarily related to the bridge and retaining wall construction costs associated with each crossing location. The highest cost crossing, at Snipes Street, is greater than two times the cost of the Hostetler Street Extension. This cost differential reflects the length of the bridge structure needed to go over the UP Railroad and I-84 which was estimated to include two bridge structures totaling 220 feet. In comparison, the UP Railroad overcrossing structure at Hostetler Street is estimated at 130 feet.

Qualitative Assessment of Operations

Each proposed east-west crossing location was evaluated with respect to the benefits or impacts each crossing has on traffic operations. Although operations were evaluated as part of the preliminary assessment, the impacts on operations were considered in more detail under the refinement evaluation.

Additional refinements to this operational analysis included limiting the Hostetler undercrossing to 3 lanes. As shown in Exhibit 1, the existing cross-section is two-lanes. A detailed assessment of the I-84 underpass at Hostetler showed that a 3-lane cross-section is the maximum that can be accommodated under the existing structure while providing reasonable clearance to the columns. The distance between the existing bridge piers is approximately 50 feet, providing 6 to 7 feet on either side of the travel lanes between the fog line and the piers. Sidewalks and bike lanes would be provided behind the piers. Reconstruction of the underpass to accommodate additional lanes is a possibility, but in order to minimize cost widening is not proposed at this time.

Exhibit 1: Photo of Hostetler Street Undercrossing of I-84 (Looking East)

Connection to 2nd Street North of Hostetler Street

As shown in Concept E-3A, north of Hostetler Street the proposed crossing of the UP Railroad would connect 2nd Street to River Road and provide an east-west connection at Hostetler Street. This crossing location is expected to have three shortcomings and no unique benefits compared to Concept E-3D. The shortcomings include:

- Low potential for diversion of traffic from River Road
    - Due to the orientation of the overcrossing and resulting location of a local street connection to River Road within the northern portion of the Easterly Concept Area, it is expected that a large proportion of traffic on the River Road overpass of I-84 would not divert to the new connection route.
- High proportion of turning movements at 2nd Street/Hostetler Street
    - Operationally, the majority of traffic that reroutes to use the new east-west connection would be making a southbound right-turn during weekday p.m. peak hour and an eastbound left-turn during the weekday a.m. peak hour at the 2nd Street/Hostetler Street intersection. The larger proportion of turn movements generated with the new connection is expected to reduce the operational capacity

of the 2nd Street/Hostetler Street intersection compared to the connection to 2nd Street at Hostetler in Concept E-3D.

- High potential for impacting traffic operations at Webber Street
    - The orientation of the UP Railroad crossing would direct through movements onto 2nd Street in the southbound direction. Much of this traffic would be expected to continue straight on 2nd Street and increase traffic volumes at the I-84 Webber Street interchange. Furthermore, the northerly location of the east-west connection under this scenario would not be as likely to attract east-west trips from the Easterly Concept Area that currently utilized the Webber Street interchange to access 6th Street.

Connection to 2nd Street at Hostetler

As shown in Concept E-3D (a hybrid of E-3B and E-3C), an extension of Hostetler Street could provide access to/from River Road from multiple directions. The concept includes an undercrossing of the UP railroad that would be constructed to allow through traffic using the existing undercrossing of I-84 to access 6th Street. This connection location is expected to provide several benefits and has no negative impacts relative to the other Hostetler Street crossing, Concept E-3A. The greatest benefit is moderate to high potential for diversion of future traffic from River Road and potentially the Webber Street interchange. The location of this crossing allows for a connection to River Road approximately midway between the existing I-84 interchanges at a location that is familiar to motorists.

Connection to 2nd Street at Snipes Street

Concept E-4B includes a new undercrossing of I-84 and the UP railroad at Snipes Street. This new connection provides an alternative to a crossing of I-84 at Hostetler Street, but the benefits of this location are not expected to outweigh the additional costs of a new grade-separated crossing of I-84 (while there is an existing grade-separation of I-84 and Hostetler Street providing connectivity between 2nd Street and 6th Street, no such connection is currently provided at Snipes Street).

It is expected that this crossing location will have low potential for diversion of traffic from River Road due to its southerly location. The amount of traffic that is expected to be diverted from the River Road overpass of I-84 to the new Snipes Street crossing is expected to be less than the Hostetler Street location and less than the location north of Hostetler given that Snipes Street is closer to the Webber Street interchange.

This concept also requires increasing the elevation of 2nd Street to match the grade of Snipes Street at a signalized intersection. This would impact several existing businesses directly (property acquisition) and indirectly (access relocation due to the grade changes necessary at 6th Street and Snipes Street west of I-84). The magnitude of property impacts are more severe for the Snipes Street concept as compared to the Hostetler Street concepts.

Comparison of East-West Crossing Locations

The crossing locations were ranked with respect to preliminary cost estimates and expected operational benefits. The crossing location that ranked highest (one being the highest, three being the lowest) provided the lowest cost estimate or the greatest operational benefits. Operational benefits were measured by the potential to divert traffic from the Chenoweth interchange and not increase traffic impacts to the Webber Street interchange. Table 7-7 provides a summary for comparison.

Table 7-7 Preliminary Cost Estimates of East-West Crossing Locations

Crossing Location	Cost Estimate[1]	Potential to Divert Traffic from Chenoweth Interchange	Negative Impact to Webber Interchange	Total
North of Hostetler Street (E-3A)	2	2	3	**7**
Hostetler Street Extension (E-3D)	1	1	2	**4**
Snipes Street Crossing (E-4B)	3	3	1	**7**

As shown in Table 7-7, the Hostetler Street crossing alternative ranked highest in all three categories resulting in the lowest total score and the highest overall ranking. **Therefore, the Hostetler Street crossing alternative, as shown in Concept E-3D, will be incorporated into a preferred circulation and access design concept.**

Westerly Concept Refinement

The following refined concept evaluation focuses on identifying the preferred design concept for the west concept area. Four westerly concepts have been included in refined evaluation: W-2, W-3, W-4, and W-5. The critical elements that distinguish westerly concepts from one another include feasibility of roundabout intersection control and the type of access control measures implemented. Both elements are discussed in the following sections.

Roundabout Operations

Roundabouts and signal alternatives were considered in order to serve the forecast demand volumes at 6th Street/River Road, 6th Street/Chenoweth Loop, and 6th Street/Hostetler Street. The operational analysis results are summarized below. For this analysis it was assumed that Concept N-1 and E-3D are the preferred concepts for their respective areas (i.e., there will not be a future I-84 overpass north of the Chenoweth Interchange and there will be an I-84 and UP railroad underpass at Hostetler Street).

All traffic volumes were developed based on a conservative estimate of future traffic demand generated by new developments. This was assumed to be achieved by a future volume scenario that includes development of up to 75 percent of full development as allowed under Land Use Scenario #2. This does not represent the maximum development that could occur, but represents a likely development scenario for the purpose of comparison between traffic control types.

6th Street/River Road

At the 6th Street/River Road intersection, Concepts W-2 and W-3 propose a roundabout, Concept W-4 proposes a "T" intersection, and Concept W-5 proposes a signalized intersection.

Given the demand volumes anticipated on 6th Street the analysis assumed a 5-lane section on 6th Street south of River Road through Hostetler Street. This cross-section includes two southbound lanes, one center turn lane, and two northbound through lanes. During the weekday p.m. peak hour, the southbound traffic warrants two through lanes. In order to account for weekday a.m. peak hour directional traffic, an equal cross-section was assumed in the northbound direction.

Table 7-10 provides a summary of the signal and roundabout operations at 6th Street/River Road intersection.

Table 7-8 Signal and Roundabout Operations at 6th Street/River Road

Geometric Description	Signalized			Roundabout		
	East Leg	North Leg	South Leg	East Leg	North Leg	South Leg
Entry Lanes	2	1	2	2	1	2
Right Turn By-Pass?	N/A			NO	NO	NO
Circulating Lanes	N/A			1	2	1
Exit Lanes	N/A			1	1	2
Performance Measure						
Critical Lane Volume / Capacity	0.58			0.50	0.20	0.28
Critical Lane Average Delay (sec)	13.9			7.0	7.4	4.7
95% Queue Length (ft)	200	100	150	75	25	50

As shown in Table 7-10 the operational benefits of a roundabout include reduced delay and queuing. However, the right-of-way impacts of a roundabout are greater than that of a traffic signal. Figure 7-5 conceptually shows the right-of-way impacts expected with a roundabout. As shown in Figure 7-5, a two-lane roundabout could be constructed at this location without significant impacts to adjacent properties.

ROUNDABOUT CONCEPT SKETCH
6TH STREET AT RIVER ROAD
THE DALLES, OREGON

FIGURE 7-5

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6th Street/Chenoweth Loop

Concept W-3 proposes a roundabout at the 6th Street/Chenoweth Loop intersection, while Concepts W-2, W-4, and W-5 propose a signalized intersection.

Table 7-11 provides a summary of the signal and roundabout operations at 6th Street/River Road

Table 7-9 Signal and Roundabout Operations at 6th Street/Chenoweth Loop

Geometric Description	Signalized			Roundabout		
	North Leg	West Leg	South Leg	North Leg	West Leg	South Leg
Entry Lanes	2	1	2	2	1	2
Right Turn By-Pass?	N/A			NO	NO	NO
Circulating Lanes	N/A			1	2	1
Exit Lanes	N/A			2	1	2
Performance Measure						
Critical Lane Volume / Capacity	0.44			0.52	0.37	0.35
Critical Lane Average Delay (sec)	9.4			8.4	8.4	5.7
95% Queue Length (ft)	250	200	150	50	25	50

As shown in Table 7-11, a roundabout is forecast to operate with less delay and queuing than the signal. However, both a roundabout and signal provide adequate capacity and minimal delay.

Figure 7-6 shows a conceptual design of a two-lane roundabout and illustrates the right-of-way impacts of a roundabout at the 6th Street/Chenoweth Loop intersection. The sketch shows the additional right-of-way required for sidewalks and utilities as a dashed line. As shown in Figure 7-6, a two-lane roundabout could be constructed at this location, but would impact adjacent property, including recently constructed businesses in front of the Home Depot in the southwest quadrant of the intersection.

ROUNDABOUT CONCEPT SKETCH
6TH STREET AT CHENOWETH LOOP
THE DALLES, OREGON

FIGURE 7-6

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6th Street/Hostetler Street

The 6th Street/Hostetler Street intersection is currently recognized as a system constraint and is forecast to continue to be a constraint if new development occurs, despite improvements to traffic control and geometry.

Table 7-12 provides a summary of the signal and roundabout operations at 6th Street/Hostetler Street

Table 7-10 Signal and Roundabout Operations at 6th Street/Hostetler Street

Geometric Description	Signalized				Roundabout			
Approach	East	North	West	South	East	North	West	South
# Entry Lanes	2	4	3	4	2	2	1	2
Right Turn By-Pass	N/A				NO	NO	NO	NO
Circulating Lanes	N/A				2	2	2	1
Exit Lanes	N/A				1	2	1	2
Performance Measures								
Critical Lane Volume/Capacity	0.91				0.58	0.73	0.59	0.44
Critical Lane Average Delay, sec	35.2				12.3	19.6	18.4	7.2
95% Queue Length, ft	250	275	125	150	100	175	100	75

As shown in Table 7-12, a roundabout is forecast to operate with less delay and queues than the signal. However, a roundabout or a signal provides adequate capacity and minimal delay.

Figure 7-7 shows a conceptual design of a two-lane roundabout and illustrates the right-of-way impacts of a roundabout at the 6th Street/Hostetler Street intersection. As shown in Figure 7-7, a two-lane roundabout could be constructed at this location, but would impact adjacent property, including businesses in southwest quadrant and the northwest quadrant of the intersection.

Access Control

In order to provide access control and improve traffic flow along 6th Street, a median is proposed in Concepts W-5 and W-3. The challenge associated with a continuous center lane median is the ability to provide access to all sites through right-in-right-out movements, which requires u-turns at the intersections. If two roundabouts are provided on 6th Street at River Road and Chenoweth Loop, u-turns can be made relatively easily. However, if signals are installed along with a median, as proposed in Concept W-5, u-turns cannot be made in the southbound direction at Chenoweth Loop or in the northbound direction at River Road unless a u-turn phase were added to the signal operations. The existing 3-phase signals do not provide a left-turn phase in the directions that would be used by u-turning vehicles.

ROUNDABOUT CONCEPT SKETCH
6TH STREET AT HOSTETLER STREET
THE DALLES, OREGON

FIGURE 7-5

Westerly Concept Comparison

The operational analysis showed that roundabouts will operationally perform better than signals along the 6th Street corridor. However, due to right-of-way impacts a roundabout is not recommended at the 6th Street/Hostetler Street intersection.

A continuous median is recognized as the most effective means to provide access control along 6th Street in the vicinity of the I-84 Chenoweth interchange, without eliminating access to local businesses. Therefore, a continuous median is proposed from River Road to Chenoweth Loop, as shown in Concepts W-3 and W-5. The continuous median will limit driveways and minor streets on the west side of 6th Street to right-in-right-out movements only.

Although access management measures shown in Concepts W-2 and W-4 are expected to improve traffic flow within the vicinity of the interchange, they don't provide as much access control as a median. Additionally, Concepts W-2 and W-4 impose full driveway closures, which may have a significant impact on the viability of local businesses.

In order to effectively serve businesses while maintaining access control through a median, u-turns must be provided at the Chenoweth Loop and River Road intersections. A fourth signal phase (a u-turn specific phase) would need to be added to the existing 3-phase signalized intersections at River Road and Chenoweth Loop. This would reduce the projected traffic capacity at these intersections and may increase the number of needed lanes at the intersection or reduce the amount of development that could be accommodated by the proposed improvements. **Therefore, a continuous median on 6th Street from River Road to Chenoweth Loop, as shown in Concept W-2, will be incorporated into a preferred circulation and access design concept. Roundabouts are preferred at River Road and Chenoweth Loop and a signal is preferred at the Hostetler Street intersection on 6th Street.**

PREFERRED ALTERNATIVE OVERVIEW

A comprehensive preferred alternative was developed based on the evaluations outlined above for each region of the study area. Figure 7-8 illustrates the preferred alternative concept including proposed alignments of new roadways and intersections, and locations where existing intersection control is proposed to be modified. Figure 7-9 illustrates proposed lane configurations and preferred traffic control devices in greater detail.

As shown in Figures 7-8 and 7-9, roundabouts are preferred along River Road at River Trail Way, Columbia Street, Crates Way (North), Hostetler Street (new connection), and Crates Way (South). Roundabouts are recommended at these locations in order to provide consistency in the network and to reduce the number of approach lanes necessary compared to signal alternatives. Attachment "D" provides a summary of roundabout operations at intersections where roundabouts are incorporated into the preferred alternative.

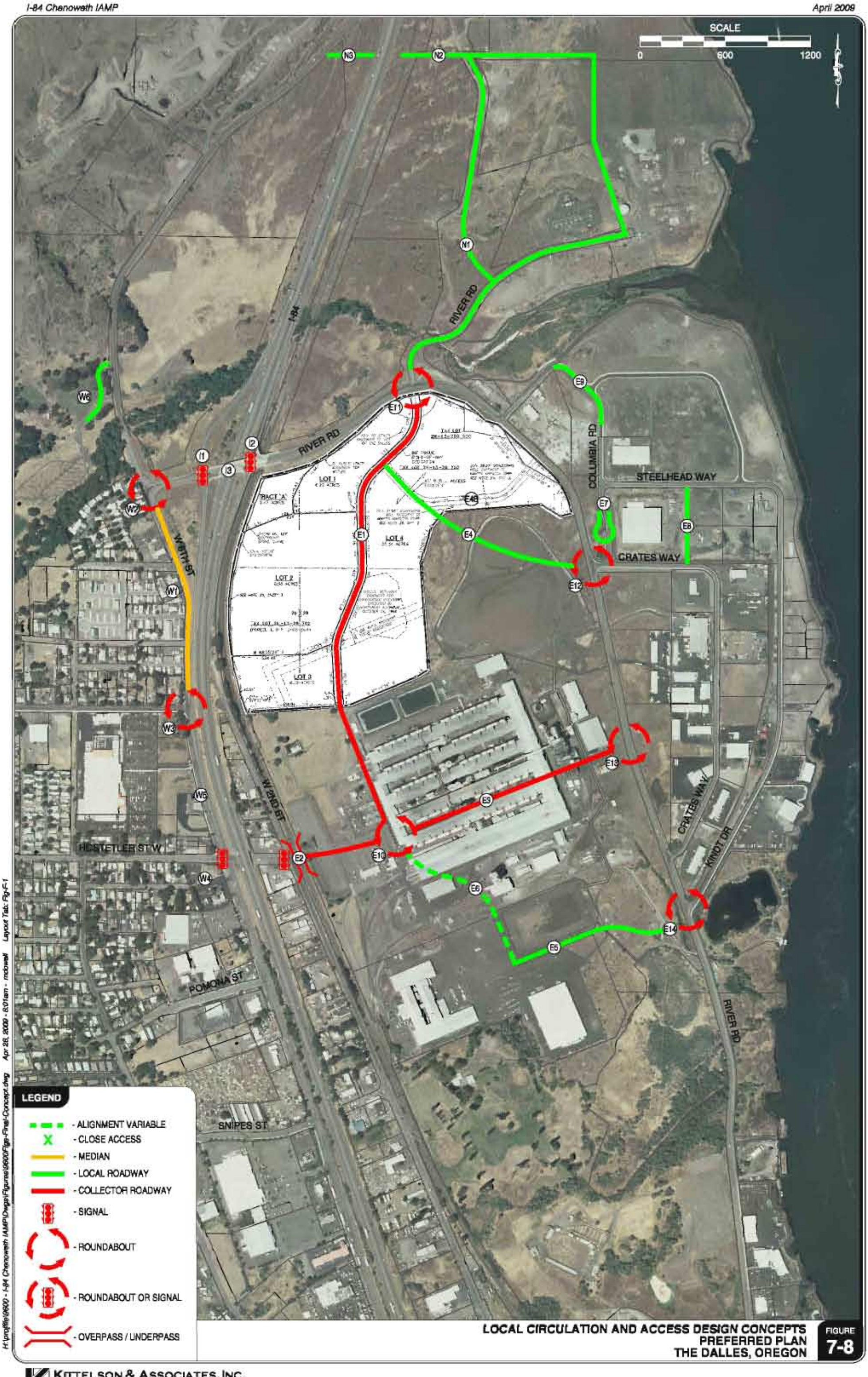
Figures 7-10 and 7-11 provide conceptual design layouts for the Hostetler Undercrossing and the Chenoweth Interchange Bridge Improvements. The Hostetler Undercrossing conceptual design

shown in Figure 7-10 includes a four-lane cross-section proposed east of the bridge structure, but the cross-section under the structure will be limited to 3 lanes. Refined cost estimates for improvements shown in Figure 7-10 were prepared and are provided in Attachment "E." Assuming 40-percent contingency and construction in year 2020, the improvements at the Hostetler Street Undercrossing are expected to cost 13.8 million.

Figure 7-11 shows a maximum six-lane cross-section over I-84, which includes side-by-side left-turn lanes in order to provide adequate queue storage. Signal timing can be implemented that will minimize queuing between I-84 ramp terminal intersections. Retaining walls are being proposed to allow widening on the I-84 WB ramps to improve operations at the ramp terminal intersection. Refined cost estimates for improvements shown in Figure 7-11 were prepared and are provided in Attachment "E." Assuming 40-percent contingency and construction in year 2020, the improvements to the I-84 Chenoweth interchange are expected to cost 10.6 million.

The intersection configurations and roadway cross-sections were developed to serve a maximum amount of new development without requiring a greater cross-section on the River Road overpass of I-84, or under I-84 at Hostetler Street. The preferred alternative is not expected to provide capacity for full build-out of all vacant and redevelopable land within the study area. Recommendations for managing future development in order to allow maximum use of existing land for development purposes are provided in the following sections.

Table 7-11 provides a list of the recommended improvements identified in Figure 7-8.



LOCAL CIRCULATION AND ACCESS DESIGN CONCEPTS
PREFERRED PLAN
THE DALLES, OREGON

FIGURE **7-8**

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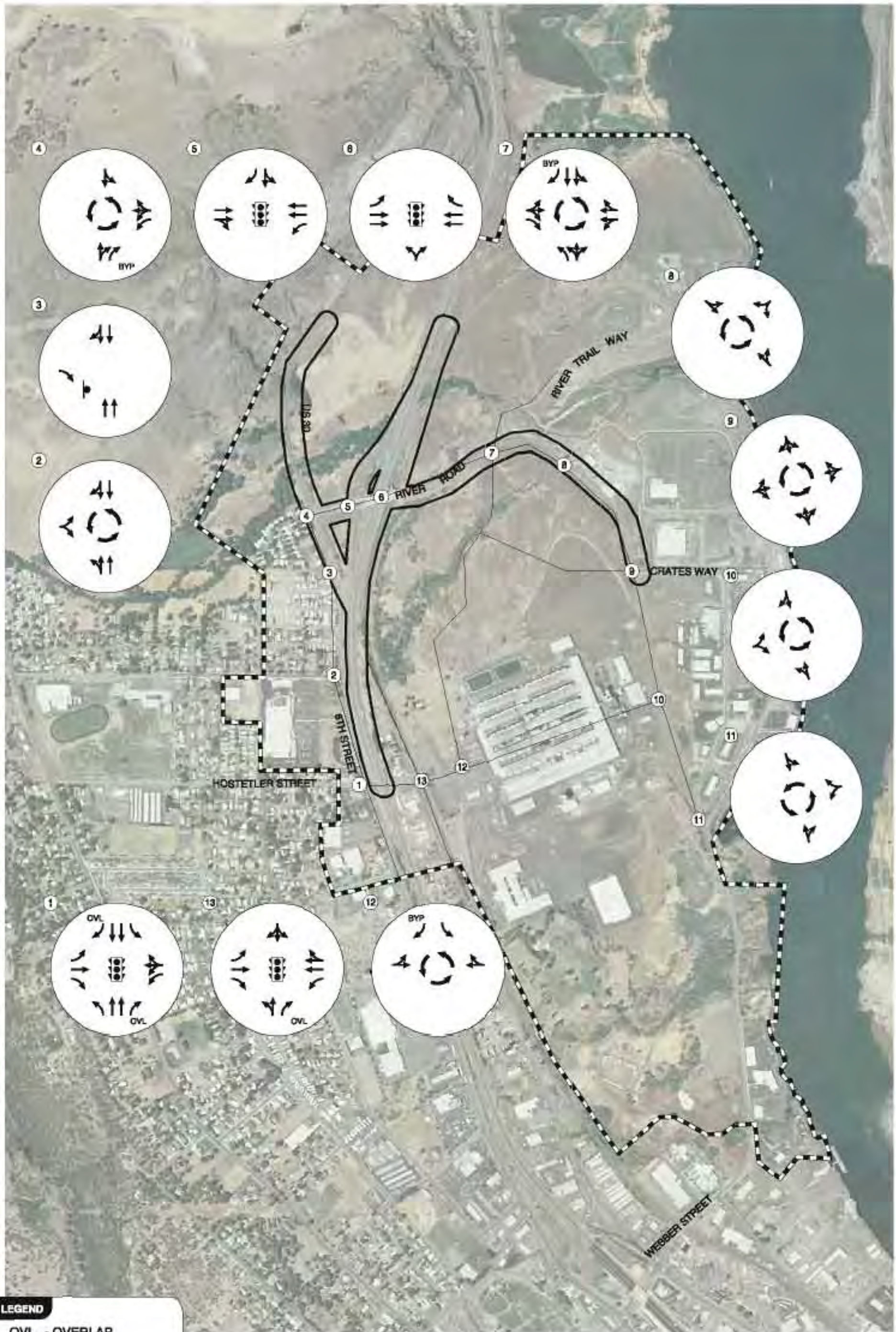

FUTURE 2030 LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
PREFERRED ALTERNATIVE, WEEKDAY PM PEAK HOUR
THE DALLES, OREGON

FIGURE 7-9

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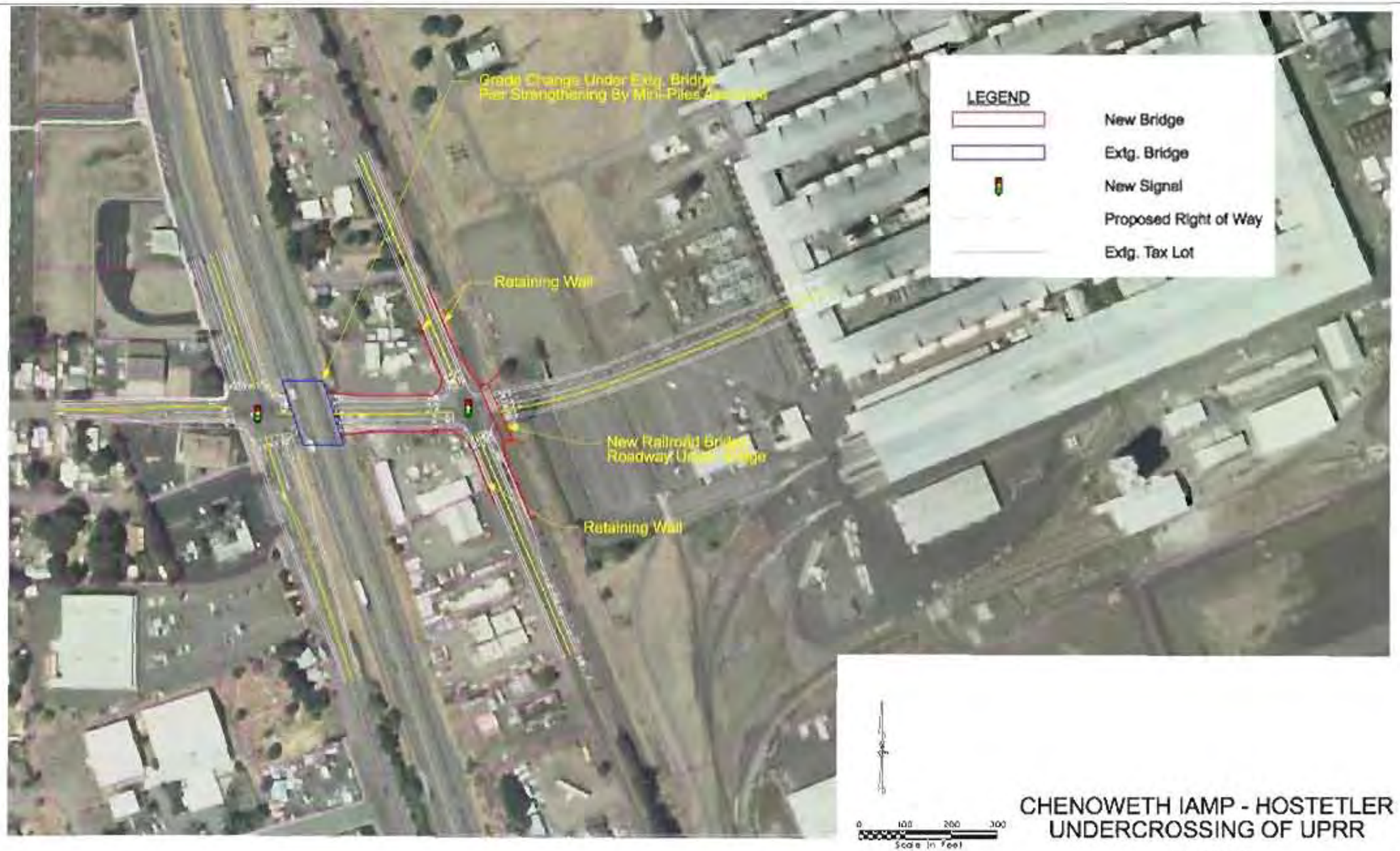

CHENOWETH IAMP - HOSTETLER UNDERCROSSING OF UPRR

04/27/2009

CH2MHILL

PREFERRED ALTERNATIVE CONCEPTUAL DESIGN
HOSTETLER STREET UNDERCROSSING
THE DALLES, OREGON

FIGURE 7-10

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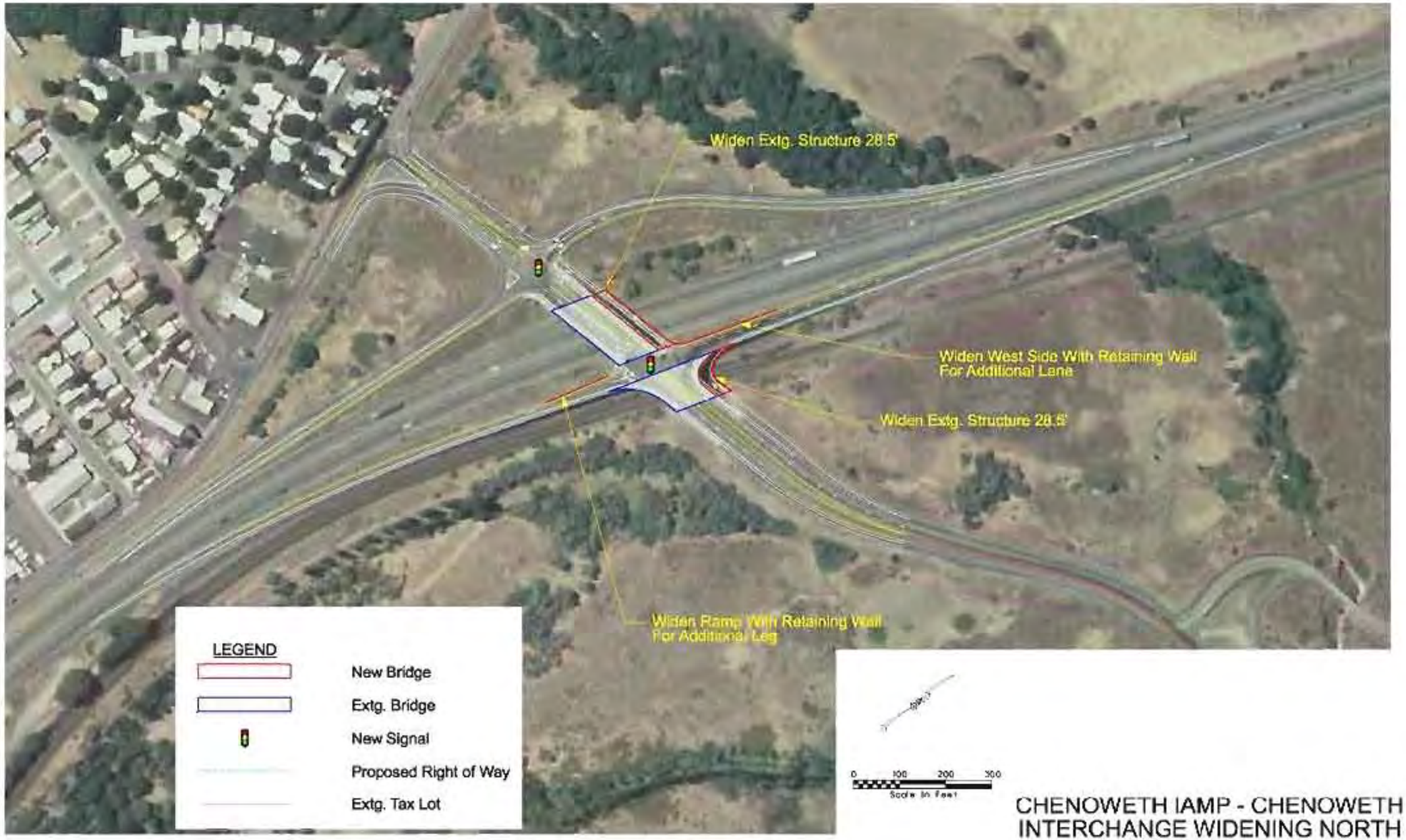


CHENOWETH IAMP - CHENOWETH INTERCHANGE WIDENING NORTH

04/27/2009

CH2MHILL

PREFERRED ALTERNATIVE CONCEPTUAL DESIGN
I-84 CHENOWETH INTERCHANGE BRIDGE
THE DALLES, OREGON

FIGURE 7-11

Table 7-11 Preferred Alternative Improvement Summary

Improvement Reference	Improvement Type	Description
N1	New Local Roadways	Provide a network of local streets
N2	ROW Preservation	Preserve ROW for a potential future overpass of I-84
N3	ROW Preservation	Preserve ROW for a potential future overpass of I-84
E1	New Collector Roadway	Extend River Trail Way to the Hostetler Street Extension
E2	UP Railroad Under-Crossing	Provides Hostetler Street connection to River Road
E3	New Collector Roadway	Extends Hostetler Street from 2nd Street to River Road
E4	New Local Roadway	Provides local business access
E5	New Local Roadway	Provides local business access
E6	New Local Roadway (variable alignment)	Provides local business access
E7	Disconnect Local Roadway/ Create Cul-de-sac	Eliminates conflicts with westbound approach to the River Road/Crates Way (north) intersection
E8	New Local Roadway	Connects Klindt Drive to Crates Way
E9	New Local Roadway	Complete connection between Columbia Road and Steelhead Way
E10	Intersection Improvement (Roundabout)	Intersection control to accommodate future traffic at Hostetler Street/River Trail Way Extension
E11	Intersection Improvement (Roundabout)	Intersection control to accommodate future traffic at reconstructed River Trail Way/River Road
E12	Intersection Improvement (Roundabout)	Intersection control to accommodate future traffic
E13	Intersection Improvement (Roundabout)	Intersection control to accommodate future traffic
E14	Intersection Improvement (Roundabout)	Intersection control to accommodate future traffic
W1	Install median	Install median from River Road to Hostetler Street
W2	Intersection Improvement (Roundabout)	Intersection control to accommodate future traffic and provide for u-turns created by the median
W3	Intersection Improvement (Roundabout)	Intersection control to accommodate future traffic and provide for u-turns created by the median
W4	Intersection Improvement (Signal)	Intersection control to accommodate future traffic
W5	Widen 6th Street to 5 Lanes	Widen 6th Street from River Road to south of Hostetler Street to accommodate weekday a.m. and p.m. peak hour travel demand
W6	Relocate Driveway/ New Local Roadway	Relocate driveway further from interchange and River Road/6th Street intersection to meet access spacing standards
I1	Signalize Intersection	Accommodate weekday a.m. and p.m. peak hour travel demand
I2	Signalize Intersection	Accommodate weekday a.m. and p.m. peak hour travel demand
I3	Widen Bridge to 6 Lanes	Accommodate weekday a.m. and p.m. peak hour travel demand

PREFERRED ALTERNATIVE REFINED CAPACITY ANALYSIS

Refined capacity analysis of the preferred alternative was conducted to evaluate the level of development that could occur if all of the proposed improvements are made and no other traffic management measures are applied. Figure 7-8 illustrated the preferred alternative lane configurations and traffic control devices assumed in the analysis.

Although originally designed based on a 75-percent build-out of Land Use Scenario #2 (WM3 property all developed as commercial development), the preferred alternative was found to be able to accommodate up to 85-percent of full development scenario under Land Use Scenario #2 while still operating below capacity and meeting ODOT mobility standards at the ramp terminals. Additional development beyond 85-percent of build-out is forecast to increase the queuing on River Road at the I-84 Ramp Terminal intersections and at the 6th Street/Hostetler Street intersection beyond the available storage length. Figure 7-12 summarizes the forecast traffic volumes and operations based on up to 85-percent of full development.

Travel Demand Management and Land Use Alternatives

Two additional scenarios were evaluated to determine if greater levels of the full build-out forecast can be accommodated through other strategies. These strategies include travel demand management (TDM) and modifications to the assumed land use scenario. If no additional strategies are applied, a trip cap or trip budget would likely be needed to ensure that the 85-percent build-out scenario is not exceeded over time. These measures, as well as potential TDM measures would likely be implemented through an overlay district in the comprehensive plan.

Trip caps would specify the number of trips per acre allowed on each parcel within the overlay area. A trip budget would monitor the trips used per acre of development to ensure that the 85-percent build-out scenario was being averaged over time. System development charges (SDC) that varied based on the intensity of a proposed development could be used as a tool to ensure that the desired average density was not exceeded over time but would allow property owners to develop at the maximum density allowed by the code. Many combinations of these measures can be developed based on input from Agency staff.

Impacts of Travel Demand Management

The percentage of the full build-out scenario of Land Use Scenario #2 that could be accommodated if all new industrial developments achieved a 10-percent reduction in new trips through TDM measures was evaluated. A 10-percent reduction in new industrial trips was found to result in the preferred alternative being able to accommodate a 90-percent of full build-out of Land Use Scenario #2. Under this scenario the system is forecast to operate below capacity and forecast queues are expected to equal available storage distances. Additional development beyond 90-percent is forecast to increase the queuing on River Road at the I-84 Ramp Terminal intersections and at the 6th Street/Hostetler Street intersection beyond the available storage length. Figure 7-13 summarizes the forecast traffic volumes and operations based on up to 90-percent of full development.

As shown in Figure 7-13, the V/C ratios and delay at the I-84 Ramp Terminal intersections on River Road meet ODOT mobility standards. The forecast queues use all available storage capacity with this level of development.

Land Use Strategies

If, in addition to the TDM measures, the land use for approximately 42-acres of WM3 property was restricted to industrial development only (consistent with Land Use Scenario #1) the percentage of the full build-out scenario was also analyzed. As outlined in Memo #3/4, Land Use Scenario #1 is estimated to generate less new trips than Land Use Scenario #2. The combination of TDM measures and reverting to Land Use Scenario #1 resulted in the preferred alternative being able to accommodate 95-percent of full build-out Land Use Scenario #1.

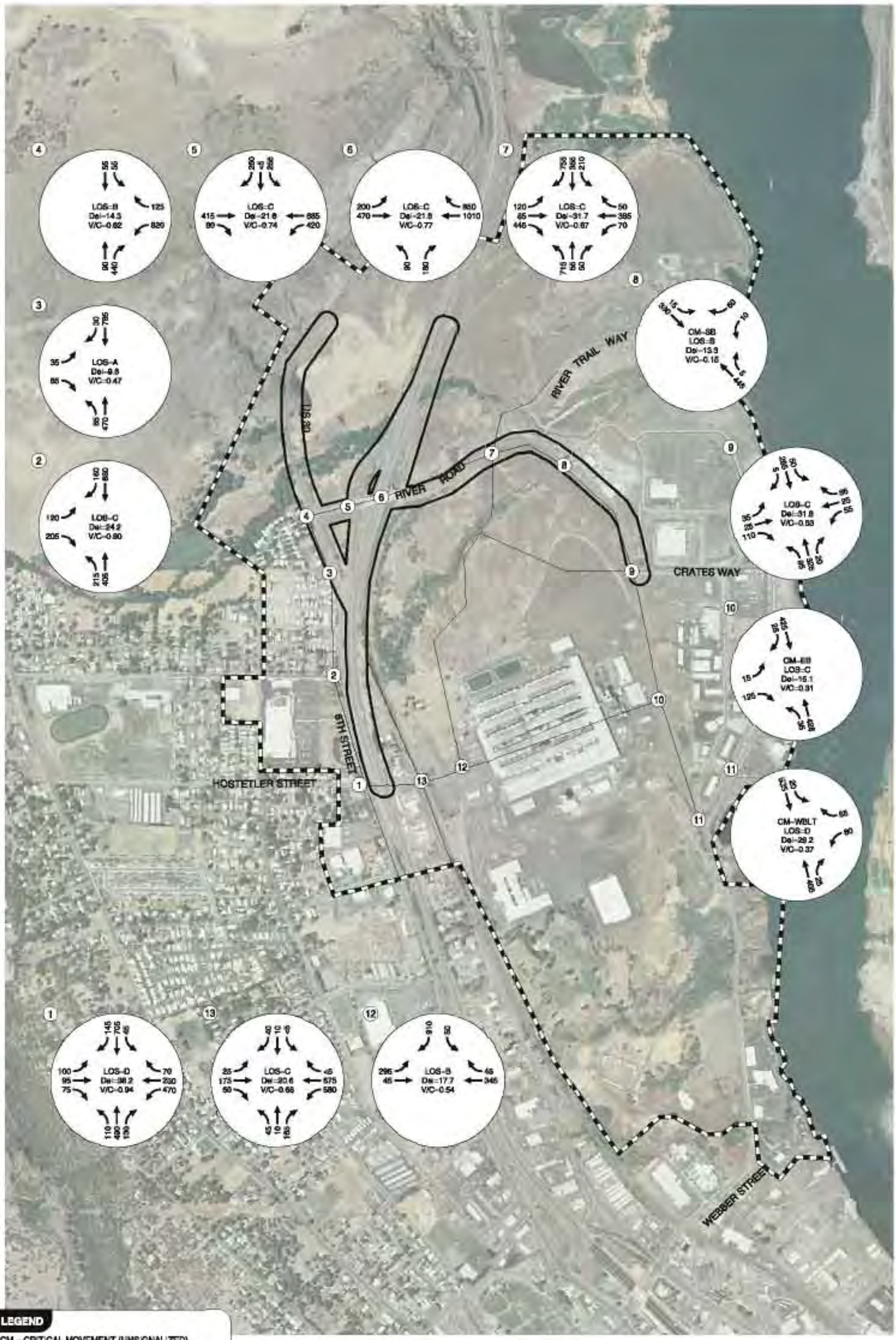
Under this scenario the system was found to operate at capacity. Additional development beyond 95-percent is forecast to increase the queuing on River Road at the I-84 Ramp Terminal intersections and at the 6th Street/Hostetler Street intersection beyond the available storage length. Additionally, the V/C ratio of the 6th Street/Hostetler Street intersection will exceed 1.0. Figure 7-14 summarizes the forecast traffic volumes and operations based on up to 95-percent of full development.

As shown in Figure 7-14, the V/C ratios and delay at the critical I-84 Ramp Terminal intersections on River Road meet ODOT mobility standards. The forecast queues use all available storage capacity with this level of development.

A summary of the three future development scenarios and strategies evaluated is summarized in Table 7-12.

Table 7-12 Future Development Scenarios and Transportation Demand Management Measures

Percent of Full Build-Out Scenario	TDM Resulting in 10% Reduction of Industrial Trips	Land Use Scenario
85%	No	#2 (WM3 all commercial)
90%	Yes	#2 (WM3 all commercial)
95%	Yes	#1 (25 acres of WM3 commercial, 42 acres industrial)

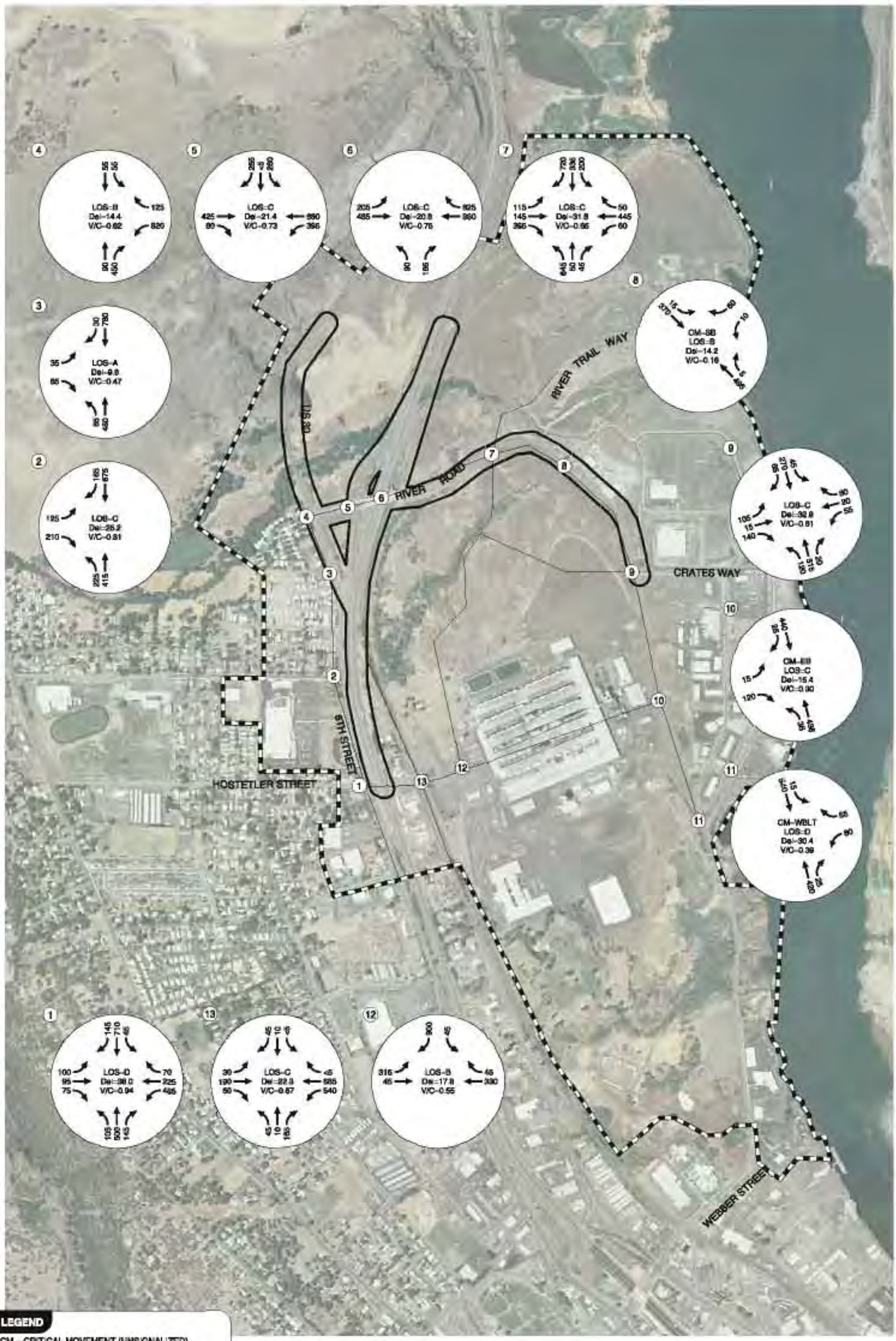


LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

2030 FUTURE DEVELOPMENT TRAFFIC CONDITIONS
85% DEVELOPMENT, WEEKDAY PM PEAK HOUR
THE DALLES, OREGON

FIGURE 7-12

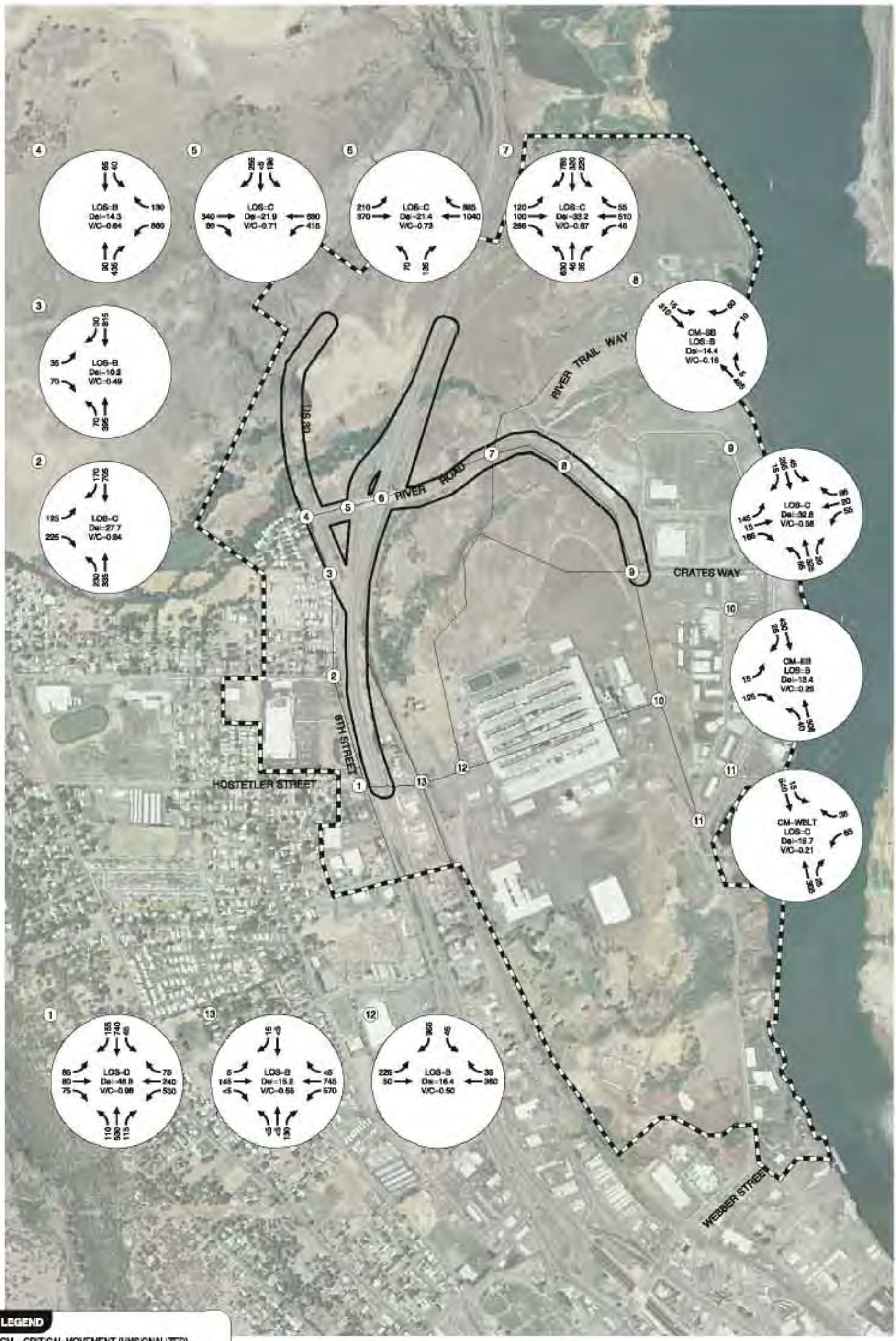


LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

2030 FUTURE DEVELOPMENT TRAFFIC CONDITIONS
90% DEVELOPMENT SCENARIO, WEEKDAY PM PEAK HOUR
THE DALLES, OREGON

FIGURE **7-13**



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

2030 FUTURE DEVELOPMENT TRAFFIC CONDITIONS
95% DEVELOPMENT SCENARIO, WEEKDAY PM PEAK HOUR
THE DALLES, OREGON

FIGURE **7-14**

SUMMARY

Refinement of the preliminary concepts resulted in a recommended preferred alternative that combines a recommended local circulation and access design concept from each of the study areas. These include North Concept N-2, East Concept E-3D, and West Concept W-2. Based on the proposed roadway cross-sections, intersection control treatments, and intersection lane configurations, the preferred alternative can reasonably accommodate up to 85-percent of the forecast full build-out scenario for Land Use Scenario #2 from previous memorandums (WM3 property assumed to be developed as all commercial development). Additional measures can be implemented to increase the level of development that can be accommodated. TDM measures that reduce industrial peak hour trips by ten-percent would allow the full build-out scenario to be increased to approximately 90 percent. In addition to TDM measures, if development of the WM3 property is restricted to industrial development on 42-acres, up to 95-percent of the full build-out scenario could be accommodated.

It is recommended that the Technical Advisory Committee and Steering Committee determine what, if any, measures should be taken to increase the amount of the full build-out scenario can be accommodated. In addition, specific measures should be determined for managing and monitoring the amount of development that occurs over time.

REFERENCES

1. Transportation Research Board. *Highway Capacity Manual*. 2000.

ATTACHMENTS

A. Roundabout Analysis Lane Configurations

B. I-84 Eastbound Roundabout Terminal Intersection Sketch

C. Preliminary Cost Estimates for East-West Crossing Locations

D. Refined Roundabout Operational Analysis Summary

E. Refined Cost Estimates

Attachment A
Roundabout Analysis
Lane Configurations

ROUNDABOUT
INT #2 Scenario #2

	NORTH LEG	WEST LEG	SOUTH LEG			
APPROACH						
RIGHT TURN BY-PASS						
RIGHT	☐	☐	☐	☐	☐	☐
LANE DEMAND						
1						
RIGHT	☑	☑	☑	☐	☐	☐
THRU	☐	☐	☐	☐	☐	☐
LEFT	☑	☑	☑	☐	☐	☐
LANE DEMAND	595	280	690			
2						
RIGHT	☐	☐	☐	☐	☐	☐
THRU	☐	☐	☐	☐	☐	☐
LEFT	☑	☐	☑	☐	☐	☐
LANE DEMAND	595		175			
3						
RIGHT	☐	☐	☐	☐	☐	☐
THRU	☐	☐	☐	☐	☐	☐
LEFT	☐	☐	☐	☐	☐	☐
LANE DEMAND						
CRITICAL LANE DEMAND	595	280	690	0	0	0
CIRCULATORY FLOW						
VOLUME	175	1030	135	0	0	0
NUMBER OF LANES	1	2	1			
CAPACITY	949	549	987	0	0	0
V/C	0.63	0.51	0.70	0.00	0.00	0.00
DELAY	10.0	13.2	11.6	0.0	0.0	0.0
Q95% (veh.)	4.6	2.9	6.0	0.0	0.0	0.0
Q95% (ft.)	125	75	150	0	0	0

ROUNDABOUT
INT #2 Scenario #3

	NORTH LEG	WEST LEG	SOUTH LEG			
APPROACH						
RIGHT TURN BY-PASS						
RIGHT	☐	☐	☐	☐	☐	☐
LANE DEMAND						
1						
RIGHT	☑	☑	☑	☐	☐	☐
THRU	☐	☐	☐	☐	☐	☐
LEFT	☑	☑	☑	☐	☐	☐
LANE DEMAND	508	285	595			
2						
RIGHT	☐	☐	☐	☐	☐	☐
THRU	☐	☐	☐	☐	☐	☐
LEFT	☑	☐	☑	☐	☐	☐
LANE DEMAND	508		180			
3						
RIGHT	☐	☐	☐	☐	☐	☐
THRU	☐	☐	☐	☐	☐	☐
LEFT	☐	☐	☐	☐	☐	☐
LANE DEMAND						
CRITICAL LANE DEMAND	508	285	595	0	0	0
CIRCULATORY FLOW						
VOLUME	180	855	135	0	0	0
NUMBER OF LANES	1	2	1			
CAPACITY	944	621	987	0	0	0
V/C	0.54	0.46	0.60	0.00	0.00	0.00
DELAY	8.2	10.6	9.0	0.0	0.0	0.0
Q95% (veh.)	3.3	2.4	4.2	0.0	0.0	0.0
Q95% (ft.)	100	75	125	0	0	0

ROUNDABOUT
INT #4 Scenario #2

	EAST LEG	NORTH LEG	SOUTH LEG			
APPROACH						
RIGHT TURN BY-PASS						
RIGHT	☐	☐	☐	☐	☐	☐
LANE DEMAND						
1						
RIGHT	☑	☑	☑	☐	☐	☐
THRU	☐	☐	☐	☐	☐	☐
LEFT	☑	☑	☑	☐	☐	☐
LANE DEMAND	655	120	820			
2						
RIGHT	☐	☐	☐	☐	☐	☐
THRU	☐	☐	☐	☐	☐	☐
LEFT	☑	☐	☑	☐	☐	☐
LANE DEMAND	655		95			
3						
RIGHT	☐	☐	☐	☐	☐	☐
THRU	☐	☐	☐	☐	☐	☐
LEFT	☐	☐	☐	☐	☐	☐
LANE DEMAND						
CRITICAL LANE DEMAND	655	120	820	0	0	0
CIRCULATORY FLOW						
VOLUME	95	1165	55	0	0	0
NUMBER OF LANES	1	2	2			
CAPACITY	1028	500	1087	0	0	0
V/C	0.64	0.24	0.75	0.00	0.00	0.00
DELAY	9.4	9.5	12.7	0.0	0.0	0.0
Q95% (veh.)	4.8	0.9	7.5	0.0	0.0	0.0
Q95% (ft.)	125	25	200	0	0	0

ROUNDABOUT
INT #4 Scenario #3

	EAST LEG	NORTH LEG	SOUTH LEG			
APPROACH						
RIGHT TURN BY-PASS						
RIGHT	☐	☐	☐	☐	☐	☐
LANE DEMAND						
1						
RIGHT	☑	☑	☑	☐	☐	☐
THRU	☐	☐	☐	☐	☐	☐
LEFT	☑	☑	☑	☐	☐	☐
LANE DEMAND	580	120	725			
2						
RIGHT	☐	☐	☐	☐	☐	☐
THRU	☐	☐	☐	☐	☐	☐
LEFT	☑	☐	☑	☐	☐	☐
LANE DEMAND	580		95			
3						
RIGHT	☐	☐	☐	☐	☐	☐
THRU	☐	☐	☐	☐	☐	☐
LEFT	☐	☐	☐	☐	☐	☐
LANE DEMAND						
CRITICAL LANE DEMAND	580	120	725	0	0	0
CIRCULATORY FLOW						
VOLUME	95	1015	55	0	0	0
NUMBER OF LANES	1	2	2			
CAPACITY	1028	555	1087	0	0	0
V/C	0.56	0.22	0.67	0.00	0.00	0.00
DELAY	7.9	8.3	9.7	0.0	0.0	0.0
Q95% (veh.)	3.6	0.8	5.4	0.0	0.0	0.0
Q95% (ft.)	100	25	150	0	0	0

ROUNDABOUT
INT #7 Scenario #2

	EAST LEG	NORTH LEG	WEST LEG	SOUTH LEG		
APPROACH						
RIGHT TURN BY-PASS						
RIGHT	☐	☑	☐	☐	☐	☐
LANE DEMAND		960				
1						
RIGHT	☑	☐	☑	☑	☐	☐
THRU	☑	☑	☐	☑	☐	☐
LEFT	☐	☐	☐	☑	☐	☐
LANE DEMAND	390	295	580	415		
2						
RIGHT	☐	☐	☐	☐	☐	☐
THRU	☑	☑	☑	☐	☐	☐
LEFT	☑	☑	☑	☑	☐	☐
LANE DEMAND	390	295	365	415		
3						
RIGHT	☐	☐	☐	☐	☐	☐
THRU	☐	☐	☐	☐	☐	☐
LEFT	☐	☐	☐	☐	☐	☐
LANE DEMAND						
CRITICAL LANE DEMAND	390	295	580	415	0	0
CIRCULATORY FLOW						
VOLUME	900	1425	655	805	0	0
NUMBER OF LANES	2	2	2	2		
CAPACITY	602	417	714	643	0	0
V/C	0.65	0.71	0.81	0.65	0.00	0.00
DELAY	16.3	27.0	23.0	15.2	0.0	0.0
Q95% (veh.)	4.7	5.4	8.6	4.7	0.0	0.0
Q95% (ft.)	125	150	225	125	0	0

ROUNDABOUT
INT #7 Scenario #3

	EAST LEG	NORTH LEG	WEST LEG	SOUTH LEG		
APPROACH						
RIGHT TURN BY-PASS						
RIGHT	☐	☑	☐	☐	☐	☐
LANE DEMAND		875				
1						
RIGHT	☑	☐	☑	☑	☐	☐
THRU	☑	☑	☐	☑	☐	☐
LEFT	☐	☐	☐	☑	☐	☐
LANE DEMAND	333	335	570	415		
2						
RIGHT	☐	☐	☐	☐	☐	☐
THRU	☑	☑	☑	☐	☐	☐
LEFT	☑	☑	☑	☑	☐	☐
LANE DEMAND	333	335	300	415		
3						
RIGHT	☐	☐	☐	☐	☐	☐
THRU	☐	☐	☐	☐	☐	☐
LEFT	☐	☐	☐	☐	☐	☐
LANE DEMAND						
CRITICAL LANE DEMAND	333	335	570	415	0	0
CIRCULATORY FLOW						
VOLUME	900	1320	715	500	0	0
NUMBER OF LANES	2	2	2	2		
CAPACITY	602	449	685	796	0	0
V/C	0.55	0.75	0.83	0.52	0.00	0.00
DELAY	13.1	28.2	25.7	9.3	0.0	0.0
Q95% (veh.)	3.4	6.2	9.1	3.1	0.0	0.0
Q95% (ft.)	100	175	250	100	0	0

Attachment B

I-84 Eastbound
Roundabout Terminal
Intersection Sketch

Attachment C

Preliminary Cost Estimates for East-West Crossing Locations

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT:	Chenoweth Local Street Option 1	**REFERENCE NAME/PHONE**			**SHEET**
DESIGN LEVEL:	Preliminary	503-235-5000			1 of 1
KIND OF WORK:	Roadway, Structures, Walls, Drainage	**LENGTH (MI.):**	0.66	**DATE** 4/2/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.66	$534,600
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	2.20	$1,104,400
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Embankment	CY	$10	48,000	$480,000
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	EA	$400	0.00	$0
9	New Signal	EA	$180,000	1.00	$180,000
10	Signal Modifications	EA	$800	0.00	$0
11	Transit Enhancements	Mi.	$106,000	0.00	$0
12	Right-Of-Way	SF	$9	100,800	$907,200
13	Illumination	Mi.	$286,000	0.66	$188,760
14	Landscaping	Mi.	$225,000	0.66	$148,500
15	Bridges (See note 2)	SF	$250	12,000	$3,000,000
16	Walls	SF	$50	46,000	$2,300,000
	SUBTOTAL				***$8,843,460***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$221,100
	TP & DT	3.0-8.0%	5.0%	$442,200
	Mobilization	8.0-10.0%	10.0%	$884,300
	Erosion Control	0.5-2.0%	2.0%	$176,900
	Contingency		40.0%	$3,537,400
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$1,946,000
	TOTAL CONSTRUCTION COST			***$16,051,360***
	Design Engineering		13.0%	$2,086,700
	Construction Engineering		10.0%	$1,605,100
	TOTAL PROJECT COST			**$19,750,000**

NOTES:	
#1	Assumes 62' Cross Section Back of Walk To Back of Walk
#2	Intersection Improvements at 2nd and River Trail Way
#3	Bridge Clearance Requirement over track 23'
#4	Embankment/Excavation for project is assumed balanced typically. Given the large anticipated additional embankment for walled area of the overcrossing, additonal embankment Qty is added.
#5	200' bridge length, 62' width
#6	New Signal assumed at 2nd and River Road
#7	Assumes 3 property takes and 2 partial impacts
#8	Road grade over tracks, 0.05.

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT:	Chenoweth Local Street Option 2	**REFERENCE NAME/PHONE**			**SHEET**
DESIGN LEVEL:	Preliminary	503-235-5000			1 of 1
KIND OF WORK:	Roadway, Structures, Walls, Drainage	**LENGTH (MI.):**	0.86	**DATE** 4/2/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.86	$696,600
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	2.86	$1,435,720
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Excavation	CY	$15	57,000	$855,000
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	EA	$400	0.00	$0
9	New Signal	EA	$180,000	1.00	$180,000
10	Signal Modifications	EA	$800	0.00	$0
11	Rail Cross Over (For Staging)	EA	$50,000	2.00	$100,000
12	Right-Of-Way	SF	$9	11,000	$99,000
13	Illumination	Mi.	$286,000	0.86	$245,960
14	Landscaping	Mi.	$225,000	0.86	$193,500
15	Bridges (See note 2)	SF	$400	2,600	$1,040,000
16	Walls	SF	$70	19,500	$1,365,000
	SUBTOTAL				***$6,210,780***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$155,300
	TP & DT	3.0-8.0%	8.0%	$496,900
	Mobilization	8.0-10.0%	10.0%	$621,100
	Erosion Control	0.5-2.0%	2.0%	$124,200
	Contingency		40.0%	$2,484,300
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$1,366,000
	TOTAL CONSTRUCTION COST			***$11,458,580***
	Design Engineering		13.0%	$1,489,600
	Construction Engineering		10.0%	$1,145,900
	TOTAL PROJECT COST			**$14,100,000**

NOTES:

#1	Assumes 62' Cross Section Back of Walk To Back of Walk
#2	Intersection Improvements at Hostetler and River Road
#3	Clearance Requirement under RR track 17'
#4	130' bridge length, 19'9" width
#5	Road grade under RR tracks assumed at 0.05. 2nd Street grade assumed 0.04
#6	Embankment/Excavation for project is assumed balanced typically. Given the large anticipated additional excavation for walled area of undercrossing, additonal embankment Qty is added.
#7	Assumes 6 property frontage and access impacts north and south of Hostetler Rd.
#8	New Signal assumed at River Road and Hostetler

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT:	Chenoweth Local Street Option 3	**REFERENCE NAME/PHONE**			**SHEET**
DESIGN LEVEL:	Preliminary	503-235-5000			1 of 1
KIND OF WORK:	Roadway, Structures, Walls, Drainage	**LENGTH (MI.):**	1.28	**DATE** 4/2/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	1.28	$1,036,800
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	4.26	$2,138,520
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Embankment	CY	$10	175,132	$1,751,320
7	Guardrail	FT	$20	13,500	$270,000
8	Interconnect Signal	EA	$400	0.00	$0
9	New Signal	EA	$180,000	2.00	$360,000
10	Signal Modifications	EA	$800	0.00	$0
11	Transit Enhancements	Mi.	$106,000	0.00	$0
12	Right-Of-Way	SF	$9	82,200	$739,800
13	Illumination	Mi.	$286,000	1.28	$366,080
14	Landscaping	Mi.	$225,000	1.28	$288,000
15	Bridges (See note 2)	SF	$250	13,640	$3,410,000
16	Walls	SF	$50	76,100	$3,805,000
	SUBTOTAL				***$14,165,520***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$354,100
	TP & DT	3.0-8.0%	8.0%	$1,133,200
	Mobilization	8.0-10.0%	10.0%	$1,416,600
	Erosion Control	0.5-2.0%	2.0%	$283,300
	Contingency		40.0%	$5,666,200
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$3,116,000
	TOTAL CONSTRUCTION COST			***$26,134,920***
	Design Engineering		13.0%	$3,397,500
	Construction Engineering		10.0%	$2,613,500
	TOTAL PROJECT COST			**$32,150,000**

NOTES:	
#1	Assumes 62' Cross Section Back of Walk To Back of Walk
#2	Intersection Improvements at Snipes and River RD
#3	Bridge Clearance Requirement over track 23'
#4	Embankment/Excavation for project is assumed balanced typically. Given the large anticipated additional embankment for walled area of the overcrossing, additonal embankment Qty is added.
#5	150' bridge length, 62' width across I-84; 70' bridge length, 62' width across RR
#6	New Signals assumed at Snipes/6th and Snipes/2nd
#7	Assumes several property impacts from fill to access cutoffs
#8	Road grade over tracks, 0.05.

Attachment D

Refined Roundabout Operational Analysis Summary

Intersection Description	River Road/ River Trail Way				River Road/ Columbia Road			River Road/ Crates Way (North)			
Approach	East	North	West	South	NE	NW	SE	East	North	West	South
# Entry Lanes	2	2	2	2	1	1	1	1	1	1	1
Right Turn By-Pass	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO
Circulating Lanes	2	2	2	1	1	1	1	1	1	1	1
Exit Lanes	1	1	2	2	1	1	1	1	1	1	1
Performance Measures											
Critical Lane Volume/Capacity	0.48	0.60	0.47	0.56	0.12	0.39	0.51	0.19	0.45	0.37	0.63
Critical Lane Average Delay, sec	11.0	17.9	9.3	11.6	6.3	5.3	6.5	5.5	6.8	7.4	10.2
95% Queue Length, ft	75	100	75	100	25	50	75	25	75	50	125

Intersection Description	River Road/ Hostetler Street Extension (See E-3D)			River Road/ Crates Way (South)			River Trail Way/ Hostetler Extension (See E-3D)		
Approach	North	West	South	East	North	South	East	North	West
# Entry Lanes	1	1	1	1	1	1	1	1	1
Right Turn By-Pass	NO	NO	NO	NO	NO	NO	NO	YES	NO
Circulating Lanes	1	1	1	1	1	1	1	1	1
Exit Lanes	1	1	1	1	1	1	1	1	1
Performance Measures									
Critical Lane Volume/Capacity	0.47	0.21	0.49	0.24	0.61	0.45	0.83	0.09	0.37
Critical Lane Average Delay, sec	6.3	6.6	6.2	6.7	8.8	6	22.7	6.5	5.3
95% Queue Length, ft	75	25	75	25	125	75	250	25	50

Legs	Angle	Name
1	0	Hostetter Way (EAST)
2	90	6th Street (NORTH)
3	180	Hostetter Way (WEST)
4	270	6th Street (SOUTH)

VOLUMES	↑	77	144	77	144
	↓	227	735	93	514
	↔	496	50	93	111
	TOTAL	799	929	275	769

ENTRY vs CIRCULATING

SINGLE vs SINGLE

CAPACITY	548	496	317	882
VIC	1.44	1.87	0.87	0.87
DELAY	225.01	415.61	54.46	24.50
QUEUE	36.06	59.37	7.86	11.34
QUEUE	875	1500	200	300

WITH RIGHT TURN BYPASS

CAPACITY	548	496	317	882
VIC	1.30	1.85	0.52	0.71
DELAY	166.35	289.30	26.51	13.36
QUEUE	26.66	43.01	3.94	6.13
QUEUE	750	1100	100	175

Hostetter Way (EAST)	6th Street (NORTH)	Hostetter Way (WEST)	6th Street (SOUTH)
CRITICAL LANE DEMAND			
395	464.5	275	384.5

CRITICAL vs SINGLE

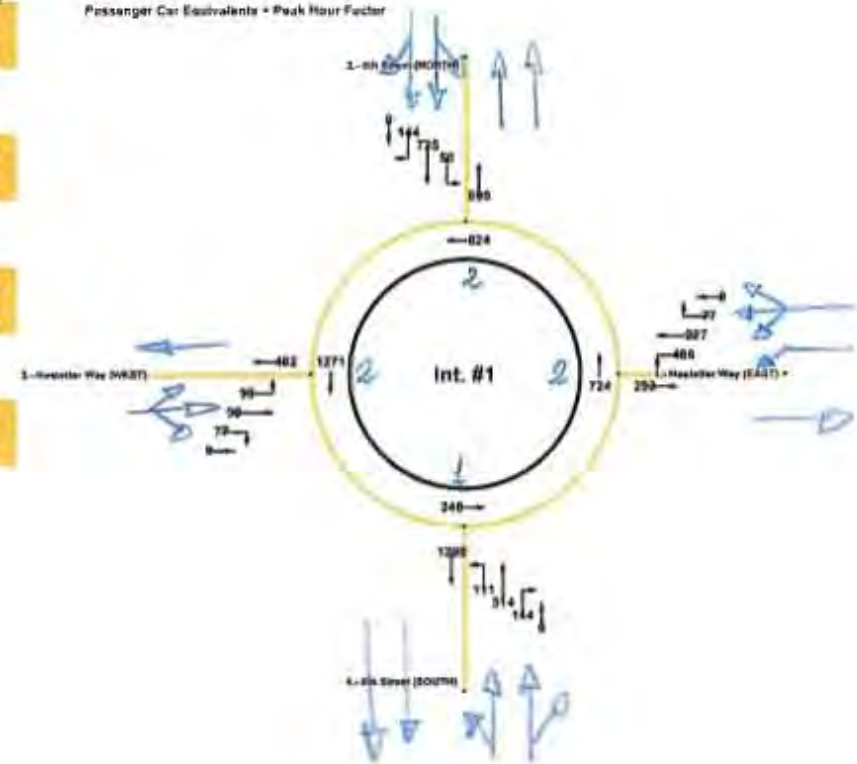
CAPACITY	548	496	317	882
VIC	0.72	0.94	0.87	0.44
DELAY	21.73	50.22	54.46	7.20
QUEUE	5.32	11.38	7.86	3.24
QUEUE	150	300	200	75

CRITICAL vs MULTY

CAPACITY	651	635	454	988
VIC	0.58	0.73	0.60	0.40
DELAY	12.34	10.55	16.41	6.34
QUEUE	3.75	6.31	3.76	1.98
QUEUE	100	175	100	50

Movement	Volume	PHF	HV(%)
1>>1	0	0.95	5%
1>>2	70	0.95	5%
1>>3	205	0.95	5%
1>>4	440	0.95	5%
2>>1	45	0.95	5%
2>>2	0	0.95	5%
2>>3	130	0.95	5%
2>>4	465	0.95	5%
3>>1	90	0.95	5%
3>>2	90	0.95	5%
3>>3	0	0.95	5%
3>>4	70	0.95	5%
4>>1	130	0.95	5%
4>>2	465	0.95	5%
4>>3	190	0.95	5%
4>>4	0	0.95	5%

Passenger Car Equivalents + Peak Hour Factor

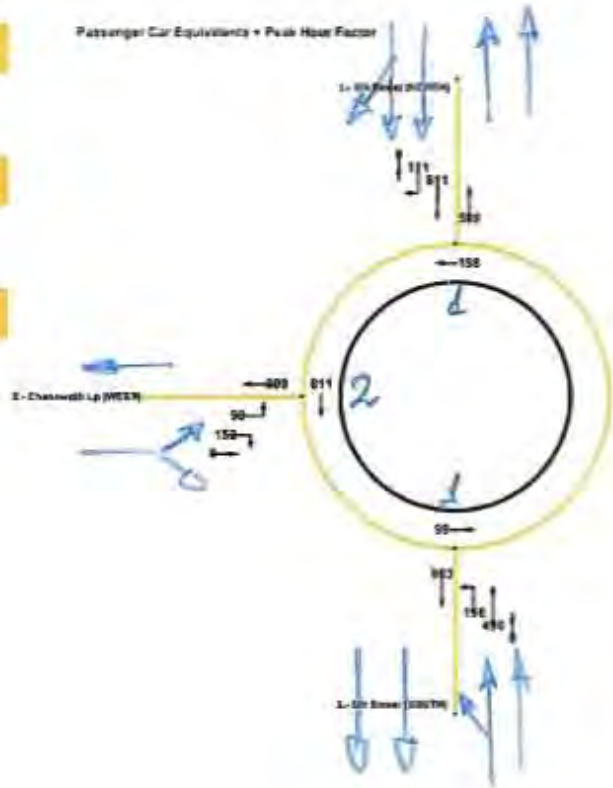


Project	9560 - I-84 Chanowith IAMP
Location	Int. #1
Scenario	YEAR 2030 LAND USE SCENARIO #2, WEEKDAY PM PEAK HOUR
Filename	H:\proj\fal\9560 - I-84 Chanowith IAMP\Excel\ROUNDABOUT ANALYSIS\INT #1.xls@INTERFACE
Analyst	KAI
Date	4/23/2009

Access	Angle	Name
1	90.00	8th Street (NORTH)
2	180	Chenowith Ln (WEST)
3	270	8th Street (SOUTH)

Movement	Volume	PHF	Hv(%)
1>>1	0	0.9	5%
1>>2	95	0.9	5%
1>>3	685	0.9	5%
2>>1	85	0.9	5%
2>>2	0	0.9	5%
2>>3	135	0.9	5%
3>>1	420	0.9	5%
3>>2	170	0.9	5%
3>>3	0	0.9	5%

Passenger Car Equivalents + Peak Hour Factor



VOLUMES

↖	111	152	490
←	811	99	198
↙	0	0	0
TOTAL	922	251	688

ENTRY vs CIRCULATING

SINGLE vs SINGLE

CAPACITY	927	502	1023
V/C	0.88	0.50	0.67
DELAY	44.37	14.12	10.41
QUEUE	18.28	2.76	5.45
QUEUE	475	75	150

WITH RIGHT TURN BYPASS

CAPACITY	927	502	1023
V/C	0.87	0.20	0.19
DELAY	23.01	8.92	4.39
QUEUE	11.64	0.73	0.71
QUEUE	300	25	25

	8th Street (NORTH)	Chenowith Ln (WEST)	8th Street (SOUTH)
CRITICAL LANE DEMAND	481	251	344

CRITICAL vs SINGLE

CAPACITY	927	502	1023
V/C	0.50	0.50	0.34
DELAY	7.68	14.12	5.29
QUEUE	2.53	2.76	1.49
QUEUE	75	75	50

CRITICAL vs MULTY

CAPACITY	984	541	1054
V/C	0.47	0.39	0.33
DELAY	6.84	9.20	5.06
QUEUE	2.55	1.68	1.43
QUEUE	75	50	50

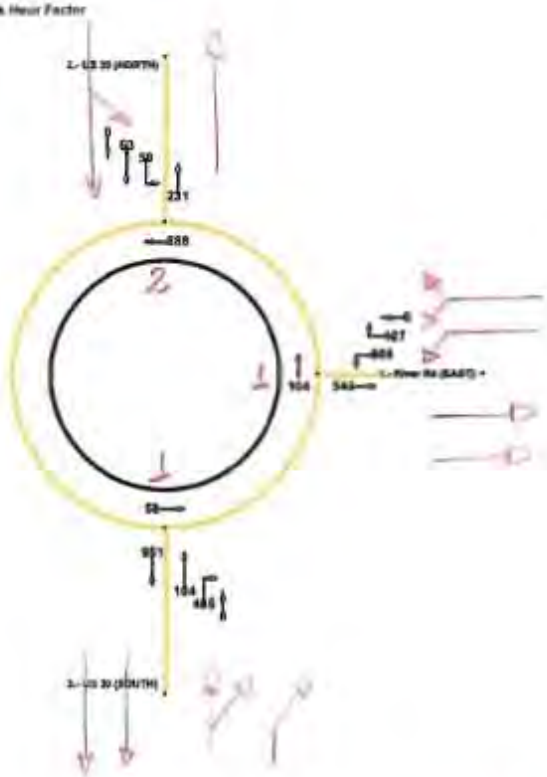
#2

Project	9600 - I-84 Chenoweth IAMP
Location	The Dalles
Scenario	YEAR 2030 LAND USE SCEMARIO #2, WEEKDAY PM PEAK HOUR
Filename	H:\proj\tv\9600 - I-84 Chenoweth IAMP\Exce\ROUNDABOUT ANALYSIS\INT #2.xls\INTERFACE
Analyst	KAI
Date	4/23/2009

Access	Angle	Name
1	0	River Rd (EAST)
2	90	US 30 (NORTH)
3	270	US 30 (SOUTH)

Movement	Volume	PHF	HV(%)
1>>1	0	0.91	5%
1>>2	110	0.91	5%
1>>3	779	0.91	5%
2>>1	50	0.91	5%
2>>2	0	0.91	5%
2>>3	55	0.91	5%
3>>1	420	0.91	5%
3>>2	90	0.91	5%
3>>3	0	0.91	5%

Passenger Car Equivalents + Peak Hour Factor



#4

VOLUMES	↖	127	53	485
	←	880	58	164
	↙	0	0	0
TOTAL		1015	121	649

ENTRY vs CIRCULATING

SINGLE vs SINGLE

CAPACITY	1018	465	1066
V/C	1.00	0.26	0.55
DELAY	42.61	10.44	7.46
QUEUE	19.30	1.03	3.50
QUEUE	600	50	100

WITH RIGHT TURN BYPASS

CAPACITY	1018	465	1066
V/C	0.87	0.12	0.18
DELAY	21.81	8.84	3.74
QUEUE	11.84	0.42	0.39
QUEUE	300	25	25

	River Rd (EAST)	US 30 (NORTH)	US 30 (SOUTH)
CRITICAL LANE DEMAND	300	121	200

CRITICAL vs SINGLE

CAPACITY	1018	465	1066
V/C	0.30	0.26	0.29
DELAY	6.59	10.44	4.96
QUEUE	2.83	1.03	1.13
QUEUE	75	50	50

CRITICAL vs MULTY

CAPACITY	1051	607	1085
V/C	0.48	0.20	0.27
DELAY	6.69	7.40	4.55
QUEUE	3.70	0.74	1.11
QUEUE	75	25	50

Project	9600 - I-84 Cherrywith IAMP
Location	The Dalles
Scenario	YEAR 2030 LAND USE SCENARIO #2, WEEKDAY PM PEAK HOUR
Filename	H:\proj\ist\9600 - I-84 Cherrywith IAMP\Excel\ROUNDABOUT ANALYSIS\INT #4 sig\INTERFACE
Analyst	KAI
Date	4/27/2009

Access	Angle	Name
1	0	River Rd (EAST)
2	90	River Trail (NORTH)
3	180	River Rd (WEST)
4	270	River Trail (SOUTH)

VOLUMES	↱	58	792	408	47
	←	467	362	146	53
	↳	64	216	123	683
	TOTAL	589	1369	677	783

ENTRY vs CIRCULATING

SINGLE vs SINGLE

CAPACITY	479	336	595	696
V/C	1.23	4.05	1.14	1.12
DELAY	142.19	1398.33	101.83	91.85
QUEUE	23.29	131.51	21.89	23.44
QUEUE	600	3300	550	590

WITH RIGHT TURN BYPASS

CAPACITY	479	336	595	696
V/C	1.11	1.72	0.45	1.08
DELAY	98.16	309.00	10.96	69.51
QUEUE	17.70	36.27	2.34	19.32
QUEUE	450	925	75	500

	River Rd (EAST)	River Trail (NORTH)	River Rd (WEST)	River Trail (SOUTH)
CRITICAL LANE DEMAND	294.5	369	358.5	381.5

CRITICAL vs SINGLE

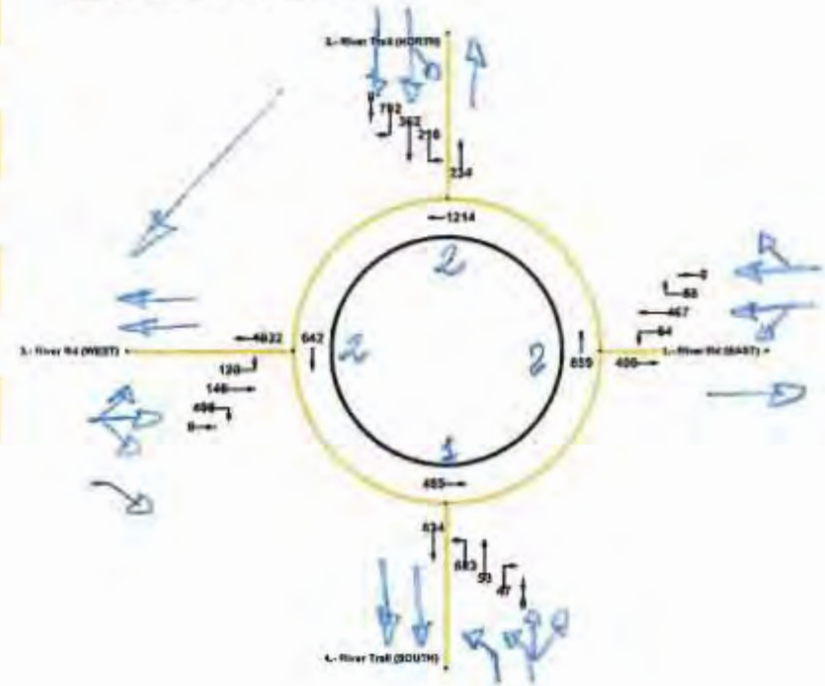
CAPACITY	479	336	595	696
V/C	0.62	0.86	0.57	0.55
DELAY	18.91	51.12	13.70	11.62
QUEUE	4.68	7.90	3.57	3.53
QUEUE	125	200	100	100

CRITICAL vs MULTY

CAPACITY	615	463	721	805
V/C	0.48	0.68	0.47	0.49
DELAY	10.87	17.54	9.33	8.64
QUEUE	2.59	3.65	2.52	2.70
QUEUE	75	100	75	75

Movement	Volume	PHF	HV(%)
1>>1	0	0.9	5%
1>>2	50	0.9	5%
1>>3	400	0.9	5%
1>>4	58	0.9	5%
2>>1	185	0.9	5%
2>>2	0	0.9	5%
2>>3	670	0.9	5%
2>>4	310	0.9	5%
3>>1	125	0.9	5%
3>>2	165	0.9	5%
3>>3	0	0.9	5%
3>>4	350	0.9	5%
4>>1	40	0.9	5%
4>>2	45	0.9	5%
4>>3	585	0.9	5%
4>>4	0	0.9	5%

Passenger Car Equivalents + Peak Hour Factor



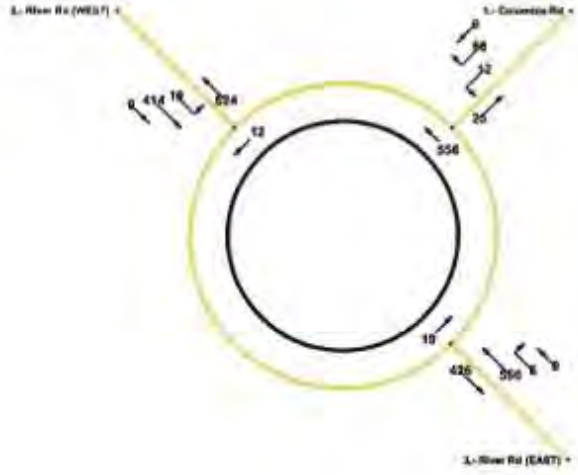
#7

Project	5600 - I-84 Chenoweth IAMP
Location	The Dalles
Scenario	YEAR 2030 LAND USE SCENARIO #2, WEEKDAY PM PEAK HOUR
Filename	H:\proj\Rail\5600 - I-84 Chenoweth IAMP\Excel\ROUNDABOUT ANALYSIS\[INT #7.xls]INTERFACE
Analyst	KN
Date	4/23/2009

Access	Angle	Name
1	45	Columbia Rd
2	135	River Rd (WEST)
3	315	River Rd (EAST)

Movement	Volume	PHF	HV(%)
1>>1	0	0.85	5%
1>>2	55	0.85	5%
1>>3	10	0.85	5%
2>>1	15	0.85	5%
2>>2	0	0.85	5%
2>>3	335	0.85	5%
3>>1	5	0.85	5%
3>>2	450	0.85	5%
3>>3	0	0.85	5%

Passenger Car Equivalents • Peak Hour Factor



VOLUMES

↑	50	415	5
←	12	18	556
↓	0	0	0
TOTAL	62	433	561

ENTRY vs CIRCULATING

SINGLE vs SINGLE

CAPACITY	849	1117	1159
V/C	0.12	0.39	0.01
DELAY	6.34	5.25	6.54
QUEUE	0.42	1.85	2.56
QUEUE	25	59	75

WITH RIGHT TURN BYPASS

CAPACITY	849	1117	1159
V/C	0.02	0.02	0.00
DELAY	5.86	3.28	6.47
QUEUE	0.06	0.05	2.60
QUEUE	25	25	75

	Columbia Rd	River Rd (WEST)	River Rd (EAST)
CRITICAL LANE DEMAND			

CRITICAL vs SINGLE

CAPACITY	849	1117	1159
V/C	0.00	0.00	0.00
DELAY	5.56	3.22	3.25
QUEUE	0.00	0.00	0.00
QUEUE	0	0	0

CRITICAL vs MULTY

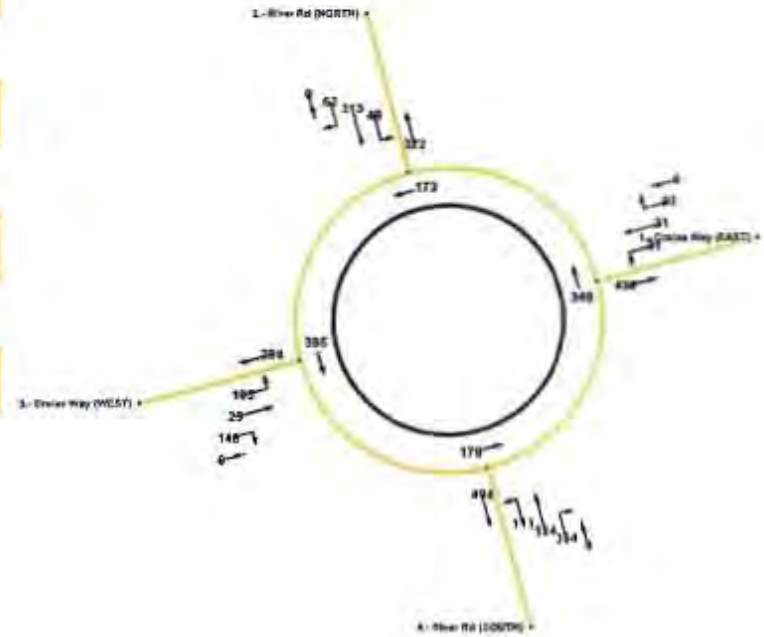
CAPACITY	768	1121	1115
V/C	0.00	0.00	0.00
DELAY	4.70	3.21	3.23
QUEUE	0.00	0.00	0.00
QUEUE	0	0	0

Project	9600 - I-84 Cherryvale IAMP
Location	The Dalles
Scenario	YEAR 2035 LAND USE SCENARIO #2, WEEKDAY PM PEAK HOUR
File name	H:\proj\9600 - I-84 Cherryvale IAMP\Excel\ROUNDABOUT ANALYSIS\INT 46 sh\INTERFACE
Analyst	KAI
Date	4/22/2009

Access	Angle	Name
1	[illegible]	[illegible] Cloverleaf Way (EAST)
2	[illegible]	[illegible] River Rd (NORTH)
3	[illegible]	[illegible] Cloverleaf Way (WEST)
4	[illegible]	[illegible] River Rd (SOUTH)

Movement	Volume	PHF	HV(%)
1>>1	0	0.85	5%
1>>2	75	0.85	5%
1>>3	25	0.85	5%
1>>4	25	0.85	5%
2>>1	40	0.85	5%
2>>2	0	0.85	5%
2>>3	50	0.85	5%
2>>4	255	0.85	5%
3>>1	20	0.85	5%
3>>2	95	0.85	5%
3>>3	0	0.85	5%
3>>4	120	0.85	5%
4>>1	295	0.85	5%
4>>2	100	0.85	5%
4>>3	90	0.85	5%
4>>4	0	0.85	5%

Passenger Car Equivalents + Peak Hour Factor



VOLUMES

↑	93	62	146	264
←	31	315	25	134
→	31	49	105	111
TOTAL	155	426	276	509

ENTRY vs CIRCULATING

SINGLE vs SINGLE

CAPACITY	804	959	761	945
V/C	0.19	0.45	0.37	0.53
DELAY	5.54	6.83	7.42	10.17
QUEUE	0.71	2.35	1.68	4.69
QUEUE	25	75	50	125

WITH RIGHT TURN BYPASS

CAPACITY	804	959	761	945
V/C	0.08	0.38	0.17	0.35
DELAY	4.85	6.12	5.70	8.07
QUEUE	0.29	1.62	0.61	0.88
QUEUE	25	50	25	25

	Cloverleaf Way (EAST)	River Rd (NORTH)	Cloverleaf Way (WEST)	River Rd (SOUTH)

CRITICAL LANE DEMAND

CRITICAL vs SINGLE

CAPACITY	804	959	761	945
V/C	0.00	0.00	0.00	0.00
DELAY	4.48	3.79	4.73	3.81
QUEUE	0.00	0.00	0.00	0.00
QUEUE	0	0	0	0

CRITICAL vs MULTY

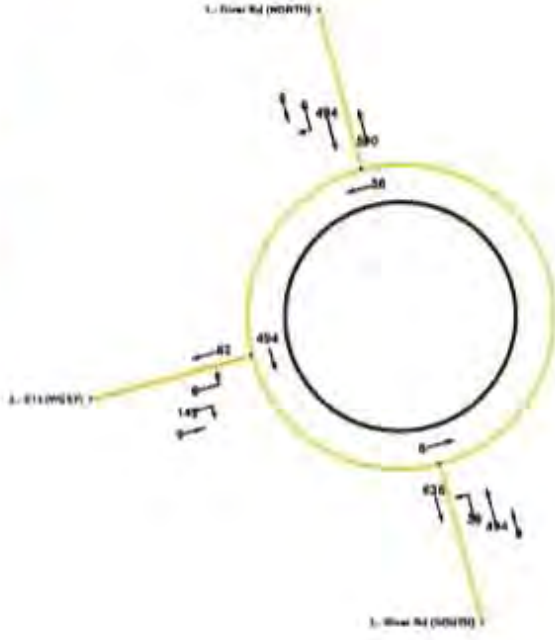
CAPACITY	891	1021	857	997
V/C	0.00	0.00	0.00	0.00
DELAY	4.04	3.60	4.20	3.61
QUEUE	0.00	0.00	0.00	0.00
QUEUE	0	0	0	0

Project	9600 - I-84 Cherrywith IAMP
Location	The Dalles
Scenario	YEAR 2030 LAND USE SCENARIO #2, WEEKDAY PM PEAK HOUR
Filename	H:\proj\ai\9600 - I-84 Cherrywith IAMP\Excel\ROUNDABOUT ANALYSIS\INT #8.xls\INTERFACE
Analysi	KAI
Date	4/23/2009

Access	Angle	Name
1		105 River Rd (NORTH)
2		188-E13 (WEST)
3		295 River Rd (SOUTH)

Movement	Volume	PHF	HV(%)
1>>1	0	0.85	5%
1>>2	5	0.85	5%
1>>3	400	0.85	5%
2>>1	5	0.85	5%
2>>2	0	0.85	5%
2>>3	115	0.85	5%
3>>1	400	0.85	5%
3>>2	42	0.85	5%
3>>3	0	0.85	5%

Passenger Car Equivalents + Peak Hour Factor



VOLUMES

↑	5	142	494
←	494	5	56
→	0	0	0
TOTAL	500	148	550

ENTRY vs CIRCULATING

SINGLE vs SINGLE

CAPACITY	1068	690	1123
V/C	0.47	0.21	0.49
DELAY	6.30	5.04	5.24
QUEUE	2.55	0.81	2.77
QUEUE	75	25	75

WITH RIGHT TURN BYPASS

CAPACITY	1068	690	1123
V/C	0.46	0.01	0.05
DELAY	6.23	5.37	5.37
QUEUE	2.49	0.03	0.16
QUEUE	75	25	25

	River Rd (NORTH)	E13 (WEST)	River Rd (SOUTH)

CRITICAL LANE DEMAND

CRITICAL vs SINGLE

CAPACITY	1068	690	1123
V/C	0.00	0.00	0.00
DELAY	3.37	5.22	3.21
QUEUE	0.00	0.00	0.00
QUEUE	0	0	0

CRITICAL vs MULTY

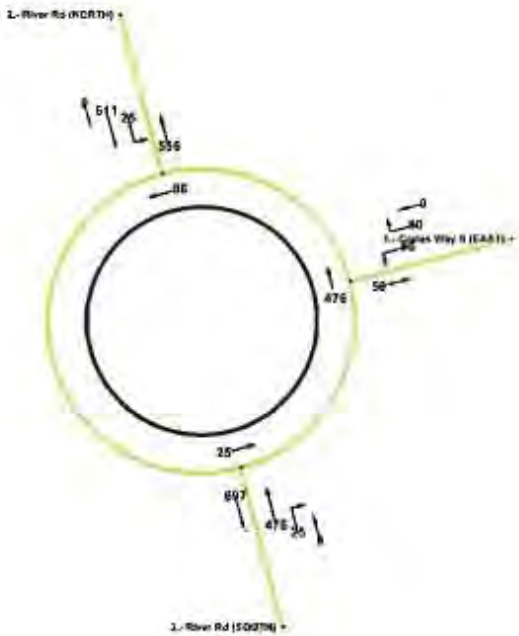
CAPACITY	1087	800	1125
V/C	0.00	0.00	0.00
DELAY	3.31	4.50	3.20
QUEUE	0.00	0.00	0.00
QUEUE	0	0	0

Project	9600 - I-84 Cherrywith MAP
Location	The Dalles
Scenario	YEAR 2030 LAND USE SCENARIO #2, WEEKDAY PM PEAK HOUR
Filename	H:\proj\Ta\9600 - I-84 Cherrywith IAMP\Excel\ROUNDABOUT ANALYSIS\SHT #10.xls\INTERFACE
Analyst	RJM
Date	4/23/2020

Access	Angle	Name
1		15 Crates Way S (EAST)
2		105 River Rd (NORTH)
3		285 River Rd (SOUTH)

Movement	Volume	PHF	HV(%)
1>>1	0	0.85	5%
1>>2	65	0.85	5%
1>>3	70	0.85	5%
2>>1	30	0.85	5%
2>>2	0	0.85	5%
2>>3	495	0.85	5%
3>>1	20	0.85	5%
3>>2	385	0.85	5%
3>>3	0	0.85	5%

Passenger Car Equivalents + Peak Hour Factor



VOLUMES

↖	80	611	25
←	65	25	476
↙	0	0	0
TOTAL	145	636	501

ENTRY vs CIRCULATING

SINGLE vs SINGLE

CAPACITY	702	1037	1102
VIC	0.24	0.01	0.45
DELAY	6.71	8.62	5.96
QUEUE	0.92	4.38	2.42
QUEUE	25	125	75

WITH RIGHT TURN BYPASS

CAPACITY	702	1037	1102
VIC	0.12	0.02	0.43
DELAY	5.84	3.56	5.73
QUEUE	0.42	0.07	2.22
QUEUE	25	25	75

	Crates Way S (EAST)	River Rd (NORTH)	River Rd (SOUTH)
CRITICAL LANE DEMAND			

CRITICAL vs SINGLE

CAPACITY	702	1037	1102
VIC	0.00	0.00	0.00
DELAY	5.13	3.47	3.27
QUEUE	0.00	0.00	0.00
QUEUE	0	0	0

CRITICAL vs MULTY

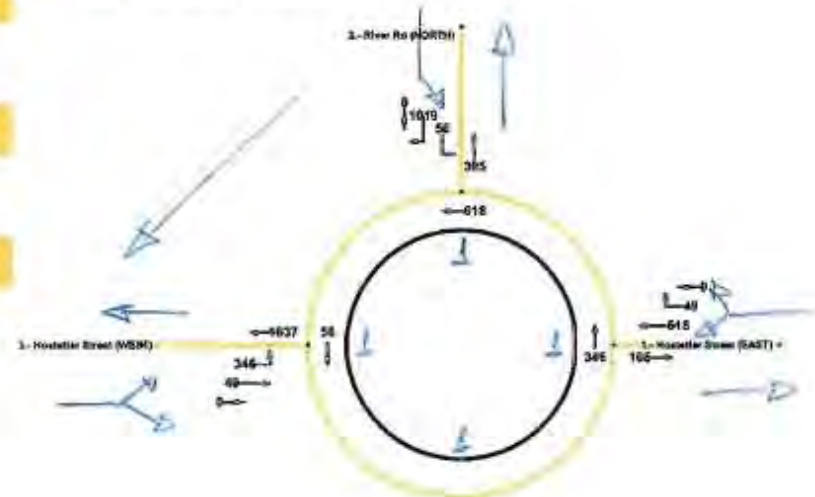
CAPACITY	810	1064	1110
VIC	0.00	0.00	0.00
DELAY	4.45	3.38	3.24
QUEUE	0.00	0.00	0.00
QUEUE	0	0	0

Project	9600 - I-84 Chenoweth IAMP
Location	The Dalles
Scenario	YEAR 2030 LAND USE SCENARIO #2, WEEKDAY PM PEAK HOUR
Filename	H:\proj\list\9600 - I-84 Chenoweth IAMP\Excel\ROUNDABOUT ANALYSIS\INT #11.xls\INTERFACE
Analyst	KAI
Date	4/23/2009

Access	Angle	Name
1	0	Hostetler Street (EAST)
2	90	River Rd (NORTH)
3	180	Hostetler Street (WEST)

Movement	Volume	PHF	HV(%)
1>>1	0	0.85	5%
1>>2	40	0.85	5%
1>>3	500	0.85	5%
2>>1	45	0.85	5%
2>>2	0	0.85	5%
2>>3	825	0.85	5%
3>>1	40	0.85	5%
3>>2	280	0.85	5%
3>>3	0	0.85	5%

Passenger Car Equivalents + Peak Hour Factor



VOLUMES

↖	49	1019	49
←	618	56	346
↙	0	0	0
TOTAL	667	1075	395

ENTRY vs CIRCULATING

SINGLE vs SINGLE

CAPACITY	759	609	1068
V/C	0.88	1.76	0.37
DELAY	22.72	363.26	5.33
QUEUE	9.57	64.49	1.72
QUEUE	200	1625	50

WITH RIGHT TURN BYPASS

CAPACITY	799	609	1068
V/C	0.77	0.09	0.32
DELAY	16.04	0.51	4.97
QUEUE	7.84	0.30	1.41
QUEUE	200	25	50

	Hostetler Street (EAST)	River Rd (NORTH)	Hostetler Street (WEST)
CRITICAL LANE DEMAND			

CRITICAL vs SINGLE

CAPACITY	799	609	1068
V/C	0.00	0.00	0.00
DELAY	4.50	5.91	3.27
QUEUE	0.00	0.00	0.00
QUEUE	0	0	0

CRITICAL vs MULTY

CAPACITY	887	733	1287
V/C	0.00	0.00	0.00
DELAY	4.06	4.91	3.31
QUEUE	0.00	0.00	0.00
QUEUE	0	0	0

#12

Project:	9600 - I-84 Chenoweth IAMP
Location:	The Dalles
Scenario:	YEAR 2030 LAND USE SCENARIO #2, WEEKDAY PM PEAK HOUR
Filename:	H:\proj\ai\9600 - I-84 Chenoweth IAMP\Excel\ROUNDABOUT ANALYSIS\INT #12.xls\INTERFACE
Analyst:	KAI
Date:	4/23/2009

Attachment E

Refined Cost Estimates

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT: Chenoweth IAMP - Hostetler Undercrossing	**REFERENCE NAME/PHONE**		**SHEET**
DESIGN LEVEL: Preliminary	503-235-5000		1 of 1
KIND OF WORK: Roadway, Structures, Walls, Drainage	**LENGTH (MI.):** 0.71	**DATE** 4/2/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.71	$575,100
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	3.14	$1,576,280
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Excavation	CY	$15	57,000	$855,000
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	2.00	$360,000
10	Signal Modifications	EA	$60,000	0.00	$0
11	Rail Cross Over (For Staging)	EA	$50,000	2.00	$100,000
12	Right-Of-Way	SF	$9	11,000	$99,000
13	Illumination	Mi.	$286,000	0.71	$203,060
14	Landscaping	Mi.	$225,000	0.71	$159,750
15	Bridge Modifications	EA	$200,000	1.00	$200,000
16	Bridges (See note 2)	SF	$400	2,840	$1,136,000
17	Walls	SF	$70	11,580	$810,600
	SUBTOTAL				***$6,074,790***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$151,900
	TP & DT	3.0-8.0%	8.0%	$486,000
	Mobilization	8.0-10.0%	10.0%	$607,500
	Erosion Control	0.5-2.0%	2.0%	$121,500
	Contingency		40.0%	$2,429,900
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$1,336,000
	TOTAL CONSTRUCTION COST			***$11,207,590***
	Design Engineering		13.0%	$1,457,000
	Construction Engineering		10.0%	$1,120,800
	TOTAL PROJECT COST			**$13,790,000**

NOTES:

#1	Assumes Varied Width Roadways, Standard Section is 60' ROW Width
#2	Improvements for Hostetler and 6th (all legs) and Hostetler and 2nd (all legs)
#3	Clearance Requirement under RR track 17'
#4	142' length bridge, 20' wide, with above grade girders (reduces cut)
#5	Road grade under RR tracks assumed at 0.05. 2nd Street grade assumed 0.05
#6	Assumed 6 property frontage and access impacts north and south of Hostetler Rd.
#7	Embankment/Excavation for project is assumed balanced typically. Given the large anticipated additional excavation for walled area of undercrossing, additonal embankment Qty is added.
#8	Bridge Modifications are to install micropiling to the inside piers (8 total) on I-84 bridge.
#9	New Signal assumed at 6th and Hostetler and 2nd and Hostetler

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT:	Chenoweth IAMP - Interchange Bridge Widening	**REFERENCE NAME/PHONE**			**SHEET**
DESIGN LEVEL:	Preliminary	503-235-5000			1 of 1
KIND OF WORK:	Roadway, Structures, Walls, Drainage	**LENGTH (MI.):**	0.21	**DATE** 4/2/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.21	$170,100
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	0.51	$256,020
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Embankment	CY	$10	17,150	$171,500
7	Guardrail	FT	$20	0	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	2.00	$360,000
10	Signal Modifications	EA	$60,000	0.00	$0
11	Transit Enhancements	Mi.	$106,000	0.00	$0
12	Right-Of-Way	SF	$9	0	$0
13	Illumination	Mi.	$286,000	0.21	$60,060
14	Landscaping	Mi.	$225,000	0.21	$47,250
15	Bridges (See note 2)	SF	$300	9,330	$2,799,000
16	Walls	SF	$70	11,500	$805,000
	SUBTOTAL				***$4,668,930***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$116,700
	TP & DT	3.0-8.0%	8.0%	$373,500
	Mobilization	8.0-10.0%	10.0%	$466,900
	Erosion Control	0.5-2.0%	2.0%	$93,400
	Contingency		40.0%	$1,867,600
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$1,027,000
	TOTAL CONSTRUCTION COST			***$8,614,030***
	Design Engineering		13.0%	$1,119,800
	Construction Engineering		10.0%	$861,400
	TOTAL PROJECT COST			**$10,600,000**

NOTES:	
#1	Assumes 6-L Cross Section, 14' lanes to match existing
#2	Ramp widening occurs to inside towards I-84 so no conflict with UPRR
#3	Structure 1 (over I-84) assumed 190' length. Structure 2 (over UPRR) assumed 110' length
#4	Embankment/Excavation for project is assumed balanced typically. Given the large anticipated additional embankment for walled area of the overcrossing, additonal embankment Qty is added.
#5	All improvements will be made within ODOT ROW.
#6	UPRR not impacted, but coordination/easement may be required.

Appendix F
Cost Estimates

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT:	REFERENCE NAME/PHONE		SHEET
Chenoweth IAMP - River Trail Way			
DESIGN LEVEL: Preliminary	503-235-5000		1 of 1
KIND OF WORK: Roadway, Drainage	LENGTH (MI.): 0.63	DATE 5/18/2009	NAME DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.63	$510,300
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	3.55	$1,782,100
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Embankment	CY	$10	0	$0
7	Guardrail	FT	$20	0	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Transit Enhancements	Mi.	$106,000	0.00	$0
12	Right-Of-Way	SF	$10	301,200	$3,012,000
13	Illumination	Mi.	$286,000	0.63	$180,180
14	Landscaping	Mi.	$225,000	0.63	$141,750
15	Bridges (See note 2)	SF	$300	0	$0
16	Walls	SF	$70	0	$0
	SUBTOTAL				***$5,626,330***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$140,700
	TP & DT	3.0-8.0%	3.0%	$168,800
	Mobilization	8.0-10.0%	10.0%	$562,600
	Erosion Control	0.5-2.0%	2.0%	$112,500
	Contingency		40.0%	$2,250,500
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$1,238,000
	TOTAL CONSTRUCTION COST			***$10,099,430***
	Design Engineering		13.0%	$1,312,900
	Construction Engineering		10.0%	$1,009,900
	TOTAL PROJECT COST			**$12,430,000**

NOTES:

#1	Roadway cross section is 5-L; 4-12' lanes, 1-14' median and 2-6' bike lanes.
	Roadway widens to 4-L; 12' lanes and 6' bike lanes at River Rd.
#2	No wall assumed.
#3	Roadway construction occurs at grade so no additional earthwork is needed
#4	Approx. 301,200 SF of ROW is needed.
#5	No signals included, roundabouts are estimated separately
#6	Illumination and landscaping are included

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT: Chenoweth IAMP - Hostetler Undercrossing	**REFERENCE NAME/PHONE**		**SHEET**
DESIGN LEVEL: Preliminary	503-235-5000		1 of 1
KIND OF WORK: Roadway, Structures, Walls, Drainage	**LENGTH (MI.):** 0.71	**DATE** 5/18/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.71	$575,100
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	3.14	$1,576,280
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Excavation	CY	$15	57,000	$855,000
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	1.00	$180,000
10	Signal Modifications	EA	$60,000	0.00	$0
11	Rail Cross Over (For Staging)	EA	$50,000	2.00	$100,000
12	Right-Of-Way	SF	$10	11,000	$110,000
13	Illumination	Mi.	$286,000	0.71	$203,060
14	Landscaping	Mi.	$225,000	0.71	$159,750
15	Bridge Modifications	EA	$200,000	1.00	$200,000
16	Bridges (See note 2)	SF	$400	2,840	$1,136,000
17	Walls	SF	$70	11,580	$810,600
	SUBTOTAL				***$5,905,790***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$147,600
	TP & DT	3.0-8.0%	8.0%	$472,500
	Mobilization	8.0-10.0%	10.0%	$590,600
	Erosion Control	0.5-2.0%	2.0%	$118,100
	Contingency		40.0%	$2,362,300
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$1,299,000
	TOTAL CONSTRUCTION COST			***$10,895,890***
	Design Engineering		13.0%	$1,416,500
	Construction Engineering		10.0%	$1,089,600
	TOTAL PROJECT COST			**$13,410,000**

NOTES:

#1	Assumes Varied Width Roadways, Standard Section is 60' ROW Width
#2	Improvements for Hostetler and 6th (all legs) and Hostetler and 2nd (all legs)
#3	Clearance Requirement under RR track 17'
#4	142' length bridge, 20' wide, with above grade girders (reduces cut)
#5	Road grade under RR tracks assumed at 0.05. 2nd Street grade assumed 0.05
#6	Assumed 6 property frontage and access impacts north and south of Hostetler Rd.
#7	Embankment/Excavation for project is assumed balanced typically. Given the large anticipated additional excavation for walled area of undercrossing, additional embankment Qty is added.
#8	Bridge Modifications are to install micropiling to the inside piers (8 total) on I-84 bridge.
#9	New Signal assumed at 2nd and Hostetler

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT: Chenoweth IAMP - Hostetler River Trail Way To River Rd.	**REFERENCE NAME/PHONE**		**SHEET**
DESIGN LEVEL: Preliminary	503-235-5000		1 of 1
KIND OF WORK: Roadway, Drainage	**LENGTH (MI.):** 0.31	**DATE** 5/18/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.31	$251,100
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	1.04	$522,080
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Excavation	CY	$15	0	$0
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Rail Cross Over (For Staging)	EA	$50,000	0.00	$0
12	Right-Of-Way	SF	$10	97,400	$974,000
13	Illumination	Mi.	$286,000	0.31	$88,660
14	Landscaping	Mi.	$225,000	0.31	$69,750
15	Bridge Modifications	EA	$200,000	0.00	$0
16	Bridges (See note 2)	SF	$400	0	$0
17	Walls	SF	$70	0	$0
	SUBTOTAL				***$1,905,590***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$47,600
	TP & DT	3.0-8.0%	3.0%	$57,200
	Mobilization	8.0-10.0%	10.0%	$190,600
	Erosion Control	0.5-2.0%	2.0%	$38,100
	Contingency		40.0%	$762,200
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$419,000
	TOTAL CONSTRUCTION COST			***$3,420,290***
	Design Engineering		13.0%	$444,600
	Construction Engineering		10.0%	$342,000
	TOTAL PROJECT COST			**$4,210,000**

NOTES:

#1 Assumes 40' curb to curb width, standard section is 60' ROW width
#2 Improvements are from the roundabout at River Trail Way to River Rd.
#3 Roadway is at grade so excavation/embankment included in per lane mile cost for new roads
#4 Approx. 97,400 SF of ROW is needed.

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT: Chenoweth IAMP - Local Road; River Trail Way to River Road (Long Term)	**REFERENCE NAME/PHONE**		**SHEET**
DESIGN LEVEL: Preliminary	503-235-5000		1 of 1
KIND OF WORK: Roadway, Drainage	**LENGTH (MI.):** 0.31	**DATE** 5/18/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.31	$251,100
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	1.02	$512,040
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Excavation	CY	$15	0	$0
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Rail Cross Over (For Staging)	EA	$50,000	0.00	$0
12	Right-Of-Way	SF	$10	93,400	$934,000
13	Illumination	Mi.	$286,000	0.31	$88,660
14	Landscaping	Mi.	$225,000	0.31	$69,750
15	Bridge Modifications	EA	$200,000	0.00	$0
16	Bridges (See note 2)	SF	$400	0	$0
17	Walls	SF	$70	0	$0
	SUBTOTAL				***$1,855,550***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$46,400
	TP & DT	3.0-8.0%	5.0%	$92,800
	Mobilization	8.0-10.0%	10.0%	$185,600
	Erosion Control	0.5-2.0%	2.0%	$37,100
	Contingency		40.0%	$742,200
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$408,000
	TOTAL CONSTRUCTION COST			***$3,367,650***
	Design Engineering		13.0%	$437,800
	Construction Engineering		10.0%	$336,800
	TOTAL PROJECT COST			**$4,150,000**

NOTES:

#1	Assumes 40' curb to curb width, standard section is 60' ROW width
#2	Improvements are from River Trail Way to River Rd. at Crates Way
#3	Roadway is at grade so excavation/embankment included in per lane mile cost for new roads
#4	Construction is mostly off alignment so TP&DT reduced
#5	Approx. 93,425 SF of ROW is needed.

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT: Chenoweth IAMP - Local Road; River Trail Way to River Road (Short Term)	**REFERENCE NAME/PHONE**		**SHEET**
DESIGN LEVEL: Preliminary	503-235-5000		1 of 1
KIND OF WORK: Roadway, Drainage	**LENGTH (MI.):** 0.26	**DATE** 5/18/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.26	$210,600
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	0.87	$436,740
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Excavation	CY	$15	0	$0
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Rail Cross Over (For Staging)	EA	$50,000	0.00	$0
12	Right-Of-Way	SF	$10	76,000	$760,000
13	Illumination	Mi.	$286,000	0.26	$74,360
14	Landscaping	Mi.	$225,000	0.26	$58,500
15	Bridge Modifications	EA	$200,000	0.00	$0
16	Bridges (See note 2)	SF	$400	0	$0
17	Walls	SF	$70	0	$0
	SUBTOTAL				***$1,540,200***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$38,500
	TP & DT	3.0-8.0%	5.0%	$77,000
	Mobilization	8.0-10.0%	10.0%	$154,000
	Erosion Control	0.5-2.0%	2.0%	$30,800
	Contingency		40.0%	$616,100
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$339,000
	TOTAL CONSTRUCTION COST			***$2,795,600***
	Design Engineering		13.0%	$363,400
	Construction Engineering		10.0%	$279,600
	TOTAL PROJECT COST			**$3,440,000**

NOTES:

#1	Assumes 40' curb to curb width, standard section is 60' ROW width
#2	Improvements are from River Trail Way to River Rd. south of Columbia Road
#3	Roadway is at grade so excavation/embankment included in per lane mile cost for new roads
#4	Construction is mostly off alignment so TP&DT reduced
#5	Approx. 76,000 SF of ROW is needed.

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT: Chenoweth IAMP - Local Road; E6 to River Trail Way	**REFERENCE NAME/PHONE**		**SHEET**
DESIGN LEVEL: Preliminary	503-235-5000		1 of 1
KIND OF WORK: Roadway, Drainage	**LENGTH (MI.):** 0.26	**DATE** 5/18/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.26	$210,600
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	0.87	$436,740
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Excavation	CY	$15	0	$0
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Rail Cross Over (For Staging)	EA	$50,000	0.00	$0
12	Right-Of-Way	SF	$10	81,700	$817,000
13	Illumination	Mi.	$286,000	0.26	$74,360
14	Landscaping	Mi.	$225,000	0.26	$58,500
15	Bridge Modifications	EA	$200,000	0.00	$0
16	Bridges (See note 2)	SF	$400	0	$0
17	Walls	SF	$70	0	$0
	SUBTOTAL				***$1,597,200***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$39,900
	TP & DT	3.0-8.0%	5.0%	$79,900
	Mobilization	8.0-10.0%	10.0%	$159,700
	Erosion Control	0.5-2.0%	2.0%	$31,900
	Contingency		40.0%	$638,900
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$351,000
	TOTAL CONSTRUCTION COST			***$2,898,500***
	Design Engineering		13.0%	$376,800
	Construction Engineering		10.0%	$289,900
	TOTAL PROJECT COST			**$3,570,000**

NOTES:

#1	Assumes 40' curb to curb width, standard section is 60' ROW width
#2	Improvements are from E6 to River Road
#3	Roadway is at grade so excavation/embankment included in per lane mile cost for new roads
#4	Construction is mostly off alignment so TP&DT reduced
#5	Approx. 81,700 SF of ROW is needed.

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT: Chenoweth IAMP - Local Road Hostetler to E5	**REFERENCE NAME/PHONE**		**SHEET**
DESIGN LEVEL: Preliminary	503-235-5000		1 of 1
KIND OF WORK: Roadway, Drainage	**LENGTH (MI.):** 0.26	**DATE** 5/18/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.26	$210,600
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	0.87	$436,740
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Excavation	CY	$15	0	$0
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Rail Cross Over (For Staging)	EA	$50,000	0.00	$0
12	Right-Of-Way	SF	$10	77,300	$773,000
13	Illumination	Mi.	$286,000	0.26	$74,360
14	Landscaping	Mi.	$225,000	0.26	$58,500
15	Bridge Modifications	EA	$200,000	0.00	$0
16	Bridges (See note 2)	SF	$400	0	$0
17	Walls	SF	$70	0	$0
	SUBTOTAL				***$1,553,200***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$38,800
	TP & DT	3.0-8.0%	5.0%	$77,700
	Mobilization	8.0-10.0%	10.0%	$155,300
	Erosion Control	0.5-2.0%	2.0%	$31,100
	Contingency		40.0%	$621,300
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$342,000
	TOTAL CONSTRUCTION COST			***$2,819,400***
	Design Engineering		13.0%	$366,500
	Construction Engineering		10.0%	$281,900
	TOTAL PROJECT COST			**$3,470,000**

NOTES:

#1	Assumes 40' curb to curb width, standard section is 60' ROW width
#2	Improvements are from Hostetler Road to E5
#3	Roadway is at grade so excavation/embankment included in per lane mile cost for new roads
#4	Construction is mostly off alignment so TP&DT reduced
#5	Approx. 77,300 SF of ROW is needed.

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT: Chenoweth IAMP - Roundabout at River Trail Way and Hostetler St	**REFERENCE NAME/PHONE**		**SHEET**
DESIGN LEVEL: Preliminary	503-235-5000		1 of 1
KIND OF WORK: Roadway, Drainage	**LENGTH (MI.):** 0.07	**DATE** 7/14/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.04	$28,350
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	0.15	$75,300
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Excavation	CY	$15	0	$0
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Rail Cross Over (For Staging)	EA	$50,000	0.00	$0
12	Right-Of-Way	SF	$10	25,000	$250,000
13	Illumination	Mi.	$286,000	0.04	$10,010
14	Landscaping	Mi.	$225,000	0.04	$7,875
15	Bridge Modifications	EA	$200,000	0.00	$0
16	Bridges (See note 2)	SF	$400	0	$0
17	Walls	SF	$70	0	$0
	SUBTOTAL				***$371,535***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$9,300
	TP & DT	3.0-8.0%	5.0%	$18,600
	Mobilization	8.0-10.0%	10.0%	$37,200
	Erosion Control	0.5-2.0%	2.0%	$7,400
	Contingency		40.0%	$148,600
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$82,000
	TOTAL CONSTRUCTION COST			***$674,635***
	Design Engineering		13.0%	$87,700
	Construction Engineering		10.0%	$67,500
	TOTAL PROJECT COST			**$830,000**

NOTES:

#1	Assumes 20' curb to curb width inside Rdbt, with 16' width right slip lane
#2	Length measured around middle of driving lane inside Rdbt
#3	Roadway is at grade so excavation/embankment included in per lane mile cost for new roads
#4	Construction is under roadway closure so TP&DT reduced
#5	Approx. 25,000 SF of ROW is needed.

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT: Chenoweth IAMP - Roundabout at River Rd and River Trail Way	**REFERENCE NAME/PHONE**		**SHEET**
DESIGN LEVEL: Preliminary	503-235-5000		1 of 1
KIND OF WORK: Roadway, Drainage	**LENGTH (MI.):** 0.09	**DATE** 7/14/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.05	$36,450
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	0.31	$155,620
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Excavation	CY	$15	0	$0
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Rail Cross Over (For Staging)	EA	$50,000	0.00	$0
12	Right-Of-Way	SF	$10	9,500	$95,000
13	Illumination	Mi.	$286,000	0.05	$12,870
14	Landscaping	Mi.	$225,000	0.05	$10,125
15	Bridge Modifications	EA	$200,000	0.00	$0
16	Bridges (See note 2)	SF	$400	0	$0
17	Walls	SF	$70	0	$0
	SUBTOTAL				***$310,065***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$7,800
	TP & DT	3.0-8.0%	8.0%	$24,800
	Mobilization	8.0-10.0%	10.0%	$31,000
	Erosion Control	0.5-2.0%	2.0%	$6,200
	Contingency		40.0%	$124,000
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$68,000
	TOTAL CONSTRUCTION COST			***$571,865***
	Design Engineering		13.0%	$74,300
	Construction Engineering		10.0%	$57,200
	TOTAL PROJECT COST			**$710,000**

NOTES:

#1 Assumes 30' curb to curb width inside Rdbt (2-15' lanes) for two of four approaches
#2 Length measured between driving lanes inside Rdbt
#3 Roadway is at grade so excavation/embankment included in per lane mile cost for new roads
#4 Construction is under traffic so TP&DT at highest percentage
#5 Approx. 1,500 SF of ROW is needed.
#6 Roadway improvements for roundabout along N, E, and S approaches covered in adjacent roadway estimates

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT: Chenoweth IAMP - Signals Interchange Ramp Intersection	**REFERENCE NAME/PHONE**		**SHEET**
DESIGN LEVEL: Preliminary	503-235-5000		1 of 1
KIND OF WORK: Signals	**LENGTH (MI.):** 0	**DATE** 5/18/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.00	$0
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	0.00	$0
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Embankment	CY	$10	0	$0
7	Guardrail	FT	$20	0	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	2.00	$360,000
10	Signal Modifications	EA	$60,000	0.00	$0
11	Transit Enhancements	Mi.	$106,000	0.00	$0
12	Right-Of-Way	SF	$10	0	$0
13	Illumination	Mi.	$286,000	0.00	$0
14	Landscaping	Mi.	$225,000	0.00	$0
15	Bridges (See note 2)	SF	$300	0	$0
16	Walls	SF	$70	0	$0
	SUBTOTAL				***$360,000***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	1.0%	$3,600
	TP & DT	3.0-8.0%	5.0%	$18,000
	Mobilization	8.0-10.0%	10.0%	$36,000
	Erosion Control	0.5-2.0%	0.5%	$1,800
	Contingency		40.0%	$144,000
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$79,000
	TOTAL CONSTRUCTION COST			***$642,400***
	Design Engineering		10.0%	$64,200
	Construction Engineering		8.0%	$51,400
	TOTAL PROJECT COST			**$760,000**

NOTES:

#1 Installs new signals at the interchange ramp terminal intersections

#2 DE and CE set at 10% and 8% since design work is limited to intersection signalization

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT:	Chenoweth IAMP - Interchange Bridge Widening	**REFERENCE NAME/PHONE**			**SHEET**
DESIGN LEVEL:	Preliminary	503-235-5000			1 of 1
KIND OF WORK:	Roadway, Structures, Walls, Drainage	**LENGTH (MI.):**	0.84	**DATE** 5/13/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.42	$340,200
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	0.84	$421,680
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Embankment	CY	$10	17,150	$171,500
7	Guardrail	FT	$20	0	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	2.00	$360,000
10	Signal Modifications	EA	$60,000	0.00	$0
11	Transit Enhancements	Mi.	$106,000	0.00	$0
12	Right-Of-Way	SF	$10	0	$0
13	Illumination	Mi.	$286,000	0.42	$120,120
14	Landscaping	Mi.	$225,000	0.42	$94,500
15	Bridges (See note 2)	SF	$300	11,050	$3,315,000
16	Walls	SF	$70	11,500	$805,000
	SUBTOTAL				***$5,628,000***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$140,700
	TP & DT	3.0-8.0%	8.0%	$450,200
	Mobilization	8.0-10.0%	10.0%	$562,800
	Erosion Control	0.5-2.0%	2.0%	$112,600
	Contingency		40.0%	$2,251,200
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$1,238,000
	TOTAL CONSTRUCTION COST			***$10,383,500***
	Design Engineering		13.0%	$1,349,900
	Construction Engineering		10.0%	$1,038,400
	TOTAL PROJECT COST			**$12,780,000**

NOTES:

#1	Assumes 6-L Cross Section, 14' lanes to match existing
#2	Ramp widening occurs to inside towards I-84 so no conflict with UPRR
#3	Structure 1 (over I-84) assumed 190' length. Structure 2 (over UPRR) assumed 110' length
#4	Embankment/Excavation for project is assumed balanced typically. Given the large anticipated additional embankment for walled area of the overcrossing, additional embankment Qty is added.
#5	All improvements will be made within ODOT ROW.
#6	Per mile quantities divided by 2 for half street widening
#7	UPRR not impacted, but coordination/easement may be required.

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT: Chenoweth IAMP - Roundabout at 6th Street and River Rd	**REFERENCE NAME/PHONE**		**SHEET**
DESIGN LEVEL: Preliminary	503-235-5000		1 of 1
KIND OF WORK: Roadway, Drainage	**LENGTH (MI.):** 0.09	**DATE** 7/14/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.05	$36,450
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	0.15	$75,300
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Excavation	CY	$15	0	$0
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Rail Cross Over (For Staging)	EA	$50,000	0.00	$0
12	Right-Of-Way	SF	$10	2,500	$25,000
13	Illumination	Mi.	$286,000	0.05	$12,870
14	Landscaping	Mi.	$225,000	0.05	$10,125
15	Bridge Modifications	EA	$200,000	0.00	$0
16	Bridges (See note 2)	SF	$400	0	$0
17	Walls	SF	$70	0	$0
	SUBTOTAL				***$159,745***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$4,000
	TP & DT	3.0-8.0%	8.0%	$12,800
	Mobilization	8.0-10.0%	10.0%	$16,000
	Erosion Control	0.5-2.0%	2.0%	$3,200
	Contingency		40.0%	$63,900
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$35,000
	TOTAL CONSTRUCTION COST			***$294,645***
	Design Engineering		13.0%	$38,300
	Construction Engineering		10.0%	$29,500
	TOTAL PROJECT COST			**$370,000**

NOTES:

#1 Assumes 30' curb to curb width inside Rdbt (2-15' lanes),
#2 Length measured between driving lanes inside Rdbt
#3 Roadway is at grade so excavation/embankment included in per lane mile cost for new roads
#4 Construction is under traffic so TP&DT at highest percentage
#5 Approx. 2,500 SF of ROW is needed.
#6 Roadway improvements for roundabout along E, W, and S approaches covered in adjacent roadway estimates

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT: Chenoweth IAMP - Roundabout at 6th Street and Chenoweth Loop	**REFERENCE NAME/PHONE**		**SHEET**
DESIGN LEVEL: Preliminary	503-235-5000		1 of 1
KIND OF WORK: Roadway, Drainage	**LENGTH (MI.):** 0.11	**DATE** 7/14/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.11	$89,100
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	0.32	$160,640
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Excavation	CY	$15	0	$0
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Rail Cross Over (For Staging)	EA	$50,000	0.00	$0
12	Right-Of-Way	SF	$10	38,300	$383,000
13	Illumination	Mi.	$286,000	0.11	$31,460
14	Landscaping	Mi.	$225,000	0.11	$24,750
15	Bridge Modifications	EA	$200,000	0.00	$0
16	Bridges (See note 2)	SF	$400	0	$0
17	Walls	SF	$70	0	$0
	SUBTOTAL				***$688,950***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$17,200
	TP & DT	3.0-8.0%	8.0%	$55,100
	Mobilization	8.0-10.0%	10.0%	$68,900
	Erosion Control	0.5-2.0%	2.0%	$13,800
	Contingency		40.0%	$275,600
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$152,000
	TOTAL CONSTRUCTION COST			***$1,271,550***
	Design Engineering		13.0%	$165,300
	Construction Engineering		10.0%	$127,200
	TOTAL PROJECT COST			**$1,570,000**

NOTES:

#1 Assumes 30' curb to curb width inside Rdbt (2-15' lanes), with 1 lane at south approach
#2 Length measured between driving lanes inside Rdbt
#3 Roadway is at grade so excavation/embankment included in per lane mile cost for new roads
#4 Construction is under traffic so TP&DT at highest percentage
#5 Approx. 38,300 SF of ROW is needed from westside of 6th and along Chenoweth Lp
#6 Roadway improvements for roundabout along N and S approaches covered in adjacent roadway estimates

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT: Chenoweth IAMP - Signal 6th Street and Hostetler Road	**REFERENCE NAME/PHONE**		**SHEET**
DESIGN LEVEL: Preliminary	503-235-5000		1 of 1
KIND OF WORK: Signals	**LENGTH (MI.):** 0	**DATE** 5/18/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.00	$0
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	0.00	$0
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Embankment	CY	$10	0	$0
7	Guardrail	FT	$20	0	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	1.00	$180,000
10	Signal Modifications	EA	$60,000	0.00	$0
11	Transit Enhancements	Mi.	$106,000	0.00	$0
12	Right-Of-Way	SF	$10	0	$0
13	Illumination	Mi.	$286,000	0.00	$0
14	Landscaping	Mi.	$225,000	0.00	$0
15	Bridges (See note 2)	SF	$300	0	$0
16	Walls	SF	$70	0	$0
	SUBTOTAL				***$180,000***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	1.0%	$1,800
	TP & DT	3.0-8.0%	5.0%	$9,000
	Mobilization	8.0-10.0%	10.0%	$18,000
	Erosion Control	0.5-2.0%	0.5%	$900
	Contingency		40.0%	$72,000
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$40,000
	TOTAL CONSTRUCTION COST			***$321,700***
	Design Engineering		10.0%	$32,200
	Construction Engineering		8.0%	$25,700
	TOTAL PROJECT COST			**$380,000**

NOTES:

#1 Installs new signal at 6th Street and Hostetler Road

#2 DE and CE set at 10% and 8% since design work is limited to intersection signalization

CH2M HILL
SUMMARY - ORDER OF MAGNITUDE COST ESTIMATE

PROJECT:	Chenoweth IAMP - 6th Street Improvements	**REFERENCE NAME/PHONE**			**SHEET**
DESIGN LEVEL:	Preliminary	503-235-5000			1 of 1
KIND OF WORK:	Roadway, Structures, Walls, Drainage	**LENGTH (MI.):**	0.63	**DATE** 5/18/2009	**NAME** DAH

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$810,000	0.63	$510,300
2	Bike Boulevard	Day	$2,000	0.00	$0
3	New Roadway	Lane-Mi.	$502,000	3.29	$1,651,580
4	Overlay Existing Roadway	Lane-Mi.	$86,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$538,000	0.00	$0
6	Embankment	CY	$10	0	$0
7	Guardrail	FT	$20	0	$0
8	Interconnect Signal	EA	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Transit Enhancements	Mi.	$106,000	0.00	$0
12	Right-Of-Way	SF	$10	53,000	$530,000
13	Illumination	Mi.	$286,000	0.63	$180,180
14	Landscaping	Mi.	$225,000	0.63	$141,750
15	Bridges (See note 2)	SF	$300	0	$0
16	Walls	SF	$70	4,000	$280,000
	SUBTOTAL				***$3,293,810***

	ADDITIONAL COSTS	RANGE	PERCENTAGE	COST
	Construction Surveying	1.0-2.5%	2.5%	$82,300
	TP & DT	3.0-8.0%	8.0%	$263,500
	Mobilization	8.0-10.0%	10.0%	$329,400
	Erosion Control	0.5-2.0%	2.0%	$65,900
	Contingency		40.0%	$1,317,500
	Escalation (per year)		2.0%	
	-Estimate Year		2009	
	-Construction Year		2020	$725,000
	TOTAL CONSTRUCTION COST			***$6,077,410***
	Design Engineering		13.0%	$790,100
	Construction Engineering		10.0%	$607,700
	TOTAL PROJECT COST			**$7,480,000**

NOTES:

#1	Roadway cross section is 5-L; 12' lanes, 14' median, 6' and 8' bike lanes
#2	4' wall assumed on east side from Hostetler, 1,000' north
#3	Approx. 53,000SF of ROW is needed.
#4	The signal at 6th and Hostetler is included in a separate estimate

Curb, Gutter, Sidewalks, & Enclosed Drainage

Unit: Mile

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENT
Standard Concrete Curb and Gutter	LF	10,560	$12.00	$126,720.00	For Both Sides of Rdwy
Sidewalk	SY	8,213	$31.00	$254,613.33	For Both Sides of Rdwy, 7' Wide
12 Inch Storm Sewer Pipe, 5' deep	LF	5,280	$60.00	$316,800.00	Storm System Pipe, Including Trenching/Backfill
Storm Manhole	EA	18	$2,700.00	$48,600.00	Every 300' (18 in a mile)
Standard Catch Basin	EA	36	$1,500.00	$54,000.00	Every 300' (18 in a mile*2 for both sides= 36)
				$0.00	
				$0.00	
			SUBTOTAL	$800,733.33	
Removal of Structures - 1.2%				$9,608.80	

TOTAL UNIT COST $810,342.13

New Roadway

Unit: Lane-Mile

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENT
Asphalt	TN	2,405	$80.00	$192,426.67	12' Lanes, 5280' long, depth=6 IN, density=2.050 TN/CY
Aggregate Base	TN	5,065	$22.00	$111,427.56	12' Lanes, 5280' long, depth=14 IN, density=1.850 TN/CY
12 Inch Storm Sewer Pipe, 5' deep	LF	216	$60.00	$12,960.00	Culverts: 12' per lane, every 300 LF (18 in one mile)
Excavation	CY	11,733	$10.00	$117,333.33	Length=5280/2=2640LF, Avg Max depth = 10'
Embankment	CY	4,693	$10.00	$46,933.33	Length=5280/2=2640LF, Avg Max depth = 4'
Painted Permanent Pavement Striping	LF	5,280	$2.00	$10,560.00	1 solid stripe per lane
				$0.00	
			SUBTOTAL	$491,640.89	
Clearing and Grubbing - 1.0%				$4,916.41	
Removal of Structures - 1.2%				$5,899.69	
			TOTAL UNIT COST	$502,456.99	

Landscaping

Unit: Mile

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENT
Landscaping	LS	1	$ 225,000.00	$225,000.00	Plantings, Trees, Topsoil, and Irrigation sums up to aproximately $225,000 per mile (for both sides of roadway)
				$0.00	
				$0.00	
				$0.00	
				$0.00	
				$0.00	
				$0.00	
				$0.00	
				$0.00	
				$0.00	
				$0.00	

TOTAL UNIT COST $225,000.00

Illumination

Unit: Mile

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENT
Luminaire and appurtenances	EA	52	$ 5,500.00	$286,000.00	Luminaire, pole, wiring, etc (1 pole on each side every 200'=52 poles)
				$0.00	
				$0.00	
				$0.00	
				$0.00	
				$0.00	
				$0.00	
				$0.00	
				$0.00	
				$0.00	
				$0.00	

TOTAL UNIT COST $286,000.00

Appendix G

Development Threshold Analysis Summary Memorandum

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

TECHNICAL MEMORANDUM

I-84 Chenoweth IAMP

Development Threshold Analysis Summary

Date: June 4, 2009 Project #: 9600.0

To: Chenoweth IAMP TAC/SC Members

From: Susan Wright, PE

cc: Casey Bergh and Marc Butorac, PE, PTOE

Four roadway improvement phase scenarios were developed in order to estimate the amount of new development that could occur within the Chenoweth IAMP Study Area before various components of the preferred access and circulation plan are needed. The four roadway improvement phases reflect the timeframe in which improvements are expected. For comparison purposes, Figure C-1 illustrates lane configurations of the no-build scenario, assuming no improvements to the existing 2008 roadway network. The components of each roadway improvement scenario are summarized below. Figures C-2 through C-4 illustrate the lane configurations at the study intersections under each of the following improvement phases:

Phase 1 –Near-term Improvements (Figure C-2)

- Traffic signal installed at 6th Street/Hostetler Street intersection
- Restriping of River Road overpass of I-84 to provide 4-lane cross-section

Phase 2 –Mid-term Improvements (Figure C-3)

- Roundabout constructed at River Road/River Trail Way
- Traffic signal installed at River Road/I-84 Westbound Ramp Terminal
- Traffic signal installed at River Road/I-84 Eastbound Ramp Terminal
- Roundabout constructed at River Road/6th Street (US 30)
- Turn lanes constructed at designated intersection approaches
- Roundabout installed at 6th Street/Chenoweth Loop

Phase 3 – Long-term Improvements (Figure C-4)

- Construct new east-west connection at Hostetler Street, including railroad undercrossing of Hostetler Street
- Provide dual westbound left-turns at River Road/6th Street (US 30) roundabout
- Provide 5-lane section on 6th Street from River Road south through the Hostetler Street intersection
- Construct raised median on 6th Street from River Road to Chenoweth Loop
- Provide dual westbound left-turns at 6th Street/Hostetler Street intersection

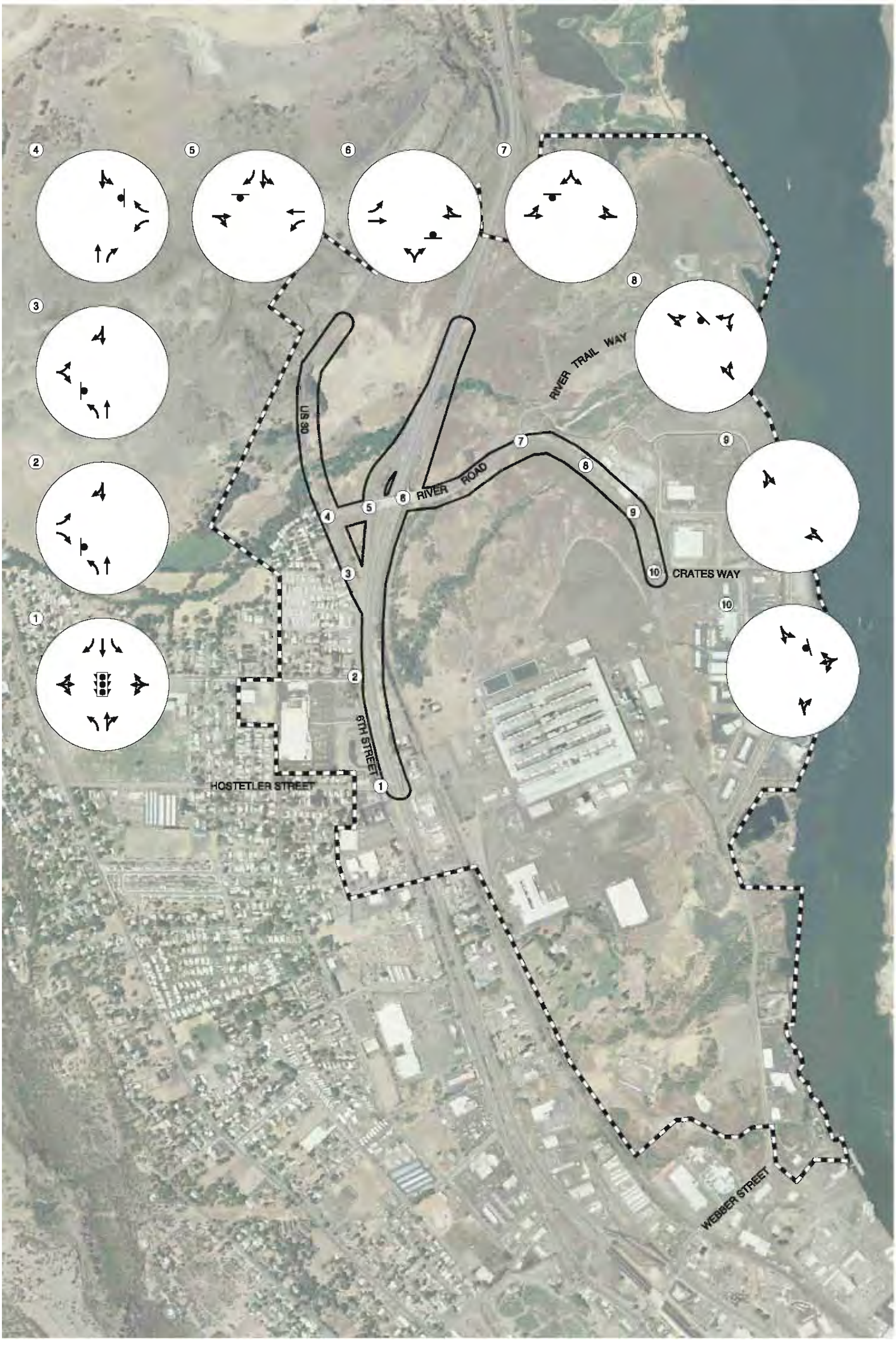
Phase 4 – Long-term Vision (Figure C-5)

- Widen Chenoweth bridge structure to accommodate 6-lane cross-section, including side-by-side left-turn lanes

Additional improvements are identified that will be implemented in conjunction with adjacent development, including:

- New local roadways to provide access to individual parcels and to provide connectivity to higher-order facilities.
- ROW preservation for potential long-term crossing of I-84 north of River Road.
- Relocating driveway access on US 30 within 1,320 feet of the interchange ramp terminals to satisfy ODOT access management standard.

Table 8-1 summarizes the percent of development that is expected to be accommodated under each improvement phase. When all improvements identified in each improvement phase are in place, the development potential listed can be achieved. For example, if all improvements identified in Phase 1 (Intersection Improvements) are in operation, between 11 and 55 percent of full build-out under Land Use Scenario #2 could occur before queuing and intersection operations exceed capacity.



LEGEND

- STOP SIGN
- TRAFFIC SIGNAL

LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
NO-BUILD SCENARIO, <10% DEVELOPMENT THRESHOLD
THE DALLES, OREGON

FIGURE **C-1**

KITTELSON & ASSOCIATES, INC.
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LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
PHASE 1: INTERSECTION IMPROVEMENTS, 11-55% DEVELOPMENT THRESHOLD
THE DALLES, OREGON

FIGURE C-2

KITTELSON & ASSOCIATES, INC.
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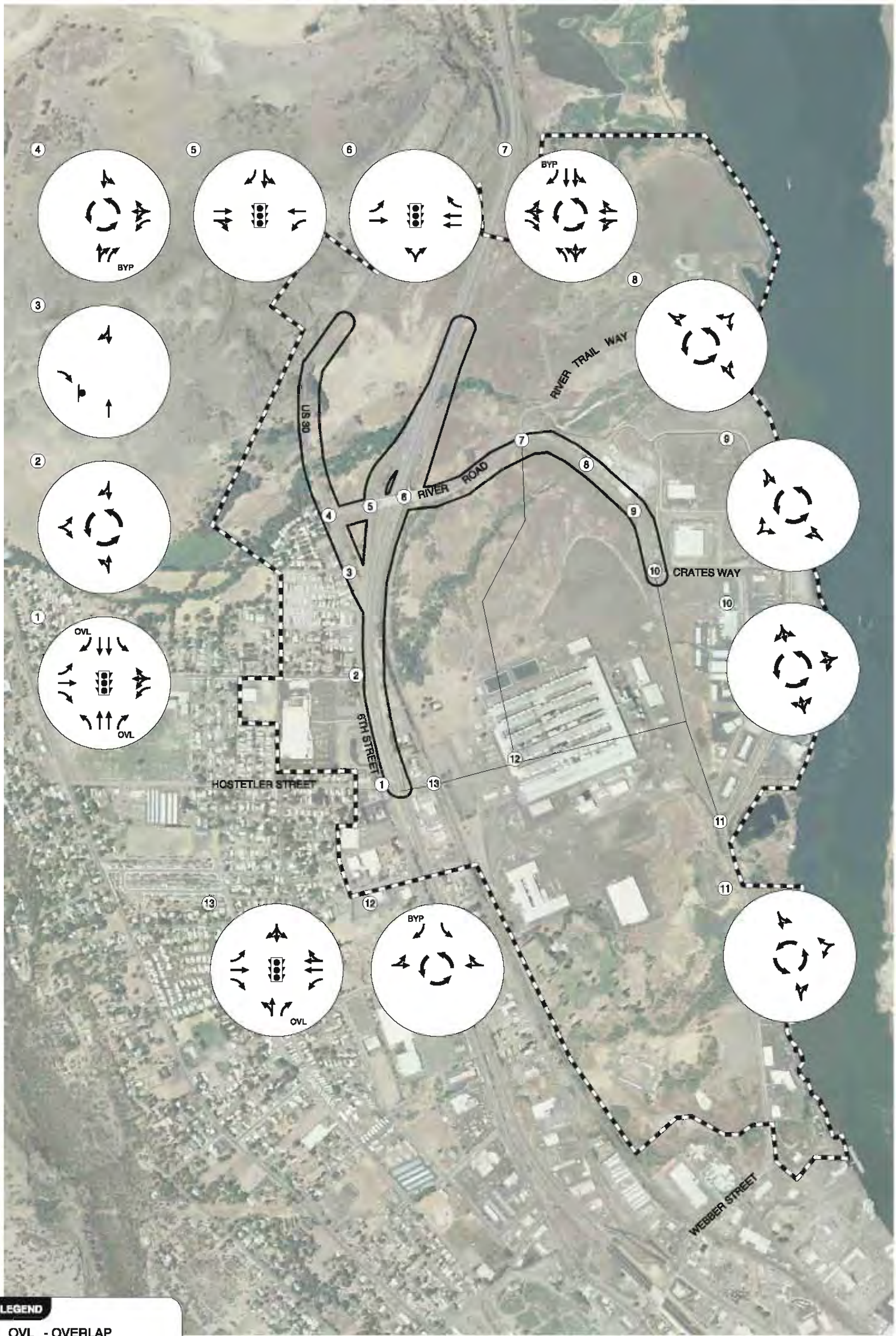

LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
IMPROVEMENT PHASE 2, 56-75% DEVELOPMENT THRESHOLD
THE DALLES, OREGON

FIGURE C-3

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

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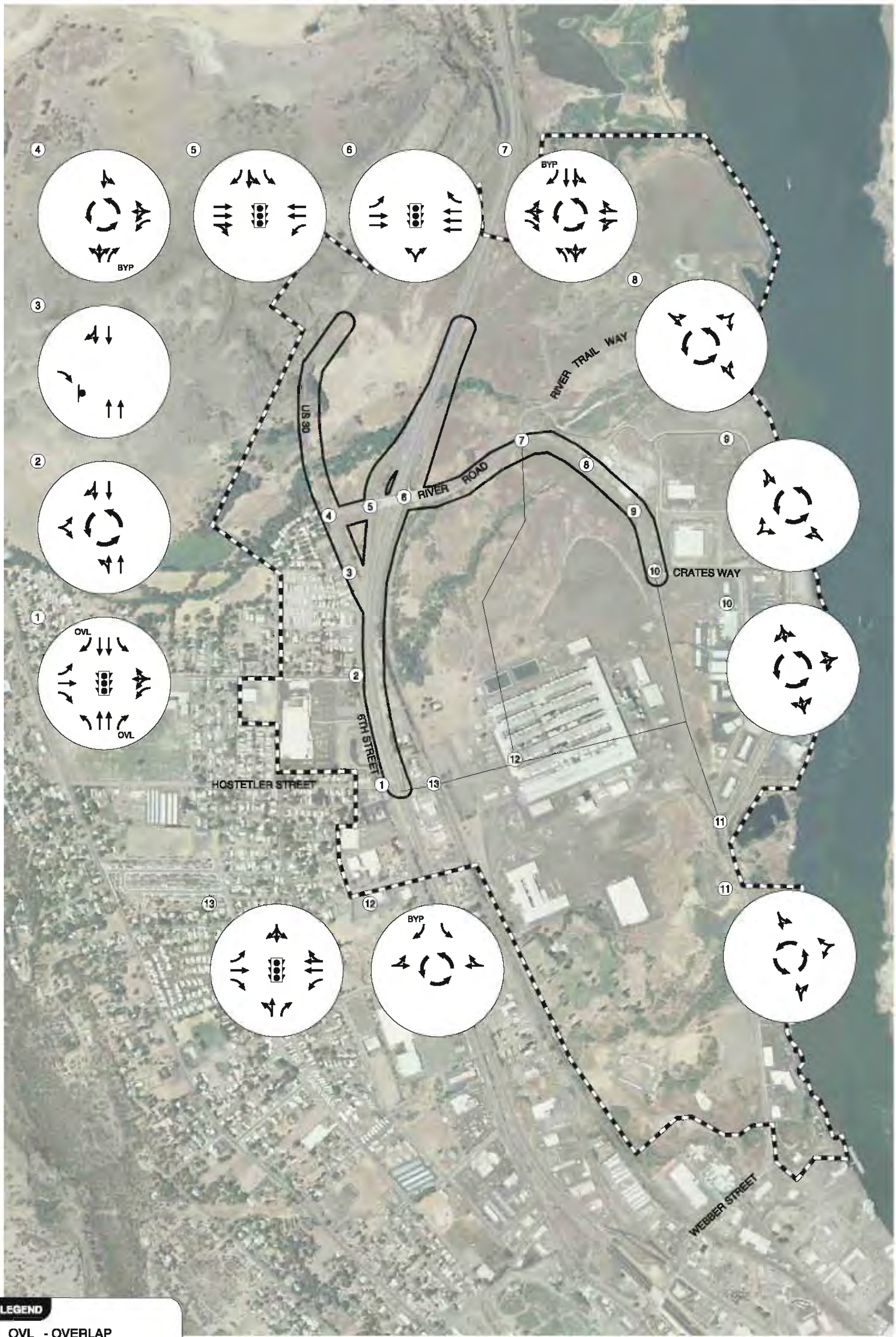

LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
IMPROVEMENT PHASE 3, 76-90% DEVELOPMENT THRESHOLD
THE DALLES, OREGON

FIGURE C-4

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

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Table 8-1 Development Thresholds

Improvement Phase	Development Threshold (Percent of Full Build-Out)
0 - No-Build	-
1 - Near-term Improvements	<10%
2 - Mid-term Improvements	11-55%
3 - Long-term Improvements	56-75%
4 - Long-term Vision Improvements	76-90%

As shown in Table 8-1, development potential of up to 75 percent is anticipated in the long-term time period. Up to 90 percent development potential may or may not be realized, as identified in the long-term vision phase.

This analysis was based on operational analysis conducted using Synchro Software in accordance with HCM methodologies. The analysis focused on critical intersections including: I-84 Eastbound Ramp Terminal/River Road, I-84 Westbound Ramp Terminal/River Road, 6th Street/River Road, and 6th Street/Hostetler Street. At the ramp terminal intersections forecast queues are not expected to exceed available storage lengths and volume-to-capacity ratios are forecast to be less than 0.70. Other intersections are forecast to operate at or below mobility standards.

Sub-area Trip Allocation

In order to determine the maximum number of trips that could be developed in each sub-area before the next phase of roadway improvements would be needed, a summary of trip generation potential was prepared for each parcel within sub-areas, and for three regions (groups of sub-areas) within the study area. Appendix "A" includes a summary of the trip generation potential of individual parcels within each sub-area based on each development scenario.

It is possible that trips could be reallocated among sub-areas; however, if intense development is expected in one sub-area it requires specific analysis given that the data in Attachment "A" assumes equal distribution of trips among all sub-areas. Summary of trip generation potential in Table 8-2 provides information for assessing potential to redistribute trips among sub-areas. In Table 8-2, sub-areas were grouped into three regions within the Study area and are defined as follows:

- **Region 1 (Sub-areas "A", "B", "C", and "E"):** portion of study area north of Hostetler Street and east of I-84.
- **Region 2 (Sub-area "D"):** Portion of study area south of Hostetler Street and east of I-84
- **Region 3 (Sub-area "F", "G", and "H"):** Portion of study area west of I-84

Given the potential for intense development to occur in Sub-area "E", a specific analysis of sub-area "E" was conducted and is summarized in the following section.

Table 8-2 Trip Generation Potential by Sub-area and Region

Sub-area	Net Developable or Re-developable Land Area (Acres)	FAR	Development Size (1,000 Sq. Feet GLA)	Full Development Trip Generation Potential			10% Development Trip Generation Potential			55% Development Trip Generation Potential			75% Development Trip Generation Potential			90% Development Trip Generation Potential		
				Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
A	100.9	0.4	1,760	1725	206	1519	172	21	151	952	114	838	1295	155	1140	1552	186	1366
B	16.3	0.4/0.3	240	323	81	242	34	7	27	183	47	136	251	67	184	289	74	215
C	63.3	0.4	1,100	1078	129	949	108	13	95	594	71	523	810	97	713	970	116	854
D	90.4	0.4	1,570	1539	185	1354	153	18	135	847	102	745	1154	139	1015	1384	166	1218
E	53.7	0.3	590	1660	830	830	160	80	80	1030	515	515	1290	645	645	1610	805	805
F	3.4	0.4	55	55	28	27	60	0	30	25	2	23	36	5	31	42	6	36
G	0.4	0.3	4	75	38	37	80	40	40	62	31	31	75	38	37	75	38	37
H	9.3	0.3	106	651	326	325	87	44	43	447	224	223	575	288	287	630	315	315
Region 1: A, B, D, E	261.3	1.1	4,160	5,247	1,302	3,945	519	126	393	3,012	778	2,234	3,990	1,006	2,984	4,835	1,231	3,604
Region 2: C	63.3	0.4	1,100	1,078	129	949	108	13	95	594	71	523	810	97	713	970	116	854
Region 3: F, G, H, I	13.1	0.9	165	781	392	389	227	84	113	534	257	277	686	331	355	747	359	388
Total (All Regions)	**337.7**	**2.4**	**5425**	**7106**	**1823**	**5283**	**854**	**223**	**601**	**4140**	**1106**	**3034**	**5486**	**1434**	**4052**	**6552**	**1706**	**4846**

SUB-AREA "E" DEVELOPMENT ANALYSIS

Analysis of Sub-area "E" (owned by WM3, Inc.) in the southeast quadrant of the I-84 Chenoweth interchange was conducted in order to assess the traffic operational impacts if it were the first parcel to develop and it were to develop as a commercial use. Analysis assumed 2030 background traffic volume growth and no other development other than full development of 67.2 acres of Sub-area "E". Table 8-3 provides a summary of assumed trip generation of Sub-area "E."

Table 8-3 Sub-area "E" Development Trip Generation

Land Use	ITE Code	Size (1,000 sq. feet)	Weekday PM Peak Hour		
			Total	In	Out
Commercial Light Industrial (67.2 acres)	820	669	2,190	1,095	1,095
Pass-By Trip Reduction (1%)			*(30)*	*(15)*	*(15)*
Net New Trips			**2,160**	**1,080**	**1,080**

As outlined in Table 8-3, pass-by trips were reduced to 30 trips (15 in, 15 out) during the weekday p.m. peak hour, which is no more than 10 percent of forecast through volumes on River Road. As such, 2,160 net new trips (1,080 in, 1,080 out) were estimated to be generated by Sub-area "E" during the weekday p.m. peak hour using previous trip generation rates outlined in Memo 5/6.

Forecast roadway improvements necessary to accommodate full development of Sub-area "E" include improvements as outlined above in Improvement Phase 1. With improvements described in Improvement Phase 1 in place (as shown in Figure C-2), the critical movement is expected to be the eastbound queue at the I-84 Eastbound Ramp Terminal/River Road intersection. Forecast queuing at the ramp terminal intersection is not expected to exceed available storage length and volume-to-capacity ratios are forecast to be less than 0.70. Other intersections are forecast to operate at or below mobility standards.

Based on equal distribution of trips assumed for the 55-percent development trip generation scenario shown in Table 8-2, the trip generation potential of full build-out of Sub-area "E" will exceed the trips allocated to Region 1 under Improvement Phase 1. Although operational analysis of this specific scenario showed that the critical study intersections operate acceptably, it is not expected that additional development of adjacent parcels could occur until Phase 2 improvements are in place. Multiple alternatives for managing development of Sub-area "E" will be outlined and a preferred strategy will be developed based on discussions at the May 27 TAC/SC meeting.

Appendix “A” – Trip Generation Thresholds by Parcel (Table A-1)

Sub-area	Tax Lot	Acres	Zoning	Owner	*Utilities & ROW (20%)*	Net Developable or Re-developable Land Area (Acres)	FAR	Development Size (1,000 Sq. Feet GLA)	Trip Generation Potential - Full Development			Trip Generation Potential - 10% Development			Trip Generation Potential - 55% Development			Trip Generation Potential - 75% Development			Trip Generation Potential - 90% Development		
									Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
A	2N 13E 21 600	22.2	I	NORTHWEST ALUMINUM CO	4.4	17.8	0.4	310	304	36	268	30	4	26	168	20	148	228	27	201	273	33	240
	2N 13E 21 700	40.9	I	DALLES PORT OF THE	8.2	32.7	0.4	570	559	67	492	56	7	49	308	37	271	419	50	369	503	60	443
	2N 13E 21 800	42.5	I	DALLES PORT OF THE	8.5	34.0	0.4	590	578	69	509	58	7	51	319	38	281	434	52	382	520	62	458
	2N 13E 28 701	20.5	I	NORTHWEST ALUMINUM CO	4.1	16.4	0.4	290	284	34	250	28	3	25	157	19	138	214	26	188	256	31	225
Sub-area Total		*126.2*			*25.2*	*100.9*		*1760*	*1725*	*206*	*1519*	*172*	*21*	*151*	*952*	*114*	*838*	*1295*	*155*	*1140*	*1552*	*186*	*1366*
B	2N 13E 28 900	4.4	I	CHENOWITH CREEK DEVELOPER	0.9	3.6	0.4	60	59	7	52	6	1	5	32	4	28	44	5	39	53	6	47
	2N 13E 28 901	4.3	I	NORTHWEST ALUMINUM CO	0.9	3.4	0.4	60	59	7	52	6	1	5	32	4	28	44	5	39	53	6	47
	2N 13E 28 A 1200	1.5	I	DALLES PORT OF THE	0.3	1.2	0.4	20	20	2	18	2	0	2	11	1	10	15	2	13	18	2	16
	2N 13E 28 A 600	1.5	I	DALLES PORT OF THE	0.3	1.2	0.4	20	20	2	18	2	0	2	11	1	10	15	2	13	18	2	16
	2N 13E 28 A 900	0.8	I	EVERSUMMER LLC	0.2	0.6	0.4	10	10	1	9	1	0	1	6	1	5	8	1	7	9	1	8
	2N 13E 28 D 2500	0.4	CR	CRATES POINT DEVELOPMENT LL	0.1	0.4	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2N 13E 28 D 2600	0.9	CR	CRATES POINT DEVELOPMENT LL	0.2	0.7	0.3	10	27	12	15	3	1	2	16	7	9	22	10	12	24	11	13
	2N 13E 28 D 2700	0.9	CR	DALLES PORT OF THE	0.2	0.7	0.3	10	27	12	15	3	1	2	16	7	9	22	10	12	24	11	13
	2N 13E 28 D 2800	1.2	CR	DALLES PORT OF THE	0.2	1.0	0.3	10	27	12	15	3	1	2	16	7	9	22	10	12	24	11	13
	2N 13E 28 D 3100	1.0	CR	DALLES PORT OF THE	0.2	0.8	0.3	10	27	12	15	3	1	2	16	7	9	22	10	12	24	11	13
	2N 13E 28 D 800	1.4	I	TUM A LUM LUMBER CO	0.3	1.1	0.4	20	20	2	18	2	0	2	11	1	10	15	2	13	18	2	16
	2N 13E 28 DB 100	0.6	CR	TENNESON ENGINEERING CORP	0.1	0.5	0.3	10	27	12	15	3	1	2	16	7	9	22	10	12	24	11	13
	2N 13E 28 DB 200	0.4	CR	RIVERFRONT ASSETS LLC	0.1	0.4	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2N 13E 28 DB 600	0.2	CR	RIVERFRONT ASSETS LLC	0.0	0.1	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2N 13E 28 DB 300	0.3	CR	RIVERFRONT ASSETS LLC	0.1	0.3	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2N 13E 28 DB 700	0.2	CR	RIVERFRONT ASSETS LLC	0.0	0.1	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2N 13E 28 DB 800	0.2	CR	RIVERFRONT ASSETS LLC	0.0	0.1	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-area Total		*20.4*			*4.1*	*16.3*		*240*	*323*	*81*	*242*	*34*	*7*	*27*	*183*	*47*	*136*	*251*	*67*	*184*	*289*	*74*	*215*
C	2N 13E 33 200	76.9	I	NORTHWEST ALUMINUM CO	15.4	61.5	0.4	1070	1049	126	923	105	13	92	577	69	508	787	94	693	944	113	831
	2N 13E 33 A 200	2.2	I	BERNERT BARGE LINE INC	0.4	1.7	0.4	30	29	3	26	3	0	3	17	2	15	23	3	20	26	3	23
Sub-area Total		*79.1*			*15.8*	*63.3*		*1100*	*1078*	*129*	*949*	*108*	*13*	*95*	*594*	*71*	*523*	*810*	*97*	*713*	*970*	*116*	*854*
D	2N 13E 28 700	94.3	I	NORTHWEST ALUMINUM CO	18.9	75.4	0.4	1310	1284	154	1130	128	15	113	707	85	622	963	116	847	1155	139	1016
	2N 13E 28 1000	18.7	I	NORTHWEST ALUMINUM CO	3.7	14.9	0.4	260	255	31	224	25	3	22	140	17	123	191	23	168	229	27	202
Sub-area Total		*113.0*			*22.6*	*90.4*		*1570*	*1539*	*185*	*1354*	*153*	*18*	*135*	*847*	*102*	*745*	*1154*	*139*	*1015*	*1384*	*166*	*1218*
E	2N 13E 28 702	67.2	CLI	5277 CHERRY HGTS RD	13.4	53.7	0.3	590	2190	1095	1095	219	110	110	1205	605	600	1643	820	820	1971	986	986
								Pass-by Trips	*(530)*	*(265)*	*(265)*	*(60)*	*(30)*	*(30)*	*(175)*	*(90)*	*(85)*	*(350)*	*(175)*	*(175)*	*(360)*	*(180)*	*(180)*
Sub-area Total		*67.2*			*13.4*	*53.7*		*Net New Trips*	1660	830	830	160	80	80	1030	515	515	1290	645	645	1610	805	805
F	2N 13E 28 CC 100	0.3	CLI	LEE ERNEST W & MARY L	0.07	0.3	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2N 13E 28 CC 200	0.6	CLI	LEE ERNEST W & MARY L	0.12	0.5	0.4	8	8	4	4	10	0	5	4	0	4	6	1	5	7	1	6
	2N 13E 29 DA 1800	0.6	CLI	VELADOR AMADO & CHARLOTTE	0.13	0.5	0.4	9	9	5	4	10	0	5	5	1	4	7	1	6	8	1	7
	2N 13E 29 DA 1900	1.0	CLI	KOOPS DUANE C & JEAN M	0.19	0.8	0.4	14	14	7	7	10	0	5	8	1	7	11	1	10	13	2	11
	2N 13E 29 DD 100	0.6	CLI	STEELE CLARA S ET AL	0.12	0.5	0.4	8	8	4	4	10	0	5	4	0	4	6	1	5	7	1	6
	2N 13E 29 DD 200	0.6	CLI	SPEE DEE HAULERS INC	0.11	0.5	0.4	8	8	4	4	10	0	5	4	0	4	6	1	5	7	1	6
	2N 13E 29 DD 300	0.5	CLI	SPEE DEE HAULERS INC	0.11	0.4	0.4	8	8	4	4	10	0	5	0	0	0	0	0	0	0	0	0
Sub-area Total		*4.3*			*0.9*	*3.4*		*55*	*55*	*28*	*27*	*60*	*0*	*30*	*25*	*2*	*23*	*36*	*5*	*31*	*42*	*6*	*36*
G	2N 13E 29 DD 1100	0.2	CG	DEAN SANDY ET AL	0.03	0.1	0.3	1	19	10	9	20	10	10	21	11	10	19	10	9	19	10	9
	2N 13E 29 DD 1200	0.2	CG	DEAN SANDY ET AL	0.03	0.1	0.3	1	20	10	10	20	10	10	20	10	10	20	10	10	20	10	10
	2N 13E 29 DD 1300	0.2	CG	DEAN SANDY ET AL	0.05	0.2	0.3	2	31	16	15	40	20	20	20	10	10	31	16	15	31	16	15
Sub-area Total		*0.6*			*0.1*	*0.4*		*4*	*75*	*38*	*37*	*80*	*40*	*40*	*62*	*31*	*31*	*75*	*38*	*37*	*75*	*38*	*37*
H	2N 13E 29 DA 400	1.6	CG	ROBINSON JR RAY & DORIS J	0.31	1.3	0.3	14	57	29	28	11	6	5	39	20	19	48	24	24	54	27	27
	2N 13E 29 DA 300	0.2	CG	LEABO JESSE D & WILLETTA A	0.04	0.2	0.3	2	8	4	4	0	0	0	5	3	2	9	5	4	8	4	4
	2N 13E 29 DB 200	0.2	CG	BRUCE LARRY W & JOVIA S	0.04	0.2	0.3	2	8	4	4	0	0	0	5	3	2	9	5	4	8	4	4
	2N 13E 29 DB 100	0.2	CG	HESTER DENNIS R	0.04	0.2	0.3	2	8	4	4	0	0	0	5	3	2	9	5	4	8	4	4
	2N 13E 29 DA 200	0.2	CG	GAST STEPHEN L	0.04	0.2	0.3	2	8	4	4	0	0	0	5	3	2	9	5	4	8	4	4
	2N 13E 29 DB 500	0.1	CG	REDLINGSHAFER KENNY R & TER	0.02	0.1	0.3	1	4	2	2	0	0	0	5	3	2	4	2	2	4	2	2
	2N 13E 29 DB 700	0.2	CG	HELGESON ROBERT E	0.04	0.2	0.3	2	8	4	4	0	0	0	5	3	2	9	5	4	8	4	4
	2N 13E 29 DB 800	0.2	CG	CARLSON VEDA M	0.04	0.2	0.3	2	8	4	4	0	0	0	5	3	2	9	5	4	8	4	4
	2N 13E 29 DB 900	0.2	CG	TAYLOR MARY JO	0.04	0.2	0.3	2	8	4	4	0	0	0	5	3	2	9	5	4	8	4	4
	2N 13E 29 DA 1100	0.2	CG	AKIYAMA FLORENCE	0.04	0.2	0.3	2	8	4	4	0	0	0	5	3	2	9	5	4	8	4	4
	2N 13E 29 DA 1000	0.2	CG	SUTTON AARON R & DONNA M	0.04	0.2	0.3	2	8	4	4	0	0	0	5	3	2	9	5	4	8	4	4
	2N 13E 29 DA 900	0.3	CG	MONNER JOSEPH A & ELIZABETH	0.07	0.3	0.3	3	12	6	6	0	0	0	10	5	5	9	5	4	12	6	6
	2N 13E 29 DA 800	0.3	CG	HICKS GREG N & KELLY R	0.07	0.3	0.3	3	12	6	6	0	0	0	10	5	5	9	5	4	12	6	6
	2N 13E 29 DA 700	0.3	CG	ROBINSON JR RAY & DORIS J	0.07	0.3	0.3	3	12	6	6	0	0	0	10	5	5	9	5	4	12	6	6
	2N 13E 29 DA 600	0.5	CG	ROCKHILL CHARLES H	0.10	0.4	0.3	4	16	8	8	0	0	0	10	5	5	13	7	6	16	8	8
	2N 13E 29 DA 500	0.1	CG	ROBINSON JR RAY & DORIS J	0.02	0.1	0.3	1	4	2	2	0	0	0	5	3	2	4	2	2	4	2	2
	2N 13E 29 DB 600	0.1	CG	MARQUEZ JOHN & CARMEN E	0.01	0.1	0.3	1	4	2	2	0	0	0	5	3	2	4	2	2	4	2	2
	2N 13E 29 DB 1300	0.2	CG	WILLIAMS LEONARD E	0.04	0.2	0.3	2	8	4	4	0	0	0	5	3	2	9	5	4	8	4	4
	2N 13E 29 DB 1200	0.2	CG	ORNELAS JOSE & TERESA V	0.04	0.2	0.3	2	8	4	4	0	0	0	5	3	2	9	5	4	8	4	4
	2N 13E 29 DB 1100	0.2	CG	CARTER WALTER & MYRTLE M	0.04	0.2	0.3	2	8	4	4	0	0	0	5	3	2	9	5	4	8	4	4
	2N 13E 29 DB 1000	0.2	CG	MANNING GINA M	0.04	0.2	0.3	2	8	4	4	0	0	0	5	3	2	9	5	4	8	4	4
	2N 13E 29 DA 1300	0.2	CG	SMITH CLIFFORD R & ANGELA K	0.04	0.2	0.3	2	8	4	4	0	0	0	5	3	2	9	5	4	8	4	4
	2N 13E 29 DA 1200	0.2	CG	KISHI MICHIKO RLT	0.04	0.2	0.3	2	8	4	4	0	0	0	5	3	2	9	5	4	8	4	4
	2N 13E 29 A 900	1.3	CG	ROBINSON DORIS J FAMILY TRUS	0.26	1.0	0.3	11	45	23	22	11	6	5	30	15	15	35	18	17	41	21	20
	2N 13E 29 DA 100	2.4	CG	ROBINSON DORIS J FAMILY TRUS	0.48	1.9	0.3	21	85	43	42	23	12	11	59	30	29	69	35	34	78	39	39
	2N 13E 29 DA 1700	1.6	CG	METRO INVESTMENTS LLC	0.33	1.3	0.3	14	57	29	28	11	6	5	39	20	19	48	24	24	54	27	27
					2.3	*9.3*		*106*	*651*	*326*	*325*	*87*	*44*	*43*	*447*	*224*	*223*	*575*	*288*	*287*	*630*	*315*	*315*
Sub-area Total		*11.6*						*Net New*	*430*	*215*	*215*	*57*	*29*	*28*	*295*	*148*	*147*	*380*	*190*	*190*	*416*	*208*	*208*
Study Area Total		**295.9**			**59.2**	**236.7**		**3075**	**6885**	**1617**	**3764**	**682**	**202**	**450**	**3188**	**992**	**2196**	**4191**	**1279**	**2912**	**5000**	**1520**	**3480**

Sub-Area Net New Trip Generation Summary

A	100.9	0.4	1760	1725	206	1519	172	21	151	952	114	838	1295	155	1140	1552	186	1366
B	16.3	0.4/0.3	240	323	81	242	34	7	27	183	47	136	251	67	184	289	74	215
C	63.3	0.4	1100	1078	129	949	108	13	95	594	71	523	810	97	713	970	116	854
D	90.4	0.4	1570	1539	185	1354	153	18	135	847	102	745	1154	139	1015	1384	166	1218
E	53.7	0.3	590	1660	830	830	160	80	80	1030	515	515	1290	645	645	1610	805	805
F	3.4	0.4	55	55	28	27	60	0	30	25	2	23	36	5	31	42	6	36
G	0.4	0.3	4	75	38	37	80	40	40	62	31	31	75	38	37	75	38	37
H	9.3	0.3	106	651	326	325	87	44	43	447	224	223	575	288	287	630	315	315
Region 1: A, B, D, E	261.3	1.1	4160	5247	1302	3945	519	126	393	3012	778	2234	3990	1006	2984	4835	1231	3604
Region 2: C	63.3	0.4	1100	1078	129	949	108	13	95	594	71	523	810	97	713	970	116	854
Region 3: F, G, H, I	13.1	0.9	165	781	392	389	227	84	113	534	257	277	686	331	355	747	359	388

Appendix H

Crossing Evaluation Memorandum

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

TECHNICAL MEMORANDUM

I-84 Chenoweth IAMP

East-West Crossing Alternative Evaluation

Date: July 13, 2009 Project #: 9600.08

To: Dan Durow, City of The Dalles

From: Susie Wright, P.E.
Marc Butorac, P.E., P.T.O.E.,
Casey Bergh

cc: Ana Jovanovic, ODOT

This memorandum provides supplementary information associated with selecting a preferred access and circulation design for the IAMP Study Area. Information in the following sections provides an evaluation of the property impacts and cost associated with constructing a new east-west crossing between 6th Street and River Road in The Dalles, Oregon. Additionally, an assessment of forecast lane configurations has been prepared that allows for a comparison between signalized and roundabout control at three intersections: River Road/River Trail Way, River Road/6th Street, and 6th Street/Chenoweth Loop.

EAST-WEST CROSSING LOCATION EVALUATION

Two connections exist within the IAMP Study Area between 6th Street and River Road: 1) River Road at the I-84 Chenoweth Interchange and 2) Webber Street at the Webber Street Interchange. There is also an existing connection between 6th Street and 2nd Street at Hostetler; however, this connection does not provide access all the way to River Road. It is assumed that if Hostetler Street were to be extended from 2nd Street to River Road as a public roadway, the existing railroad crossing at the 2nd Street/Hostetler Street intersection would require grade separation.

Grade separation of the railroad at Hostetler Street is one of four railroad crossing locations that have been evaluated between Webber Street and River Road in order to alleviate congestion at both interchanges and to provide additional capacity for future development. As summarized in previous memorandums, a new east-west crossing is expected to be needed when approximately 55 percent of the available land within the IAMP Study Area is developed. A new crossing is expected to allow development of up to 75 percent of the available land within the IAMP Study Area.

As an alternative to providing a new connection from 6th Street to River Road within the study area, a "no new crossing" alternative was also evaluated. If a "no new crossing" alternative is selected, development of the land within the Land Use Study Area would have to be restricted to a lower Floor Area Ratio (FAR). Development forecasts outlined in Memorandum #5/6 assumed a maximum FAR of 0.40 for industrial property and 0.25 for commercial property. In order to provide development of all land without constructing a new crossing, a maximum FAR of 0.22 for industrial development and 0.14 for commercial would need to be maintained. This represents a reduction of approximately 533,000 square feet of industrial development and 87,000 square feet of commercial development over what would be permitted with a UP rail crossing.

Three crossing locations were identified through Public Open House #1 and the associated design workshop. A fourth crossing location (at Chenoweth Loop) was identified after initial screening of alternatives had been completed. The evaluated crossing locations are identified from north to south:

A. North 2nd Street Overpass
B. Chenoweth Loop Underpass
C. Hostetler Street Underpass
D. Snipes Street Overpass

Relative cost comparisons and an analysis of property impacts forms the basis for the supplementary analysis provided in this memo.

Relative Cost Comparison

As summarized in Memorandum #7, initial screening of three crossing alternatives (not including Chenoweth Loop) considered the following criteria: cost estimates, potential to divert traffic from Chenoweth Interchange, and potential to negatively impact the Webber Street Interchange. Cost estimates developed for the initial screening are shown in Table 1. These costs do not include right-of-way acquisition related to access and property impacts. These impacts are discussed later in this memorandum.

Table 1 Initial Cost Estimates of East-West Crossing Alternatives (Memorandum #7)

Crossing Location	Cost Estimate[1]
North 2nd Street Overpass (A)	$19,750,000
Hostetler Street Underpass (C)	$14,100,100
Snipes Street Overpass (D)	$32,150,000

[1]Includes 40-percent contingency and no ROW costs

Relative to the costs of crossing locations A, C, and D, the Chenoweth Loop Underpass is expected to be more expensive than A, but less expensive than D. The following assumptions form the basis for this comparison.

- In the vicinity of Chenoweth Loop the elevation of 6th Street is approximately six to eight feet below the elevation of I-84. Therefore, an undercrossing will have less impact to businesses and properties along 6th Street and Chenoweth Loop than an overpass.
- New bridge structures would be needed to support I-84 and the UP Railroad where Chenoweth Loop would pass under each.
- Retaining walls would be needed under both I-84 and UP Railroad, and along 6th street and Chenoweth Loop to minimize impacts to adjacent properties.
- Given the grade separation between existing roads and I-84, less excavation (total earthwork) would be required at Chenoweth Loop than at Snipes Street.

Property Impacts of Grade Changes

Preliminary estimates of grade changes associated with each crossing were prepared by CH2MHill based on field observations of existing elevations. Given the required clearance for an under or over crossing of the UP Railroad and I-84, the distance required to tie back into existing roadway grade is expected to range from 200 to 1000 feet depending on the existing elevations. Until survey information is obtained, these represent a conservative estimate based on relative differences in elevation. The following sections outline the estimated impacts of grade changes to the roadways based on the proposed crossing form at each location.

A: North 2nd Street Overpass

As shown in Figure A, the North 2nd Street Overpass is expected to impact properties along 2nd Street from the proposed overpass location south to Hostetler Street (approximately 1000 feet). Retaining walls would be required to gain elevation prior to the overpass of the UP Railroad and may block access to four to five parcels on the west side of 2nd Street. This crossing location does not impact 6th Street, however capacity constraints at the 2nd Street/Hostetler Street intersection may reduce the potential operational benefit of this location.

Depending on approval of the proposed Wal-Mart in the southwest quadrant of the I-84 Chenoweth Interchange, the alignment shown may need to be modified to avoid impacts to the site plan.

B: Chenoweth Loop Underpass

Given the existing difference in elevation between I-84 and 6th Street at Chenoweth Loop, retaining walls are expected to be required up to 800 feet in each direction from the 6th Street/Chenoweth Loop intersection and the 2nd Street/Chenoweth Loop intersection. Both intersections would be below grade in order to go under I-84 and the UP Railroad. Within 800 feet of the 6th Street/Chenoweth Loop intersection access to commercial and residential properties would be impacted, including access to Home Depot which has primary access on 6th Street and secondary access on Chenoweth Loop. On 2nd Street three to four parcels would likely be impacted.

FUTURE EAST-WEST CONNECTION EVALUATION
NORTH 2ND STREET RAILROAD OVERPASS
THE DALLES, OREGON

FIGURE A

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LEGEND

- PROPOSED COLLECTOR ROADWAY
- OVERPASS STRUCTURE
- PROPERTY IMPACT RANGE ASSOCIATED WITH RETAINING WALLS (APPROXIMATE)
- ROUNDABOUT
- TRAFFIC SIGNAL

FUTURE EAST-WEST CONNECTION EVALUATION
CHENOWETH LOOP UNDERPASS
THE DALLES, OREGON

ROUTE 8

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C: Hostetler Street Underpass

The Hostetler Street Underpass location is expected to result in the least number of properties impacted by grade changes and associated retaining walls given the existing underpass of I-84 at Hostetler Street. As shown in a photo taken in the southbound direction on 6th Street, the existing elevation of 6th Street at Hostetler Street is depressed in order to provide the existing undercrossing. Construction of an undercrossing of the UP Railroad on Hostetler Street would require reduction in elevation of 2nd Street, but minimizes impacts to properties on 6th Street.

D: Snipes Street Overcrossing

As shown in Figure D, the Snipes Street Overcrossing alternative includes two overpass structures that span I-84 and the UP Railroad east of 2nd Street. In order to provide an overpass of I-84 and the UP Railroad, while maintaining connections on 6th Street and 2nd Street, the elevation of each roadway will be increased to match grade with the overpass structure. Retaining walls would be utilized to obtain grade increases which are expected to impact access to residential and commercial properties on 2nd Street and 6th Street for up to 1,000 feet in each direction from the intersections. Given the density of existing development on 6th Street and 2nd Street (residential and commercial) within the vicinity of the Snipes Street, this crossing location has the greatest impact on existing property access relative to other crossing locations.

LEGEND

- PROPOSED COLLECTOR ROADWAY
- OVERPASS STRUCTURE
- PROPERTY IMPACT RANGE ASSOCIATED WITH RETAINING WALLS (APPROXIMATE)
- ROUNDABOUT
- TRAFFIC SIGNAL

FUTURE EAST-WEST CONNECTION EVALUATION
HOSTETLER STREET UNDERPASS
THE DALLES, OREGON

ROUTE **C**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

LEGEND

- PROPOSED COLLECTOR ROADWAY
- OVERPASS STRUCTURE
- PROPERTY IMPACT RANGE ASSOCIATED WITH RETAINING WALLS (APPROXIMATE)
- ROUNDABOUT
- TRAFFIC SIGNAL

FUTURE EAST-WEST CONNECTION EVALUATION
SNIPES STREET OVERPASS
THE DALLES, OREGON

FIGURE **D**

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Crossing Alternatives Evaluation Summary

Quantitative and relative measures were used to compare crossing locations. Measures evaluated in Memorandum #7 have been incorporated with supplemental information presented above to provide a comprehensive summary in Table 2.

The Chenoweth Loop Underpass location was evaluated relative to the other locations for each of the previously-evaluated measures. Given the location of Chenoweth Loop with respect to the Chenoweth and Webber Interchanges, the Chenoweth Loop Underpass is expected to provide a lesser diversion of traffic than the Hostetler Street and Snipes Street Crossing locations from the Chenoweth Interchange and a greater diversion than the North 2nd Street Overpass. It is expected that the Chenoweth Loop Underpass will have minimal impact on the Webber Street Interchange. Relative to other crossing locations the Chenoweth Loop location is expected to have less impact on the Webber Street interchange than the Hostetler Street Underpass given that drivers may utilize a new intersection on 2nd Street to connect to Webber Street and less will do so if the underpass of I-84 is further from Webber Street. Memorandum #7 outlines the reasoning for ranking locations A, C, and D relative to one another.

Table 2 Relative Comparison Matrix of East-West Crossing Locations

Crossing Location	Cost Estimate Rank	Property Impact Rank (# of Properties Impacted)	Potential to Divert Traffic from Chenoweth Interchange Rank	Potential to Negatively Impact Webber Interchange Rank	Total Ranking Score
North 2nd Street Overpass (A)	2	2 (7)	3	4	11
Chenoweth Loop Underpass (B)	3	3 (20)	2	2	10
Hostetler Street Underpass (C)	1	1 (4)	1	3	6
Snipes Street Overcrossing (D)	4	4 (26)	4	1	13

As shown in Table 2, the Hostetler Street Underpass is expected to provide the relatively best location for a new east-west crossing when considering the cost, anticipated property impacts, and impacts to adjacent I-84 interchanges. In addition it should be noted that the Hostetler Street Underpass has access impact to four properties while the three remaining alternatives impact seven or more properties. For example, the Chenoweth Loop Road underpass would impact approximately 20 properties (see Table 2).

INTERSECTION CONTROL EVALUATION

Intersection control treatments have been proposed at each major intersection within the IAMP Study Area, as shown in the preferred access and circulation design (see Memorandum #7). The following section provides a summary of the forecast lane configurations expected to be needed

to provide capacity for future development up to 75 percent of the maximum potential density. Roundabout and signalized control scenarios were assessed assuming an identical distribution of traffic on the network. Intersection control was evaluated based on required lane configurations and potential access management trade offs and property impacts.

Lane Configuration Evaluation

Figure 1 provides a summary of lane configurations at study intersections forecasted under a signalized and roundabout scenario. The signalized analysis was conducting using Synchro Software, in accordance with HCM methodology. The roundabout analysis was conducted using NCHRP Report 572 methodology, which is recognized by ODOT as the preferred analysis method.

Either a roundabout or a signal can serve the forecast traffic volumes with the lane configurations shown in Figure 1 if no more than 75 percent of the maximum potential development density occurs. At the River Road/River Trail Way intersection a roundabout is forecast to provide equal capacity with fewer lanes than the signalized alternative. This is expected to increase land available for development and reduce construction and maintenance costs.

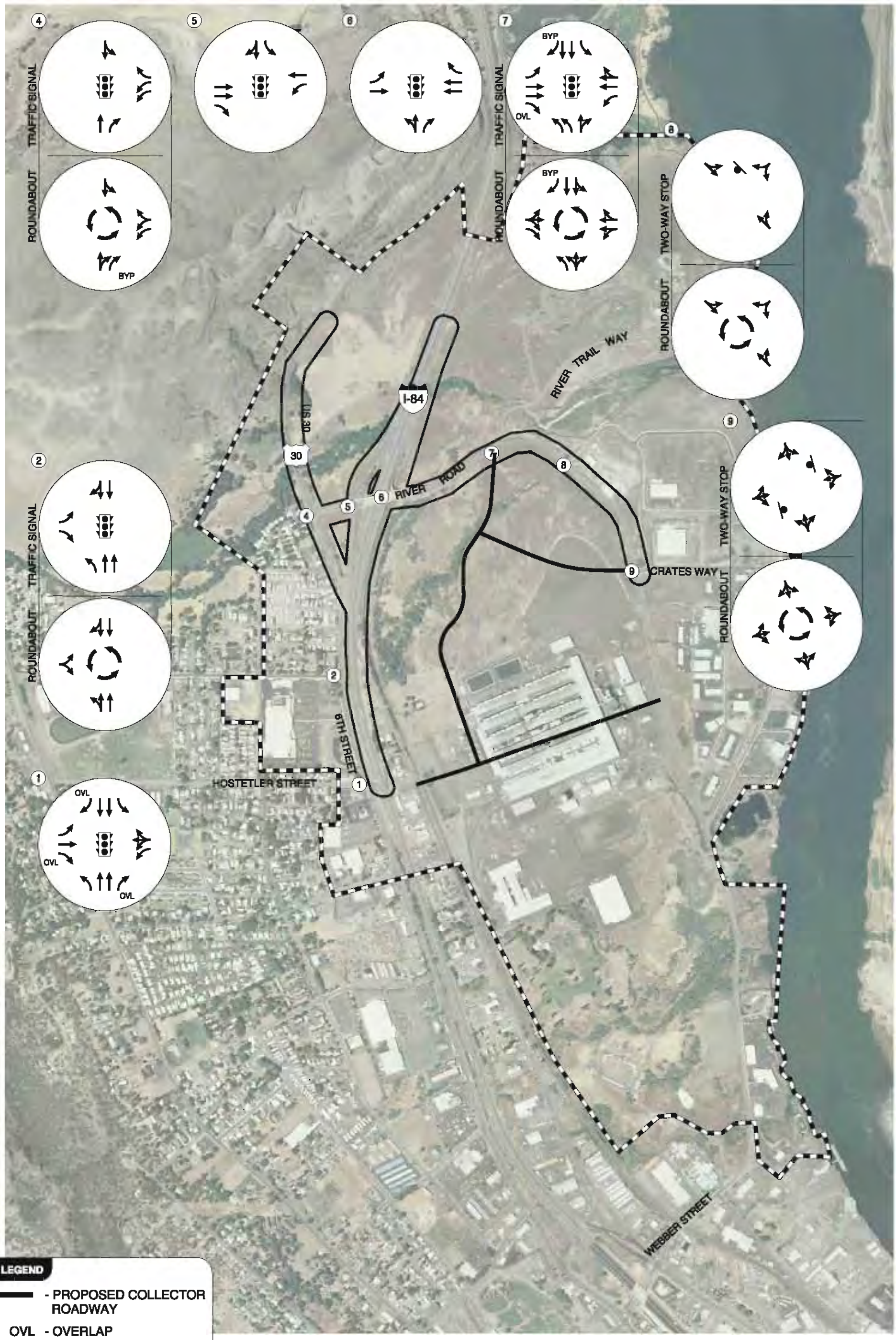
Access Management and Property Impacts

Given the potential for queues to block driveways which limits access to adjacent properties and can increase potential for crashes, the forecast 95th percentile queue was reported for the critical movement on each intersection approach in Table 3.

As shown in Figure 1, the number of lanes required at intersections with roundabouts is less than or equal to intersections with signals. Even with a lower number of approach lanes at the intersections, roundabouts are expected to operate with less queuing on all intersection approaches compared to signal control.

Table 3 Forecast Queue Length Comparison at Intersections

Intersection	Traffic Control	Critical Approach Movement Queue			
		EB	WB	NB	SB
River Road/River Trail Way	Roundabout	75	75	75	100
	Signal	175	100	275	200
River Road/6th Street	Roundabout	N/A	75	50	25
	Signal	N/A	150	100	100
6th Street/Chenoweth Loop	Roundabout	50	N/A	50	75
	Signal	125	N/A	200	275



FORECAST LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES
75% DEVELOPMENT SCENARIO, WEEKDAY PM PEAK HOUR
THE DALLES, OREGON

FIGURE 1

H:\projfile\9600 - I-84 Chenoweth IAMP\dwg\e\figures\Task 6\9600Figs_07-09.dwg Jul 13, 2009 - 4:21pm - dbergh Layout Tab: roft_vs_signal

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As shown in Table 3, the critical approach movement queue for roundabouts is equal to or less than that for signal control for all intersections and all movements.

Future traffic volume forecasts indicate that 6th Street will need to be a 5-lane facility in the future. For safety reasons, it is likely that 6th Street will require a center median to prevent left-in and left-out turns at unsignalized intersections and driveways except at locations where left-turns will be permitted as allowed by the median design. The ability to provide left-in turns from 6th Street to Irvine Street and Division Street is being evaluated by the Technical Advisory and Steering Committees. It is anticipated that the shorter queuing at the roundabout intersections as compared to the signalized intersection treatments will allow for more left-turn access to be provided.

The roundabout intersections are anticipated to provide greater access to properties impacted by a median because they would provide the ability for vehicles to make u-turns at either end of the median section. U-turns are unlikely to be feasible at a signalized intersection treatment at 6th Street/River Road and 6th Street/Chenoweth Loop Road because these are three-leg t-intersections without the northbound left and southbound left-turn movements, respectively, that would typically accommodate a u-turn. Furthermore, if a u-turn lane and signal phase were added to the intersections, the geometry would make u-turns difficult for any vehicle larger than a passenger vehicle.

SUMMARY

- As an alternative to providing a new connection from 6th Street to River Road within the study area, a "no new crossing" alternative was also evaluated. If a “no new crossing” alternative is selected, development of the land within the Land Use Study Area would have to be restricted. In order to provide development of all land without constructing a new crossing, a maximum FAR of 0.22 for industrial development and 0.14 for commercial would need to be maintained. This represents a reduction of approximately 533,000 square feet of industrial development and 87,000 square feet of commercial development over what would be permitted with a UP rail crossing.
- Hostetler Street Underpass is expected to provide the best location, as compared to the other alternatives evaluated for a new east-west crossing, when considering the cost, anticipated property impacts, and impacts to adjacent I-84 interchanges.
- The Hostetler Street Underpass has access impacts to four properties while the three remaining alternatives impact seven or more properties. In addition it should be noted that the Hostetler Street Underpass has impact access to four properties while the three remaining alternatives impact seven or more properties.
- The number of lanes required at intersections with roundabouts is less than or equal to intersections with signals. Even with a lower number of approach lanes at the intersections, roundabouts are expected to operate with less queuing on all intersection approaches compared to signal control.

- For safety reasons, it is likely that 6th Street will require a center median to prevent left-in and left-out turns at unsignalized intersections and driveways except at locations where left-turns will be permitted as allowed by the median design. It is anticipated that the shorter queuing at the roundabout intersections as compared to the signalized intersection treatments will allow for more left-turn access to be provided.
- The roundabout intersections are anticipated to provide greater access to properties impacted by a median because they would provide the ability for vehicles to make u-turns at either end of the median section.

Appendix I

Supplemental
Transportation System
Development Charge
Memorandum

Date: **July 31, 2009**

To: Marc Butorac, P.E.
Susan Wright, P.E.

From: DJ Heffernan

Re: I-84/Chenoweth Interchange Supplemental Transportation System Development Charge (STSDC)

Overview

This memorandum reviews procedural and technical considerations related to the adoption of a Supplemental Transportation System Development Charge (STSDC) in The Dalles, Oregon, which would be used to finance transportation improvements in the vicinity of the Interstate 84 Chenoweth Interchange (Interchange). The proposed improvements, which mostly affect the local road network, were developed as part of the Chenoweth Interchange Area Management Plan (IAMP). The IAMP transportation improvement program is designed to support planned land development in the vicinity of the interchange. Historically, southeast of the interchange area had been planned for industrial uses but recently an approximately 67-acre area was rezoned for commercial development.[1] That decision prompted the development of the IAMP and led to the need for a new way of financing the transportation system improvements in the interchange area. The IAMP examined a number of financing options and settled on the STSDC.

The STSDC fee only applies to properties within the IAMP Overlay District[2], which is shown in Exhibit A attached. The STSDC will be collected through city of The Dalles (City) SDC program and will be in addition to the City's regular transportation SDC fee.[3] Unlike the City's general transportation SDC, which may be used to fund transportation projects city-wide, the STSDC may only be used to construct a specific set of transportation improvements in the Overlay District. The STSDC will only be collected from properties in the interchange area. The STSDC fee is needed because the improvements it will finance were not anticipated when the City's general transportation SDC program was developed.

By adopting the IAMP and its related implementation measures, the City, Wasco County (County), and the Oregon Department of Transportation (ODOT) are making a commitment to ensure that financing will be available to build the transportation infrastructure needed to support significant industrial development in the interchange area. Except for 25-acres of land in the Commercial/Light Industrial District (CLI) that already is committed to commercial uses, the underlying assumption is

[1] See Technical Memorandum #2: Review of Adopted Plans and Regulations in the IAMP Volume 2 Appendix for an overview of the City of The Dalles' 2006 decision to rezone 67 acres to Commercial/Light Industrial District (CLI) and the subsequent LUBA appeal by ODOT.
[2] The Chenoweth IAMP Overlay District encompasses those properties identified as part of the Land Use Study Area (IAMP Figure 4-1) and will amend the City's Comprehensive Plan Map and Zoning Map upon adoption of the IAMP.
[3] Exhibit F is a Draft STSDC Ordinance.

DRAFT

that all remaining CLI land will be developed for industrial uses, and all other properties (zoned either Industrial, Commercial Recreational, or General Commerical) will develop in accordance with their existing base zoning.

The IAMP used standard trip generation tables to estimate trips that each developable parcel within the IAMP Overlay District would produce if developed. Exhibit B – Trip Allocation Table, shows the number of trips allocated to each developable parcel in the interchange area. Armed with this forecast, the IAMP determined transportation improvements that would be needed to support that volume of traffic. The improvement program is shown in Exhibit C, which also includes the estimated cost for each project, and the estimated share that would come from the STSDC program. The projects listed in Exhibit C and the percentage of funding from the STSDC program is linked to adoption of the IAMP and related funding agreements.

To account for the possibility that non-industrial uses could develop on the 42-acres of CLI zoned land that has not yet been approved for development, a separate surcharge would be used to recover the cost of financing additional road improvements that serve higher intensity uses. The additional improvement involves reconstructing the interchange overpass and ramps to accommodate six traffic lanes. The cost per net new weekday p.m. peak hour trip to develop higher intensity uses is approximately1.6 times the basic STSDC fee. The separate surcharge analysis is shown in Exhibit D.

The following sections of this memorandum review procedural steps for adopting the STSDC, more details of the STSDC methodology, proposals for STSDC discounts, and procedures for monitoring trip allocations and transfers.

STSDC Administration and Approval

The STSDC program would be administered as part of The Dalles SDC program. Because the STSDC involves a new fee, state law and City regulation requires that it be adopted through a formal SDC amendment process that includes a 30-day public review and comment period and approval of the new methodology by ordinance [ORD 3-8.4(B)]. The City may wish to take this opportunity to review general administrative aspects of its SDC program for compliance with state law, especially for statutory amendments that may have occurred since the City's program was last updated.

The existing SDC ordinance allows the City to establish SDC fees for geographic areas smaller in size than the entire city [ORD 3-8.4(A)]. The proposed STSDC is needed immediately to finance improvement to the local road system, which does not have sufficient capacity to accommodate planned land uses in the vicinity of the interchange. Since no capacity currently exists to serve future growth, the STSDC will only be comprised of an improvement and no reimbursement fee. The procedure to enact an SDC improvement fee [The Dalles ORD 3-8.8] is as follows:

- Prior to establishing the SDC, the City Council must adopt a plan (i.e., the I-84/Chenoweth Interchange Area Management Plan) that includes a list of projects needed to serve growth in the subject fee area, including the estimated cost of the improvements;
- At least 30 days prior to adopting the proposed fee, the City must provide written notice to persons that have requested notice on the SDC program amendments per Section 13 of ORD 3-8,
- Hold a public hearing on the project list if it is requested.

After the improvement plan has been adopted by the City, which in this case is the I-84/Chenoweth IAMP, the City may then enact a revised SDC. The City may adopt the STSDC fee either by

amending the existing transportation SDC fee methodology [ORD 7.1286] or by enacting a new ordinance for the STSDC. The City may adopt the STSDC methodology and then set the fee amount by separate resolution [ORD 3-8(A)]. This would allow the City to periodically update the fee schedule for the STSDC by resolution rather than by ordinance, as is the City's preferred approach for setting SDC rates. It also is recommended that the STSDC ordinance include a provision for indexing the fee to account for inflation using ODOT's road construction cost index. In order to index the fee, the index process needs to be outlined in the methodology ordinance. We have included an indexing approach in the proposed methodology for discussion purposes.

STSDC Methodology

The STSDC is one of a series of measures being proposed to implement the I-84/Chenoweth IAMP. The STSDC not only provides funding for system improvements that are needed to serve industrial growth in the interchange area but also helps protect the function of the interchange over time. The recent rezone of 67-acres from Industrial to Commercial Light Industrial (CLI) makes forecasting the improvements needed to serve the interchange area more difficult because the new zone allows considerable diversity of development. If most development on the 67-acres is light industrial, then a fairly modest set of street network improvements will meet the anticipated traffic demand for the foreseeable future. If a large concentration of commercial uses develops on the 67-acres, however, a more extensive and costly set of improvements would be needed to serve the area. To address this uncertainty, a two-tiered SDC rate methodology is proposed.

As noted above, the STSDC will only be applied in the IAMP Overlay District, as shown in Exhibit A. Rather than charging developers a fee designed to meet a "worst case" scenario, the envisioned methodology sets the STSDC fee based on the assumption that most of the land in the interchange area, including most of the rezoned 67-acres, will develop for industrial uses. An analysis was conducted that established the amount of traffic that would be generated in the interchange area under that development scenario. The analysis includes a trip allocation to all undeveloped and partly developed properties in the interchange area. Exhibit B – Trip Allocation Table, shows the presumed distribution of trips associated with that land development pattern, which hereafter is referred to as the "threshold" development.

The IAMP then analyzed the transportation improvements that would be necessary to accommodate the volume of new traffic shown in Exhibit B. Those improvements are shown in Exhibit C – IAMP Transportation Improvement Plan. The threshold SDC fee is calculated by dividing the total cost of the improvement program by the number of trips allocated to properties in the interchange area per the "threshold" development plan. That cost is:

IAMP SDC Program Share	/	Threshold Trips	=	Cost/Net New Weekday P.M. Peak Hour Trip
$26,945,000	/	4910	=	$5,488

This "threshold" trip rate would apply to all properties located within the STSDC management area.. The fee calculations is simply the "threshold" rate times the expected number of trips associated with a particular development. Property owners that develop uses below their threshold allocation would only be charged for their actual trips. The unused balance of trips may be held in reserve and reallocated to other properties by the City or, with City approval, through an exchange agreement between property owners.

If a proposed development generates more than the threshold trips allocated to the property, additional improvements will be necessary to serve traffic above the threshold level. Development that generates traffic above the threshold level in effect accelerates the timetable for constructing

planned improvements and imposes a need for additional improvements. Development that generates traffic above the threshold level either would need to acquire unused threshold trips from the City or other property owners, or pay an extra fee to finance improvements beyond the threshold level.

The cost to purchase traffic capacity above the threshold level is expensive because it requires reconstructing the Chenoweth Interchange bridge, which is estimated at roughly $12.8 million. Exhibit D shows the number of additional trips the interchange area can accommodate if the bridge is reconstructed and the related surcharge cost calculation. The additional 1,317 weekday p.m. peak hour trips correspond to the marginal difference between the threshold level at that allowed by the reconstruction of the Chenoweth Interchange bridge. The cost per trip is $9,705 which is roughly a 77% increase over the threshold rate. It should be noted that the surcharge rate most likely would apply to non-industrial uses that develop in the CLI zone because that is the only land in the interchange area with zoning that allows non-industrial uses but has been allocated industrial-level trips. All industrial properties that propose a non-industrial use would need to obtain approval for a zone change, which would trigger a review of the IAMP, a comprehensive plan amendment, and other land use review procedures; that process would directly address traffic impacts that exceed threshold levels outside the STSDC program.

STSDC Discounts and Trip Management Features

Two important features of the IAMP implementation program that affect the STSDC program include a proposal for discounts in exchange for implementing transportation demand management (TDM) measures and procedures for managing trip allocations and monitoring the IAMP. The STSDC discount feature is an incentive that lets property owners reduce their STSDC fee if they take specific steps to reduce the traffic impact of their development. Some TDM discounts would apply simply by building certain features into a project while others require participating in programs and monitoring performance to ensure that envisioned trip reductions actually occur. Exhibit E shows how these STSDC discounts would be awarded and lists examples of measures that may be used to earn the discounts. It is recommended that the City charge a monitoring fee (e.g. $5,000) for projects granted the highest discount level. This fee would be held in a reserve fund and used to assess the performance of TDM measures and ensure that the pledged reduction in peak hour trips actually is being achieved.

The IAMP will establish the initial allocation of trips to properties in the program area. As time goes on, events may occur that require adjusting the trip allocations to individual properties. Examples include properties that develop at lower intensity than the threshold level allows, property divisions, wetland delineations that alter the developable area, etc. While administrative simplicity is desired, so is the need for the City and other IAMP participants to know over time if development is proceeding as planned and that the IAMP measures are working. It is recommended that the STSDC ordinance assign the City responsibility for adjusting trip allocations but allow willing property owners to exchange trips with City approval without having to go through an IAMP update. The following guidelines are recommended for managing trip allocations in the IAMP Overlay Zone.

1. The City must approve all threshold trip allocations to properties in the IAMP area;
2. The City Engineer will provide City Council, ODOT, and Wasco County an annual IAMP report that certifies the balance of trips (used and unused) in the IAMP area, recommends index adjustment to the STSDC rates for the coming year, and reviews program management issues that need to be addressed, such as the amount of

development that has occurred, anticipated timing for the next IAMP update, and management issues and concerns raised by program participants and property owners;

3. The City may reclaim unused trips from developed properties that have not been exchanged after a period of five years;
4. Minor reallocation of trips. The following will be considered minor reallocations and may be approved administratively by the City Engineer without triggering a formal IAMP review process. Requests must be made in writing and must include the written consent of the property owner(s).
    a. Requests for trip exchanges between adjacent properties.
    b. Reallocation associated with land division, provided that the total trips assigned to the parent parcel are not exceeded.
5. Major reallocation of trips. Any action to reallocation of trips, whether considered in response to a private request or initiated by the City, that does not fall under the definitions of "minor reallocation" will be considered a "major reallocation." A major reallocation should be considered only as part of formal IAMP review process, as described below.

The other IAMP management feature that affects the STSDC program involves a review of the SDC methodology and fees. This may only occur in connection with a City initiated IAMP review and update. The purpose of the IAMP is to ensure that interchange function and capacity is preserved. Periodically, the IAMP implementation program needs to be evaluated to ensure it is accomplishing this goal. Several events will trigger an IAMP review, which also would involve examining the SDC program to make sure it is generating sufficient revenue to finance necessary improvements. Events that will trigger an IAMP review include:

- Every fifth year from the date of IAMP adoption or latest update.
- Every cumulative addition of 250,000 sq. ft. of floor area within the IAMP Overlay District.
- Approved land applications within the IMSA result in cumulative trip generation estimates that, taken together, exceed by more than 200 trips the adopted trip generation total for the subject parcels.
- Plan map and zone changes within the IAMP Overlay District or significantly effecting the I-84/Chenoweth Interchange

The combination of annual program reports, trip management policies, and periodic updates provide assurance to all parties that the program will support private investment in the interchange area while also protecting public investment in transportation infrastructure that is intended to provide long-term benefit for the interchange area and surrounding lands.

Exhibit A – Chenoweth Interchange Area Boundary

Exhibit B – Chenoweth Interchange Threshold Trip Allocation Table

TAX LOT #	ACRES	ZONING	OWNER	NEW NEW PM PEAK HOUR TRIPS
2N 13E 21 600	22.2	I	NORTHWEST ALUMINUM CO	228
2N 13E 21 700	40.9	I	DALLES PORT OF THE	419
2N 13E 21 800	42.5	I	DALLES PORT OF THE	436
2N 13E 28 701	20.5	I	NORTHWEST ALUMINUM CO	211
2N 13E 28 900	4.4	I	CHENOWITH CREEK DEVELOPERS LLC	46
2N 13E 28 901	4.3	I	NORTHWEST ALUMINUM CO	44
2N 13E 28 A 1200	1.5	I	DALLES PORT OF THE	16
2N 13E 28 A 600	1.5	I	DALLES PORT OF THE	16
2N 13E 28 A 900	0.8	I	EVERSUMMER LLC	8
2N 13E 28 D 2500	0.4	CR	CRATES POINT DEVELOPMENT LLC	8
2N 13E 28 D 2600	0.9	CR	CRATES POINT DEVELOPMENT LLC	16
2N 13E 28 D 2700	0.9	CR	DALLES PORT OF THE	14
2N 13E 28 D 2800	1.2	CR	DALLES PORT OF THE	22
2N 13E 28 D 3100	1.0	CR	DALLES PORT OF THE	19
2N 13E 28 D 800	1.4	I	TUM A LUM LUMBER CO	15
2N 13E 28 DB 100	0.6	CR	TENNESON ENGINEERING CORP	11
2N 13E 28 DB 200	0.4	CR	RIVERFRONT ASSETS LLC	8
2N 13E 28 DB 600	0.2	CR	RIVERFRONT ASSETS LLC	3
2N 13E 28 DB 300	0.3	CR	RIVERFRONT ASSETS LLC	5
2N 13E 28 DB 700	0.2	CR	RIVERFRONT ASSETS LLC	5
2N 13E 28 DB 800	0.2	CR	RIVERFRONT ASSETS LLC	3
2N 13E 33 200	76.9	I	NORTHWEST ALUMINUM CO	788
2N 13E 33 A 200	2.2	I	BERNERT BARGE LINE INC	23
2N 13E 28 700	94.3	I	NORTHWEST ALUMINUM CO	966
2N 13E 28 1000	18.7	I	NORTHWEST ALUMINUM CO	191
	36.4	I	5277 CHERRY HGTS RD	465
2N 13E 28 702	25.0	CLI		599
2N 13E 28 CC 100	0.3	CLI	LEE ERNEST W & MARY L	0
2N 13E 28 CC 200	0.6	CLI	LEE ERNEST W & MARY L	4
2N 13E 29 DA 1800	0.6	CLI	VELADOR AMADO & CHARLOTTE	5
2N 13E 29 DA 1900	1.0	CLI	KOOPS DUANE C & JEAN M	7
2N 13E 29 DD 100	0.6	CLI	STEELE CLARA S ET AL	4
2N 13E 29 DD 200	0.6	CLI	SPEE DEE HAULERS INC	4
2N 13E 29 DD 300	0.5	CLI	SPEE DEE HAULERS INC	0
2N 13E 29 DD 1100	0.2	CG	DEAN SANDY ET AL	13
2N 13E 29 DD 1200	0.2	CG	DEAN SANDY ET AL	13
2N 13E 29 DD 1300	0.2	CG	DEAN SANDY ET AL	20
2N 13E 29 DA 400	1.6	CG	ROBINSON JR RAY & DORIS J	32
2N 13E 29 DA 300	0.2	CG	LEABO JESSE D & WILLETTA A	6
2N 13E 29 DB 200	0.2	CG	BRUCE LARRY W & JOVIA S	6
2N 13E 29 DB 100	0.2	CG	HESTER DENNIS R	6
2N 13E 29 DA 200	0.2	CG	GAST STEPHEN L	6
2N 13E 29 DB 500	0.1	CG	REDLINGSHAFER KENNY R & TERESA	3
2N 13E 29 DB 700	0.2	CG	HELGESON ROBERT E	6
2N 13E 29 DB 800	0.2	CG	CARLSON VEDA M	6
2N 13E 29 DB 900	0.2	CG	TAYLOR MARY JO	6
2N 13E 29 DA 1100	0.2	CG	AKIYAMA FLORENCE	6

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2N 13E 29 DA 1000	0.2	CG	SUTTON AARON R & DONNA M	6
2N 13E 29 DA 900	0.3	CG	MONNER JOSEPH A & ELIZABETH	6
2N 13E 29 DA 800	0.3	CG	HICKS GREG N & KELLY R	6
2N 13E 29 DA 700	0.3	CG	ROBINSON JR RAY & DORIS J	6
2N 13E 29 DA 600	0.5	CG	ROCKHILL CHARLES H	9
2N 13E 29 DA 500	0.1	CG	ROBINSON JR RAY & DORIS J	3
2N 13E 29 DB 600	0.1	CG	MARQUEZ JOHN & CARMEN E	3
2N 13E 29 DB 1300	0.2	CG	WILLIAMS LEONARD E	6
2N 13E 29 DB 1200	0.2	CG	ORNELAS JOSE & TERESA V	6
2N 13E 29 DB 1100	0.2	CG	CARTER WALTER & MYRTLE M	6
2N 13E 29 DB 1000	0.2	CG	MANNING GINA M	6
2N 13E 29 DA 1300	0.2	CG	SMITH CLIFFORD R & ANGELA K	6
2N 13E 29 DA 1200	0.2	CG	KISHI MICHIKO RLT	6
2N 13E 29 A 900	1.3	CG	ROBINSON DORIS J FAMILY TRUST	23
2N 13E 29 DA 100	2.4	CG	ROBINSON DORIS J FAMILY TRUST	46
2N 13E 29 DA 1700	1.6	CG	METRO INVESTMENTS LLC	32

Exhibit C – Chenoweth Interchange Area Transportation Improvement Program

Item	Project Description	Total Cost (in $1,000)	SDC Share (in $1,000)	SDC Element
E-1	River Trail Way Extension (2nd to Hostetler)	$12,430	$12,430	Threshold
E-2	Hostetler St connection to River Rd	$13,410	$6705	Threshold
E-3	Hostetler Extension (2nd to River Road)	$4,210	$4210	Threshold
E-9	Intersection control at Hostetler Street/River Trail Way Extension	$830	$830	Threshold
E-10	Intersection control at reconstructed River Trail Way/River Road	$710	$710	Threshold
E-11	Intersection control	$300	$300	Threshold
E-12	Intersection control	$500	$500	Threshold
E-13	Intersection control	$500	$500	Threshold
I-1	Accommodate peak hour travel demand	$760	$760	Threshold
I-2	Accommodate peak hour travel demand			Threshold
	Cost Summary		$26,945.00	

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Exhibit D – STSDC Surcharge

Item	Project Description	Total Cost (in $1,000)	SDC Share (in $1,000)	SDC Element
I-3	Widen Interchange Bridge (6-lanes)	$12,780	$12,780	Surcharge

Additional capacity from bridge widening: 1317 peak hour trips

Surcharge cost per added trip: $12,780,000 / 1371 = $9,705

Exhibit E - STSDC Discount Program Options [Original Exhibit E has been replaced.]

STSDC Discount Program: Discount Level			
Discount Level	**SDC Fee Adjustment**	**Monitoring**	**Actions Required**
TPR Status Quo	None	None	Bike parking, pedestrian access ways pursuant to the requirements of the LUDO.
Bronze	5%	None	Requirements of the LUDO and two (2) activities or actions from either Category "A" or Category "B".
Silver	10%	None	Requirements of the LUDO and four (4) activities or actions from either Category "A" or Category "B" (1 Category "B" action required).
Gold	20% max (performance based)	Yes	Requirements of the LUDO and five (5) activities or actions from either Category "A," Category "B," or Category "C" (1 Category "C" action required).

STSDC Discount Program: Eligible Activities/Actions		
Category A Activities/Actions	**Category B Activities/Actions**	**Category C Activities/Actions**
Install showers and changing rooms for employees (industrial uses only).	Install EV charging stations (# stations per X employees).	Institute and/or participate in ride share program.
Provide priority parking for carpools/vanpools.	Limits employee parking (industrial uses only) – e.g., fee non-priority parking, reduce parking 5% below required minimum.	Operate or participate in an employee van pool program.
Adopt flexible work schedule/ telecommuting program.	Institutionalize off-peak shifts.	Develop and execute bike and pedestrian use incentive pay program.

Appendix J

Interchange Area Management Overlay District Code Amendments

Memorandum

Date: **July 31, 2009**

To: Marc Butorac, PE, PTOE, Kittelson & Associates, Inc.
Susan Wright, PE, Kittelson & Associates, Inc.
Casey Bergh, Kittelson & Associates, Inc.

From: Darci Rudzinski, AICP
DJ Heffernan

Re: I-84/Chenoweth Interchange Area Management Plan – Proposed IAMP Overlay District Code Amendments

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Overview

This memorandum contains proposed regulatory language that, once adopted, will be relied upon to implement the I-84/Chenoweth IAMP. Proposed language is being provided in conformance with OAR 734-051-0155(2), which states that "prior to adoption by the Oregon Transportation Commission, the Department will work with local governments on any amendments to local comprehensive plans and transportation system plans and local land use and subdivision codes to ensure the proposed… Interchange Area Management Plan is consistent with the local plan and codes."

Adopting new code language will require that the city amend the adopted Comprehensive Plan and Land Use map and establish an IAMP Overlay District consistent with the IAMP "Land Use Study Area," as shown in Figure 4-1, through a legislative amendment process.

City of The Dalles Land Use and Development Ordinance – Proposed Code Language

The action of adopting the IAMP requires a Transportation Planning Rule (TPR) compliance review. The TPR requires that local governments adopt land use regulations consistent with state and federal requirements "to protect transportation facilities, corridors, and sites for their identified functions (OAR 660-012-0045(2))." To ensure that local land use actions are consistent with the transportation facility planning within the IAMP, the recommendation is that the City adopt a new Overlay Zone section in the Land Use and Development Ordinance (LUDO or "Development Code").

The City requires Site Plan Review, an Administrative Action pursuant to Section 3.020.040, for all uses allowed in General Commercial, Commercial/Light Industrial, and Industrial zone districts.

Proposed code language ties IAMP-related access management requirements to Site Plan Review.[1] Access management review would also occur when a change in use is proposed, as defined by the exiting LUDO.

Existing standards for traffic impact studies are established in Section 10.060 (Street Requirements), which requires traffic studies for all proposed development of 16 dwelling units or more, all development projected to generate more than 400 average daily vehicle trips, or potentially for development near an intersection that is already operating at or below level of service "D." To ensure consistency with the assumptions of the IAMP, proposed code language requires a Transportation Assessment Report for development within the Overlay District. Proposals that include a zone change and/or comprehensive amendment or exceed the trip allocation threshold by 25 percent, or increase the number of allocated trips by 25 weekday p.m. peak hour trips or more, would be required to submit a Traffic Impact Analysis pursuant to this new chapter.

The recommended language also addresses TPR Section -0060, which requires that amendments to functional plans, acknowledged comprehensive plans, and land use regulations that significantly affect an existing or planned transportation facility ensure that the allowed land uses are consistent with the identified function, capacity, and performance standards of the facility.

To reflect the joint effort required in planning for the interchange area, adopting the attached language will codify how the City will coordinate with ODOT in reviewing land use and development applications in the Overlay District and when updates to the IAMP will occur.

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[1] The City's access spacing standards defer to the Oregon Highway Plan standards for state facilities (Section 6.050.C, "ODOT access classification systems and standards shall apply to all roadways on the ODOT State Highway System").

Section 5.130

CIOD - CHENOWETH INTERCHANGE OVERLAY DISTRICT

5.130.010 Purpose

The purpose of the CIOD – Chenoweth Interchange Overlay District is the long-range preservation of operational efficiency and safety of the I-84/Chenoweth Interchange. The I-84/Chenoweth Interchange is the principal access to the Port of The Dalles and industrial land in the western part of the city, an area located directly east of the interchange. In addition to this primary function, the Chenoweth Interchange is an important facility for accessing the Discovery Center and existing commercial lands in the vicinity of the city's industrial center. The interchange also serves local residential and commercial traffic circulating from I-84 to Highway 30 and West 6th Street.

5.130.010 Boundary of the CIOD

The boundary of the CIOD is shown on The Dalles Comprehensive Land Use Plan Map and Zoning Map.

5.130.020 Applicability

The provisions of this section shall apply to any Administrative, Quasi-judicial, or Legislative land use application pursuant to Section 3.020 that is for a parcel wholly or partially within the CIOD, as defined by Section 5.130.010. Any conflict between the standards of the CIOD and those contained within other chapters of the Land Use and Development Ordinance shall be resolved in favor of the CIOD.

5.130.030 Permitted Land Uses

Uses allowed in the underlying zoning district are allowed subject to other applicable provisions in the Development Ordinance and Chapter 5, Zone District Regulations.

5.130.040 Access Management

In addition to the standards and requirements of the Access Management section of this ordinance (Section 6.050), parcels wholly or partially within the CIOD are governed by the Access Management Plan in the I-84/Chenoweth Interchange Area Management Plan (IAMP). The following applies to land use and development applications for parcels within the IAMP Overlay District that are subject to Section 3.030 Site Plan Review or Section 6.150 Changes to Uses and Structures.

A. Access Approval

1. Access to City streets within the CIOD shall be subject to joint review by the City and the Oregon Department of Transportation (ODOT). Coordination of this review will occur pursuant to Section 5.130.070.

2. Approval of an access permit is an Administrative Action and is based on the standards contained in this Chapter, the provisions of Section 6.050 Access Management, and the Access Management Plan in the I-84/Chenoweth IAMP. Where the recommendations of the

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Access Management Plan conflict with other access and spacing requirements in Section 6,050 of the LUDO, the Access Management Plan shall govern.

5.130.050 Trip Allocations

The I-84 Chenoweth IAMP transportation methodology assumed the trip generation potential for each developable and re-developable parcel within the CIOD based on existing zoning. Based on the potential total trips for all parcels, the IAMP designed a package of programmed improvements necessary to support the assumed level of future development. The trip allocation for each parcel is shown on in Appendix "J" of the I-84 Chenoweth IAMP Technical Appendix.

A. Development or redevelopment of parcels within the IAMP Overlay District will be assessed a Supplemental Transportation System Development Charge (STSDC) that will be dedicated to transportation improvements in the vicinity of the I-84 Chenoweth Interchange, as identified in the adopted I-84/Chenoweth IAMP.

B. The STSDC will be based on weekday p.m. peak hour trips generated by a proposed development and calculated pursuant to 5.130.070.

C. Development that does not exceed the trip allocation identified for the parcel in Appendix "J" of the I-84/Chenoweth IAMP will be charges a STSDC based on the threshold rate, as established in the STSDC Ordinance (City Ordinance No. XX).

D. Each trip generated by a proposed development that exceeds the trip allocation identified for the parcel in Appendix "J" of the I-84/Chenoweth IAMP will be charged at a higher surcharge rate, as established in the STSDC Ordinance (City Ordinance No. XX), in order to offset the cost of improvements required to build-out the CIOD.

5.130.060 Vesting and Expiration of Vehicle Trips

The following rules apply to allocation of vehicle trips pursuant to the I-84 Chenoweth IAMP against the adopted Trip Generation Potential.

A. Vehicle trip allocations granted through development approval are vested at the time of Site Plan Review.

B. Vehicle trips shall not be allocated based solely on approval of a comprehensive plan amendment or zone change, unless consolidated with a subdivision or planned development application.

C. Vesting of vehicle trip allocations shall expire at the same time as the development decision expires, in accordance with Site Plan Review procedures (Section 3.030.070, Time Limits and Extensions).

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5.130.070 Administration

This section delineates the responsibilities of the City and ODOT to monitor and evaluate vehicle trip generation on the Chenoweth Interchange in The Dalles from development approval under this section.

A. Transportation Assessment Report

For all development applications located within the CIOD, the applicant shall prepare and submit to the City a Transportation Assessment Report that documents the following:

a) Expected weekday p.m. peak hour trip generation.
b) Whether or not the expected weekday p.m. peak hour generation is equal to or less than the trip allocation for each parcel documented (Appendix "J" of the I-84 Chenoweth IAMP Technical Appendix).
c) The STSDC calculation for the proposed development.
d) The SDC Discount Level being requested and documents what actions/activities will be included to achieve such discount.
e) If applicable, recalculates the weekday p.m. peak hour trip generation and STSDC based on the requested SDC Discount Option.
f) Off-site improvements that will be constructed as part of the development and which improvements are STSDC creditable.
g) Proposed site-access driveways and streets to ensure compliance with the IAMP Access Management Plan and that adequate intersection sight distance and traffic control will be provided.
h) An on-site parking and circulation plan to ensure safe and efficient travel for all modes of travel, including turn movement templates (AutoTurn analysis) for anticipated trucks and emergency service vehicles.

B. Traffic Impact Analysis

For all development applications located with the CIOD that require a zone change and/or comprehensive amendment, exceed the trip allocation threshold by 25 percent, or increase the number of allocated trips by 25 weekday p.m. peak hour trips or more, the applicant shall prepare and submit to the City a Traffic Impact Analysis (TIA) that demonstrates the level of impact of the proposed development on the surrounding street system and the I-84/Chenoweth interchange. The determination of impact or effect, and the scope of the TIA, shall be coordinated with the provider of the affected transportation facility. The developer shall be required to mitigate impacts attributable to the project, including any impacts that may occur outside of the CIOD.

C. ODOT Coordination

1. The City shall not deem the land use application complete unless it includes a Traffic Generation Report or, if required by Section 5.130.070.B, a Transportation Impact Study prepared in accordance with the requirements of this Chapter.

2. The City shall provide written notification to ODOT when the application is deemed complete. This notice shall include an invitation to ODOT to participate in the City's site team review meeting, pursuant to 3.010.035 Pre-Application Requirements.

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3. ODOT shall have at least 20 days, measured from the date completion notice was mailed, to provide written comments to the City. If ODOT does not provide written comments during this 20-day period, the City staff report will be issued without consideration of ODOT comments.

D. Monitoring Responsibilities

The details of City monitoring responsibilities are found in the STSDC Ordinance (City Ordinance No. XX) and the approved I-84 Chenoweth IAMP City of The Dalles – Oregon Department of Transportation Inter-Governmental Agreement (IGA).

1. The City shall be responsible for maintaining a current ledger documenting the cumulative peak hour trip generation impact from development approved under Section 5.130, compared to the adopted Trip Generation Potential of each parcel in the district and the trip generation total for the entire district.

2. The City may adjust the ledger based on actual development and employment data during an IAMP review and update, which shall occur according to Subsection 5.130.090.

3. The City will develop an Annual IAMP Report that certifies the balance of trips (used and unused) in the IAMP area, recommends index adjustments to the STSDC rates for the coming year, and reviews program management issues. The City will provide the Annual IAMP Report to ODOT and Wasco County to allow for coordination of management issues, such as updating the monitoring process and the timing for the next IAMP update.

5.130.080 Comprehensive Plan and Zoning Map Amendments

This section applies to all Comprehensive Plan Map and Zoning Map amendments for parcels wholly or partially within the IAMP Overlay District.

A. Transportation Planning Rule Requirements. Applications for Comprehensive Plan amendments, Zoning Map amendments, or development regulation amendments shall determine whether the proposed change will significantly affect a collector or arterial transportation facility and must meet the requirements of Oregon Administrative Rule (OAR) 660-012-0060.

B. Limitations on Comprehensive Plan Amendments. To ensure that the capacity of the I-84/ Chenoweth Interchange is reserved for industrial employment opportunities, consistent with the principal function of the facility, this section imposes prohibitions on Comprehensive Plan Land Use Plan Map amendments within the IAMP Overlay District. The following actions are prohibited unless part of a legislative update of the IAMP, pursuant to the provisions of the IAMP and Subsection 5.130.090:

1. Comprehensive Plan Land Use Plan Map amendments that will increase commercial within the CIOD.

2. Comprehensive Plan Land Use Plan Map amendments that allow land uses that will generate traffic in excess of the adopted trip generation total for the district as adopted in the IAMP.

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5.130.090 Interchange Area Management Plan Review and Update

A. IAMP Review Triggers. In order to ensure that the interchange function and capacity is preserved and that the Supplemental Transportation System Development Charge (STSDC) program is generating sufficient revenue to finance necessary improvements the City, in coordination with ODOT and Wasco County, shall undertake a formal IAMP review when the following occurs:

1. Five years has elapsed since the date of IAMP adoption or since the last update occurred.
2. The City has approved development proposals that have resulted in a cumulative addition of 250,000 sq. ft. of floor area within IAMP Overlay District since the date of IAMP adoption or since the last update occurred.
3. Land use applications approved within the CIOD result in cumulative trip generation estimates that, taken together, exceed by more than 200 trips the trip generation total for the subject parcels.
4. Comprehensive Plan Land Use Plan Map or Zoning Map amendments are proposed for land within the IAMP Overlay District or significantly affect the I-84/Chenoweth interchange.
5. Mobility measures at the River Road/I-84 Ramp Terminal intersections or River Road/West 6th Street/US 30 intersection exceed the forecasted mobility measures presented in Section 7.

B. IAMP Updates.

1. If the findings and conclusions from an IAMP review demonstrate the need for an update to the plan, review participants will initiate an IAMP update process pursuant to the provisions of the IAMP.
2. An updated IAMP that results from a City-initiated review process pursuant to Section 5.130.090, or from a Comprehensive Plan Land Use Plan Map amendment pursuant to Section 5.130.080, shall be legislatively adopted as an amendment to the City of The Dalles Transportation System Plan.

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Appendix K

Hostetler At-Grade Rail Crossing Evaluation Memorandum

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

TECHNICAL MEMORANDUM
I-84 Chenoweth IAMP

Hostetler At-Grade Rail Crossing Evaluation

Date: July 23, 2009 **Project** #: 9600

To: Dan Durow, City of The Dalles
From: Marc Butorac, P.E. and Casey Bergh

cc: Ana, Jovanovic, ODOT

This memorandum addresses the operational, traffic control, and geometric characteristics of developing an at-grade crossing of the Union Pacific Railroad (UPRR) tracks at Hostetler Street in lieu of the grade-separated (underpass) crossing identified in the draft I-84 Chenoweth IAMP. Figure 7-3 from the IAMP (see attachment) identifies the recommended traffic control devices and geometric elements in the vicinity of the crossing. The remainder of this memorandum provides background regarding the current and projected rail activity, the necessary traffic control and geometric configurations of an at-grade crossing, the operational evaluation of the at-grade crossing, and a comparison between a grade-separated and at-grade crossing.

Background

The existing UPRR mainline track maintains a private at-grade crossing at the 2nd Street/Hostetler Street intersection that serves the former Northwest Aluminum property and continues to serve the a specialty metals plant with 60 employees. The UPRR track at this crossing location is currently classified by the Federal Railroad Association (FRA) as a Class 5 facility that permits operation of freight trains at up to 80 miles-per-hour (mph) and passenger trains at up to 90 mph with no weight or dimension restrictions. As shown in Exhibit A, active traffic control devices are currently provided at the private crossing, including railroad crossing gates and lights. The latest reports from the FRA[1] recorded approximately 27 freight trains per day on this track which range from 80 to 100 cars each. On this section of track train car lengths typically range from 60 to 85 feet in length and travel at speeds between 25 to 40 mph.

Assuming a new active traffic control device were to be installed (railroad crossing gates and lights) in conjunction with the extension of Hostetler Street to River Road, the passage of a train with an average of 90 cars and car length of 75 feet travelling at a speed of 40 mph would result in a closure of the Hostetler crossing for approximately 2.8 minutes. The 2.8-minute estimate includes 25 seconds of pre-emption time for pedestrian clear out, 20 seconds for gate closure and clearance, 115 seconds of train crossing time, and 10 seconds for clearance time/return to an

[1] Source: Federal Railroad Administration Office of Safety Analysis query of three UPRR crossing locations in The Dalles: 807622K (Webber Street), 807629H (Court Street), 807631J (Madison Street).

open crossing. The length of this closure should be compared to the amount of traffic expected in the area. As shown in the future conditions analysis for Chenoweth IAMP, the Hostetler Street crossing is expected to carry approximately 8,000 vehicles per day when it is ultimately constructed following approximately 55 percent buildout of the industrial area.

Exhibit A: Photo of Existing At-Grade UPRR Crossing Location (From 2nd Street looking SE)

In preparing the I-84 Chenoweth IAMP, the Technical Advisory Committee (TAC) and Steering Committee (SC) made up of City, County, and ODOT staff provided direction at the project outset that any public crossing of the UPRR tracks would require grade separation due to the level of train traffic, past practices of the UPRR and the ODOT Rail Section, federal and state safety initiatives to reduce the number of at-grade crossings, and the continuation of grade separations along UPRR track within the state of Oregon. As a result, the four east-west crossing alternatives developed during the IAMP process and documented in our July 13, 2009 memorandum, *I-84 Chenoweth IAMP East-West Crossing Alternative Evaluation* each assumed grade-separated crossings.

In response to concerns expressed by property owners and the City Council regarding the impacts of the currently proposed grade separated crossing at Hostetler Street, City staff held a preliminary meeting with UPRR staff. At the meeting, a representative from the Industry and Public Projects section of UPRR indicated that a public at-grade crossing at the Hostetler Street location could potentially be developed. As a result, the TAC and SC directed the consultant team to conduct the evaluation contained herein to assess the feasibility of developing an at-grade crossing in lieu of a grade-separated crossing at Hostetler Street. It should be further noted that an at-grade public crossing requires approval from the ODOT Rail Section. ODOT

Rail representatives were not in attendance at the meeting with UPRR staff, nor have they been contacted at this time.

At-Grade Crossing Description

The development of an at-grade Hostetler Street crossing of the UPRR tracks would generally require lane configurations and traffic control devices similar to those identified in Figure 7-3; however, retaining walls along Hostetler Street and 2nd Street would no longer be required because the roadways would generally maintain a vertical alignment similar to current conditions (*i.e., the grade related access impacts to the properties located in the northwest and southwest quadrant of the 2nd Street/Hostetler intersection would no longer exist*). The at-grade crossing would require complete reconstruction of the crossing and the development of new crossing gates and lights that would be interconnected to the two traffic signals proposed at West 6th Street and 2nd Street. These improvements, while substantially less expensive than the grade-separate crossing, may require additional vehicular storage for turning movements at the Hostetler Street/2nd Street intersection (e.g., westbound left-turns during the weekday p.m. peak hour; northbound right-turn and eastbound through movements during the weekday a.m. peak hour) that become significantly delayed during the passage of trains.

Operational Evaluation of an At-Grade Crossing

An analysis was conducted at the West 6th Street and 2nd Street signalized intersections with Hostetler Street assuming the presence of at least one train during the weekday p.m. peak hour under the year 2030 long-term total traffic conditions to assess the operations of utilizing an at-grade crossing. The weekday a.m. peak hour was not analyzed due to unavailable traffic counts; however, a qualitative assessment of the weekday a.m. peak hour is provided. The train crossing analysis assumed a 6,750-foot train traveling at 40 mph. Analysis was completed using Sim Traffic, which simulated the real-world conditions based on typical driving behaviors and forecast traffic volumes developed as part of the I-84 Chenoweth IAMP.

Exhibits B-1 and B-2 show screen captures of Sim Traffic animations at the beginning and end of the train passage. As shown in Exhibit B-1, prior to a train arrival, no existing queues extend beyond available queue storage lengths, similar to conditions that would exist under a grade-separated crossing. After a train has passed, the maximum queue is shown (Exhibit B-2) to extend up to 1,200 feet to the east on Hostetler Street and to the north on the River Trail Way Extension.

The queuing issues converge to the east of 2nd Street, which reflects the primary direction of traffic flow assumed during the weekday p.m. peak hour. The queuing is expected to be reversed during the weekday a.m. peak hour due to the primary flow of traffic into the industrial area. Queues in the morning are expected to impact flow of traffic along 6th Street as queues will extend on Hostetler Street from 2nd Street through 6th Street.

Exhibit B-1: Screen Capture of Simulated At-Grade UPRR Crossing Location at Hostetler Street (Before Train Crossing)

Exhibit B-2: Screen Capture of Simulated At-Grade UPRR Crossing Location at Hostetler Street (After Train Crossing)

Exhibit C-1 shows a screen capture of Sim Traffic animations at the beginning of the train passage under a grade-separated scenario. As shown in the screen capture minimal queues are expected. Train crossings under a grade-separated scenario do not hinder traffic operations; therefore, after a train the queues are expected to be identical to those shown in Exhibit C-1.

Exhibit C-1: Screen Capture of Simulated Grade Separated UPRR Crossing Location at Hostetler Street (Before Train Crossing)

Table 1 provides a summary comparison of maximum queuing at the 2nd Street/Hostetler Street intersection under an at-grade and grade-separation scenario.

Table 1 Maximum Queue Analysis of UPRR Crossing Location

Intersection Approach	Maximum Approach Queue Length (Feet, observed from Sim Traffic)	
	At-Grade	Grade-Separated
Westbound Through	1,200	350
Westbound Left-turn	1,200	550

At-Grade vs. Grade-Separated Crossing Comparison

To provide a simplified comparison of the at-grade and grade-separated crossing scenarios, the consultant team evaluated the crossing using ten criteria. Table 2 provides a summary of the evaluation of each criterion under the at-grade and grade-separated scenarios.

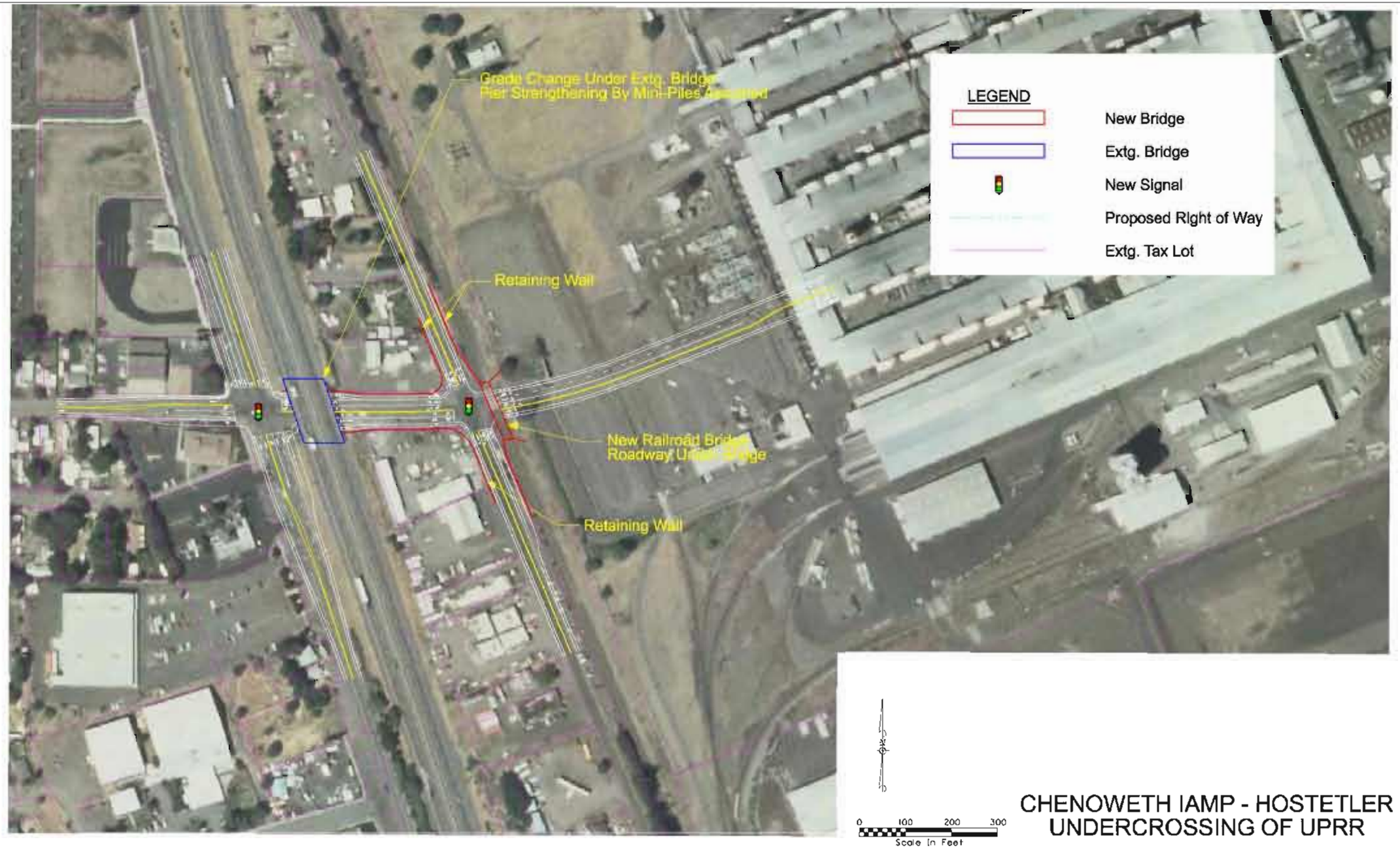
Table 2 Crossing Comparison Table

Criteria	At-Grade Crossing	Grade-Separate Crossing
Safety	All modes of travel (vehicles, trucks, bicycles, and pedestrians) are exposed to potential interaction with rail traffic. Excessive queuing on 2nd Street, West 6th Street, and Hostetler Street during rail crossing will increase the potential for rear-end and angle crashes.	All modes of travel (vehicles, trucks, bicycles, and pedestrians) are physically separated from train travel, eliminating all potential rail interaction. Queuing can be contained within the proposed design concept.
Operations	Maximum queues are forecast to exceed available storage. During the weekday a.m. peak hour, queues are expected to impact traffic flow on 6th Street when a train crosses the proposed Hostetler Street Extension.	Proposed traffic control devices and lane configurations are forecast to provide adequate storage for queues. Queues reflect the 2nd Street/Hostetler Street intersection; no queue will specifically be created by the UPRR crossing.
Impacts to properties (area)	Identical land acquisition needs as compared to other alternatives proposed in IAMP (i.e., same number of lanes are required on Hostetler Street).	Identical land acquisition needs as compared to other alternatives proposed in IAMP (i.e., same number of lanes are required on Hostetler Street).
Impacts to property access	Driveways to the properties located in the northwest and southwest quadrants of the 2nd Street/Hostetler intersection would be restricted to right-in/right-out due to the vehicular queues and level of traffic on 2nd Street and Hostetler Street. Vehicle queues would block additional property accesses along 2nd Street and Hostetler Street during train passage.	Access to the properties located in the northwest and southwest quadrants of the 2nd Street/Hostetler intersection would be restricted due to the retaining walls on 2nd Street and Hostetler Street.
Impacts to the Webber and Chenoweth interchanges	Increases the need for east-west traffic to use both interchanges due to the rail crossing delays and unreliability of the Hostetler Street route.	Minimizes the need for east-west traffic to use either interchange.
Accessibility to Industrial Area	Improved, but not as reliable as the grade separated crossing.	Significantly improved
Preliminary Cost Estimate	$2 million (not including signals)	$12 million (not including signals)
Emergency Response Time	Could increase in the event of a train crossing prior to or at the time of an emergency.	No impacts to emergency response time anticipated during train crossings.
Train Horn Use	Train horns will be sounded during the approach of all trains.	Train horn will not need to be sounded
Annual Crossing Maintenance Costs	At-grade crossings typically cost $10,000 or more per year to maintain. Because Hostetler Street would be a public crossing, the City would be responsible to cover this cost.	No grade crossing maintenance cost.

Conclusion

Although there are benefits to maintaining a grade-separated crossing at the Hostetler Street Crossing location, there are some substantial disadvantages. The greatest advantages of an at-grade crossing are the reduction in cost and impacts to adjacent property access when compared to constructing an underpass. However, these benefits must be weighted against potential safety and operational disadvantages.

We trust this memorandum provides a better understanding of the operational, traffic control, and geometric characteristics of developing an at-grade crossing of the Union Pacific Railroad (UPRR) tracks at Hostetler Street in lieu of the grade-separated (underpass) crossing identified in the draft I-84 Chenoweth IAMP. If you have any further questions, please feel free to contact us.



CHENOWETH IAMP - HOSTETLER UNDERCROSSING OF UPRR

04/27/2009

CH2MHILL

HOSTETLER STREET UNDERCROSSING CONCEPTUAL DESIGN
THE DALLES, OREGON

FIGURE 7-3

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

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