

## **CHAPTER 1: EXECUTIVE SUMMARY**

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The report presents the Interchange Area Management Plan for the proposed new North Redmond interchange with US 97 located at milepost 119. The Interchange Area Management Plan (IAMP) presents recommendations to sustain this new interchange as land in Redmond and the surrounding area continues to develop, by implementing effective local street connectivity and access management strategies.

### **Plan Goals and Objectives**

#### **Project Goal**

The goal of this project was to develop a North Redmond US 97 IAMP for the interchange area that describes existing traffic and land use patterns in the interchange area, identifies potential safety and traffic congestion issues, and proposed policies and implementing measures that would insure safe and efficient operation of the interchange over the 20-year planning horizon, and potentially beyond.

The IAMP was developed in partnership with affected property owners in the interchange area, the City of Redmond, Deschutes County, and the Oregon Department of Transportation (ODOT), and other stakeholders, including interchange users. The public-at-large and any interested local business operations within the study area were notified of public meetings related to this project, and they were provided opportunities to participate outside of the formal project committee process.

#### **Study Objectives**

Objectives were identified to achieve the project goal:

1. The preparation of the IAMP shall involve affect property owners in the interchange area, the City of Redmond, Deschutes County, The Oregon Department of Transportation (ODOT), and other stakeholders, including interchange users.
2. The IAMP shall evaluate local transportation, environmental, and land use conditions.
3. The IAMP shall identify needed transportation improvements within the Interchange Study Area and propose alternatives that conform to current design standards and accommodate the long-term capacity needs of the local transportation system.
4. The IAMP shall be developed in accordance with the provisions and the policies of the Oregon Highway Plan and other relevant state transportation laws.
5. The IAMP shall include policies and implementing measures that preserve the functionality of the interchange areas.

#### **Relevant Plans and Standards**

A comprehensive review was made of relevant federal, state, regional and city plans and standard that are applicable to the plan for North Redmond interchange. The primary transportation standards that were applied in developing and evaluating strategies for the interchange area were drawn from the Oregon Highway Plan standards related to mobility and the Oregon Administrative Rules related to Access Management. The first standard measures the long-term

forecasted traffic volumes compared to the design facility capacity, as summarized in Table 1.A. For US 97, which is a statewide freight route, the mobility standard, as measured by the ratio of forecasted volume-to-capacity, varies from 0.70 to 0.75 depending on the facility posted speeds.

**Table 1.A Maximum Volume-to-Capacity Ratios from the 1999 Oregon Highway Plan  
Inside Urban Growth Boundary**

Highway Category	Inside Urban Growth Boundary	
	Non-MPO outside of STAs where non-freeway speed limit <45 mph	Non-MPO where non-freeway speed limit > 45 mph
Statewide (NHS) Freight Routes	0.75	0.70
District/Local Interest Roads	0.85	0.80

Policies 3A and 3C of the 1999 Oregon Highway Plan establish access management objectives for state highways and interchange areas based on facility type and set standards for spacing of approaches. These standards have also been adopted as part of OAR 734-051, which provides the regulatory basis for implementation. Table 1.B below shows the applicable access management spacing standards for state facilities in the study area.

**Table 1.B: Access Spacing Standards for Statewide Highways (measured in feet)**

Posted Speed (mph)	Rural		Urban	
	Expressway (at-grade only)	Other	Expressway (at-grade only)	Other
> 55	5280	1320	2640	1320
50	5280	1100	2640	1100
40 & 45	5280	990	2640	990
30 & 35		770		770
< 25		550		550

With some design elements of the proposed project still unknown, it was assumed the North Redmond interchange would resemble a non-freeway interchange with a two-lane crossroad. The proposed locations of any new street connections within interchange areas were evaluated in accordance with the applicable Highway Design Manual standards.

Other plans and documents reviewed included:

- Oregon Transportation Plan
- Oregon Rail Plan
- Statewide Transportation Improvement Program
- Transportation Planning Rule
- Traffic Control (OAR 734-020)
- Railroad Regulations
- City of Redmond Comprehensive Plan

<sup>1</sup> Access spacing standards in urban areas for facilities with posted speeds of 35 mph or less may be reduced pending OTC approval of proposed *Oregon Highway Plan* amendments. Proposed spacing standards would be 720 feet (30 & 35 mph) and 520 feet (<25 mph).

- City of Redmond Transportation System Plan
- Redmond Urban Reserves Studies
- Deschutes County Comprehensive Plan
- Deschutes County Transportation System Plan
- For a complete presentation of the background plans and studies, refer to Appendix 1.

## Existing Land Use and Transportation Issues

### Geographic Boundaries

The geographic boundaries for the IAMP, as illustrated in Figure 1.1, include O’Neil Highway (OR 370) / NW Pershall Road to the north, NE 17th Street/NE Negus Way to the east, NW Kingwood Avenue to the south, and NW 22nd Street to the west. Assuming the proposed interchange connecting US 97 to the US 97 Reroute is located between NW Spruce Avenue and NW Quince Avenue, these boundaries would include an area approximately ¾-mile beyond the physical limits of the interchange. While this distance would be adequate for the management of access to the crossroad (i.e. US 97 south of the interchange and Canal Boulevard north of the interchange), there is need to control the creation of new intersections on the mainline (i.e. US 97 north of the interchange and the US 97 Reroute to the south) outside of the study area for a radius of 2 miles.<sup>2</sup>

The travel forecasts that were developed as part of this study encompass a larger scope than the explicit boundaries noted above for detailed operational analysis and access management review. The entire City of Redmond, including the current urban limits, and the pending Urban Growth Boundary additions are contained within the travel demand model developed for local transportation studies. The expected long-term development associated with this larger Redmond urban area were be the basis for developing future year travel forecasts that were used within the focused study area noted above for the assessing the performance of the proposed interchange facilities.

### Study Area Land Uses

Within the study area, there are lands both inside and outside of the City of Redmond urban growth boundary. Lands outside of the urban growth boundary (northern and eastern areas of study limits) maintain rural zoning and development patterns, consisting of a variety of agricultural uses. Within the urban growth boundary, most lands are zoned for either commercial, residential, light industrial, or park/open space uses. The commercial lands tend to surround the US 97 corridor in the middle of the study area with residential lands between this commercial corridor and the eastern and western urban growth boundaries. To the southeast of the study area, there is a significant amount of industrial land, but only about 22 acres of light industrial land lie within the study limits. All of the park/open space lands are located to the west of US 97, with most of it

#### Land Use Summary

Land Use	Percent of IAMP Area
Agricultural	43%
Commercial	16%
Industrial	1%
Parks/Public Facilities	7%
Residential	33%

<sup>2</sup> OAR 734-051-0125 , *Access Management Spacing Standards for Approaches in an Interchange Area*

assigned to Dry Canyon. Most of the land within the IAMP study area is zoned for agricultural uses, with the second largest group allowing residential development, as summarized in Table 1.C. There appears to be a significant amount of commercial property surrounding the proposed interchange area (between NW Spruce Avenue and NW Quince Avenue) that is currently vacant.

### **Existing Access Conditions**

The existing public and private access approaches to US 97 within the study area were mapped and compared to applicable standards. A total of 80 approaches to the state highway were identified, including both sides, compared to 14 that would be allowed based on standards. Refer to Table 3.C and Figure 3.5 for more details. Substantial modifications to the current access and local circulation system would be required to comply with standards.

A similar analysis was done for the local city street facilities to compare the driveway spacing and intersection spacing with city standards. It was found that the majority of these cases do meet the city spacing standards. Notable exceptions include Maple Avenue and Negus Way, both minor arterials with a preferred spacing of ¼-mile, which have several intersecting city streets less than 500 feet apart.

### **Crash Analysis**

State, county and city streets within the study area were evaluated to identify locations where reported vehicle crashes are excessive compared to statewide averages. The most significant finding was that the rural segment near O'Neil Highway Junction with US 97 has exceeded statewide average crash rates for the past three years of reported data (2001 to 2003). The last year crash rate was two times the statewide average. A closer review of the crash data suggested that it is concentrated at the intersection of US 97 and O'Neil Highway, and is not representative of the half-mile segment around that location. Solutions for reducing the reported crashes should concentrate on the intersection design and traffic control elements.

### **Existing Roadway Performance**

Traffic data for 2005 were evaluated to determine how well the existing road intersections and segments perform compared to state and local standards. Three locations on US 97 were identified that fell below standards:

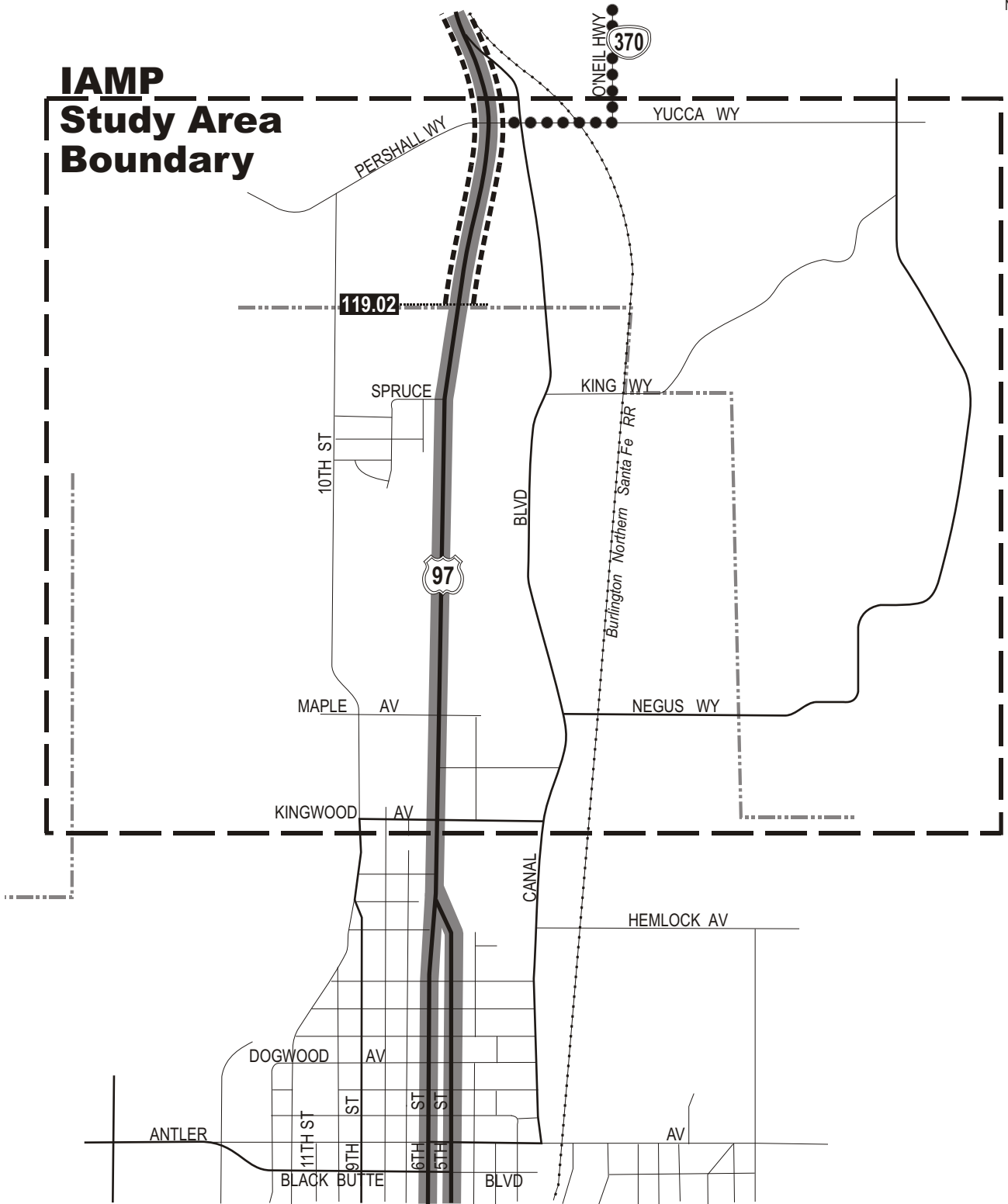
- US 97 / O'Neil Highway
- US 97 / Maple Avenue
- US 97 / Kingwood Avenue

All three are unsignalized intersections where the side street approaches must wait for gaps in highway traffic. In each case, the 2005 volume-to-capacity ratio was over 1.0, which is significantly above the 0.70 to 0.75 standard for this area. Two of these locations are planned to have traffic signal controls installed, based on current capital improvement plans. However, there are no identified improvements at US 97 / O'Neil Highway.

All of the city and county intersections within the study area operated within the acceptable performance ranges. Refer to Table 3.K for more details.



**IAMP  
Study Area  
Boundary**



**LEGEND**

- - District
- ▬ - Statewide NHS with Freight Route
- ▬▬▬ - Expressway
- ⋯ - Urban Growth Boundary (UGB)
- ▬-119.02-▬ - Milepost Indicator

**Figure 1.1**  
**STATE HIGHWAY FUNCTIONAL**  
**CLASSIFICATIONS AND**  
**SEGMENT DESIGNATIONS**

## Future Forecasts and Needs Analysis

Land use growth in the City of Redmond and nearby communities is expected to more than double the existing number of household and employees over the next 20 years. The growth projection, show more than 11,000 new dwelling units and 10,000 new jobs within the greater Redmond area, as shown in Table 1.C below.

**Table 1.C: Assumed Household and Employment Quantities**

	Households	Retail Employees	Other Employees
Base Year 2000	7,418	2,330	5,492
Future Year 2025	18,356	4,969	13,040
Growth	147%	113%	137%

ODOT's Transportation Planning Analysis Unit prepared travel forecasts based on these growth assumptions, and this information was used to develop future traffic volumes for this study. Table 1.D shows how trips will grow over the next 20 years. Trips that start or end (or both) within Redmond are growing about two times faster than through trips within the community. The annual growth rate for all trips is 4.5 percent.

**Table 1.D: Redmond Area Model Trip Types, PM Peak Hour**

	Redmond Based Trips	Through Trips	Total Trips
Base Year 2000	8,409	1,005	9,414
Future Year 2025	18,390	1,670	20,060
Avg. Annual Growth Rate	4.8%	2.6%	4.5%

The 2025 travel volumes were applied to the city street system, which included the planned US 97 Re-Route and several additional local improvements:

- US 97 Reroute
- US 97 Interchange at Milepost 119 (near existing Quince Ave.)
- Maple Avenue extension across Dry Creek Canyon
- Quince Avenue extension
- Highland / Glacier couplet (OR 126)
- 9th Street extension

Refer to Figure 4.7 for more details on the assumed street and highway improvements by 2025.

## Future 2025 Performance and Deficiencies

The North Redmond / US 97 interchange area, as proposed, would operate within standards. No deficiencies were identified. A worst-case scenario was evaluated to test the ability of the interchange design concept to serve higher travel demands. The planned commercial uses were assumed to be 30 percent higher than is typical for current zoning, and the performance analysis showed that the planned interchange could also serve that higher intensity level.

Several other highway locations and city locations outside of the immediate interchange area are expected to drop below minimum standards. These include:

- The intersection on US 97 at O’Neil Highway;
- The intersection on Maple Avenue at 9th Street; and
- The intersection on US 97 at Kingwood Avenue.

The latter two locations can be addressed through alternative traffic controls solutions; however, the US 97 at O’Neil Highway most likely would require a more significant improvement, given its rural location and high travel speeds on the highway.

### Access / Intersection Spacing

In conjunction with the construction of the US 97 Reroute and the new interchange, a strategic access management plan needs to be implemented to help address the non-compliant accesses onto US 97 and affected city and county streets within the management area. An access zone system was developed to match the highway characteristics and standards required by ODOT with the access needs of the adjoining land uses. This system prescribes the spacing methods and procedures for reaching compliance within the interchange area.

In summary, the access management zone system works in combination with the recommended local connectivity plan to reduce non-compliant access near the interchange, and provide appropriate new access where allowed by standards. The six-zone system described in Chapter 4, would enact access changes as summarized in Table 1.E.

Table 1.E: Access Deficiencies by Zone\*

Access Management Zone	Existing Number of Access Points	Allowed Number of Access Points
1	7	0
2A	10	0
2B	10	1
3	41	10
4	15	30
5	22	0
6	N/A	0

\* Includes existing access points only. Refer to Figure 4.11 for illustration of zone locations.

### Signal Spacing

As land around the interchange develops, provision of access and installation of traffic signal controls will be closely coordinated to ensure effective traffic mobility and to enhance traffic safety. The recommended IAMP plan must include a traffic signal control map that identifies the expected locations and spacing between traffic signals.

### Local Connectivity

When planning for future streets to enhance local connectivity in the IAMP area, consideration should be given to the following deficiencies.

- Improving East-West Connectivity
- Providing Access to Lands Surrounding the US 97 Interchange

- Reducing Access Points to US 97 to the North of the Interchange.

Refer to Chapter 4, for more details about the constraints, issues and challenges in addressing each of these areas. Other issues identified that would be addressed through the IAMP included proper roadway design guidelines for truck traffic, enhancement of non-motorized vehicle connections, and notations about existing right-of-way constraints.

## The Interchange Area Management Plan

The US 97 Redmond Reroute IAMP addresses the needs and issues identified in Chapter 4. The full plan is presented in Chapter 5 of this report. The elements of the IAMP are dividing into the following sections:

- **Transportation Facility Improvements** – these evaluations consider the proper improvements to the three locations identified as falling below the desired mobility standard by the horizon year (2025).
- **Local Connectivity Plan** – this plan (illustrated in Figure 5.4) is a conceptual plan that would be implemented by ODOT through the adoption of this IAMP, and the City of Redmond by incorporation into its TSP, to provide alternative circulation patterns and local access routes for lands within the influence area of the interchange.
- **Access Management Plan** – the six-zone access management strategy formed in Chapter 4 was defined for implementation. The plan provides priorities about when access changes are made, and which agency (or party) would be responsible for the improvements.
- **Land Use Alternatives** – The proposed interchange design was evaluated with average land development densities and a worst-case development scenario based on adopted land use plans and zoning to determine if ‘travel demand management’ techniques might be required for this case.
- **Implementing Code Amendments** – As land develops to urban levels within the IAMP, a system of circulation elements and access measures need to be implemented to realize the vision of this plan. The necessary amendments to the city development code are attached in Appendix 7.
- **Cost Estimates** – The preliminary cost estimates for improvement recommended by the IAMP are presented.

### Transportation Facility Improvements

The four locations within the study area not expected to provide acceptable peak period performance with the proposed build project were identified in Chapter 4. An improvement has been identified for each of the four locations made for the preferred solution based on the goals and objectives of this study. The recommendations are summarized below:

- **US 97 at O’Neil Highway** – A range of options considered for this location included turn restrictions, re-aligning side street approaches, and constructing a grade-separated overpass. The IAMP proposes restricting turning movements to right-in and right-out as an interim improvement after local connectivity has been enhanced to provide parallel



routes to US 97 (see the Local Connectivity Plan), with the long-range improvement being the construction of an overpass with no connection to US 97.

- **Relocation of King Way** – Because of the close proximity of the connection of King Way to North Canal Boulevard to the northbound off-ramp to the US 97 Reroute, and concern with the existing at-grade railroad crossing on King Way, in the long-term the IAMP recommends, as part of the Local Street Connectivity Plan, that King Way be relocated to the north on a new alignment, that will include a grade separated overcrossing of the railroad, approximately ¼ mile north of the interchange.
- **US 97 at Kingwood Avenue** – In the long-term, when warranted, the IAMP proposes that the City install traffic signal controls at this intersection, with improvements to the approaches on all legs to separate left-turning traffic movements.
- **Maple Avenue at 9th Street** – In the long-term, when warranted, the IAMP proposes that the City install traffic signal controls at this intersection, with improvements to the approaches on all legs to separate left-turning traffic movements.

## Traffic Signal Plan

The US 97 Redmond Reroute IAMP created a future traffic signal plan to guide the orderly installation of traffic signals within the IAMP area, especially along US 97 (6th Street) and North Canal Boulevard north of the proposed interchange, where poor progression of traffic due to inadequate signal spacing could impact long-term safety and operations at the proposed interchange ramp terminals. The Traffic Signal Plan is to be adopted by the City of Redmond and incorporated into their TSP (Appendix 8).

Figure 5.3 displays a map of future traffic signal locations within the IAMP area to be used in evaluating potential conflicts with future proposals for traffic signals on the study area streets. Near the interchange, this includes:

- North Canal Boulevard / New Collector Street (re-aligned King Way)
- US 97 Interchange Ramp Terminals
- US 97 Business Route at extension of Quince Avenue
- US 97 Business Route at new extension of Oak Avenue
- US 97 Business Route at Maple Avenue/Negus Way
- US 97 Business Route at Kingwood Avenue

Signal spacing generally is 1,300 feet apart with some exceptions of lesser distances near the interchange, including the ramp terminals themselves. Figure 5.3 identifies the locations of all currently planned traffic signals (there are currently no existing traffic signals) in the IAMP area, along with a future signal on US 97 (6th Street) between Maple Avenue and Quince Avenue (at Oak Avenue) that is anticipated to be constructed soon by an adjacent development and the recommended signal at the intersection of Maple Avenue and 9th Street.

## Local Connectivity Plan

Chapter 4 of the IAMP highlighted three areas where local connectivity was in need of improvement, including:

- Improving east-west connectivity;
- Providing access to lands surrounding the US 97 interchange; and
- Reducing access points to US 97 to the north of the interchange.

In response to these needs, the IAMP developed a local connectivity plan that builds on existing and planned streets in the IAMP area. This plan not only improves overall connectivity throughout the northern end of the City, but provides the ability to eliminate direct approaches to US 97 and Canal Boulevard, while maintaining accessibility to individual properties in the corridor. Figure 5.4 displays the local connectivity plan. The Local Street Connectivity Plan is to be adopted by the City of Redmond and incorporated into their TSP (Appendix 8).

## Access Management Plan

A key element of the IAMP related to the long-range preservation of operational efficiency and safety of the proposed interchange is the management of access to the interchange crossroads (US 97/6th Street and Canal Boulevard), as well as to the mainline (US 97 and the Reroute). Because access points introduce a number of potential vehicular conflicts on a roadway and are frequently the causes of slowing or stopping vehicles, they can significantly degrade the flow of traffic and reduce the efficiency of the transportation system. However, reducing the overall number of access points and providing greater separation between them can minimize the impacts of these conflicts.

Implementation of the access management plan in the IAMP is to occur over a long period of time. A number of the properties within the IAMP area were developed based on prior approvals of access locations to the subject roadways and some elements of the Access Management Plan depend on the presence of new public streets that can not be constructed until funds are made available. Therefore, the Access Management Plan has prioritized and categorized all access management recommendations into short-range, medium-range, and long-range actions, where the short-range actions are to be executed during the construction of the interchange; and the medium and long-range actions are to be executed as needed funds become available or as opportunities arise during property development or redevelopment.

To provide a basis for decision-making during the development of the Access Management Plan, an access management strategy was established. The strategy requires ODOT and/or the City to:

1. Restrict all access from abutting properties to the interchange and interchange ramps (ODOT).
2. Meet, or move in the direction of meeting, ODOT's adopted access management spacing standards for access to interchange crossroads (City).
3. Meet, or move in the direction of meeting, the City of Redmond's adopted access management guidelines on US 97 (6th Street) from a point 1,320 feet from the southbound interchange ramp terminal to Kingwood Avenue (southern boundary of IAMP area). This would require access spacing of at least 800 feet between adjacent

- driveways and/or streets on the same side of the roadway and ½-mile between adjacent intersections (City).
4. In line with the recommendation evaluate and possibly consider jurisdictional transfer of Canal Boulevard from O'Neil Highway to the new North Redmond interchange from Deschutes County and City of Redmond to the Oregon Department of Transportation, meet, or move in the direction of meeting ODOT's adopted access management spacing standards for access to District Highways (City).
  5. Meet ODOT's adopted access management spacing standards for an Expressway for interchange mainlines in the long-term (ODOT).
  6. Purchase all abutting property access rights to US 97 (6th Street) and Canal Boulevard within 1,320 feet of the proposed interchange ramp terminals. Where accesses are allowed to remain within this area under the short-range action plan, access rights should be acquired with a temporary allowance to retain access until such time as reasonable alternate access becomes available (ODOT).
  7. In attempting to meet access management spacing standards, exceptions may be allowed to take advantage of existing property boundaries and existing or planned public streets, and to accommodate environmental constraints (City).
  8. Replace private approaches with public streets, where feasible, to provide consolidated access to multiple properties (City).
  9. Ensure all properties impacted by the project are provided reasonable access to the transportation system (ODOT and City).
  10. Align approaches on opposite sides of roadways where feasible to reduce turning conflicts (City).
  11. Short-range actions shall accommodate existing development needs, unless property is to be purchased by ODOT (ODOT and City).

Using this strategy, an action plan for each approach to the interchange mainline and crossroad was developed, as shown in Table 5.A.

- The short-range actions should be implemented during the construction of the interchange.
- The medium-range actions are to be completed within 5 to 10 years, and
- The long-range actions are to be implemented over the 20-year planning period as funding becomes available or as opportunities arise through property development.

The long-range action plan has also been illustrated in Figure 5.5 to aid in the interpretation of the actions in Table 5.A.

## **Land Use Alternatives**

Aside from the improvements noted in the previous section, the proposed interchange improvements and surrounding transportation system was demonstrated to operate within acceptable levels by 2025 based on adopted land use plans and zoning.

A further sensitivity test was made for the commercially zone areas to evaluate if the planned system could serve more intense uses than are typically built on this type of zoning. An

alternative ‘worst-case’ land use evaluation was made where development around the interchange would generate about 30 percent more traffic than is typical for suburban development. It was found that even with these higher traffic generation levels that the system would continue to operate within acceptable ranges (see Table 5.C for details). Therefore, no further mitigations or limiting land use ordinances related to development levels should be required for this case.

However, the City of Redmond recently extended their Urban Growth Boundary (UGB) to include all properties north of its existing city boundary, west of US 97, to Pershall Way. Redmond also adopted an Urban Reserve Area (URA) that includes all land east of US 97 to O’Neil Way. In expanding its UGB, rather than annex and rezone the area being brought into the UGB for urban use, and having to do the TPR analysis for adequacy of the transportation system, Redmond opted to not annex the area and with the concurrence of Deschutes County had the UGB rezoned to a new Urban Holding Zone – 10 Acre Minimum (UH-10). This action first put a temporary hold on future development within the UGB until it was annexed and rezoned, and it also deferred the TPR analysis to a subsequent date. Redmond also adopted amendments to its development regulations requiring master plans be prepared for properties requesting annexation and rezoning to the City.

Consequently, by the City expanding its UGB without designating the urban zoning for the area and doing the required TPR analysis, a significant amount of land was added to the UGB that could, in the future, be annexed to the city and developed with urban intensity uses. And without a land use plan for the area, it is impossible to determine the magnitude of this action on the proposed US 97 Redmond Reroute Interchange.

To address this unknown within the context of the IAMP, the City of Redmond is required to amend its development regulations to require master plans prepared for properties adjacent to US 97 show as an element of their plan no direct access to US97 (Appendix 7). In addition, for an area defined as the “Highway Area Plan”, or HAP (Appendix 8), adjacent to US97, the City is to prepare an area plan (A.K.A. master plan) that will establish a land use plan along US 97 that based on traffic analysis of the plan will not result in the planned land use exceeding the capacity of the interchange during the plan period.

## **Implementing Ordinances and Memorandum of Understanding**

As land develops to urban densities within the interchange area, compliance will be required with the access management and circulation plans developed through the IAMP process. As part of the adoption of the IAMP, a number of amendments will be made to the City of Redmond Comprehensive Plan, Transportation System Plan (TSP) and development codes to reflect the amendments contained in Appendix 7 and actions outlined in the Memorandum of Understanding (MOU) in Appendix 8. In brief, they are as follows:

### ***Comprehensive Plan Chapter 14 (Urbanization) –***

- Master plans to be consistent with the Local Street Connectivity Plan (Figure 5.4),
- Property annexed to relinquish all direct access rights to the highway, and
- Incorporate access management strategy for US 97 (6th Street) and North Canal Boulevard.

### ***Transportation System Plan –***

- Identify phased improvement at US 97 and O’Neil Highway to include right-in/right-out and a grade separated overcrossing,
- Identify need for signals at US 97 (6th Street) and Kingwood Avenue, and NW Maple and 9th Street,
- Access spacing requirements for US 97 (6th Street) and North Canal Boulevard,
- Local Street connectivity (Figure 5.6) and access closures (Table 5.A and Figures 5.5a-5.5c), and
- Signal Plan for US 97 Business (6th Street) and North Canal Boulevard (Figure 5.3).

### ***Development Codes –***

- Master plans shall show direct access to local street, not the State highway, be consistent with the Local Street Connectivity Plan, and relinquish all direct access to the highway, and
- Adopt access management spacing standards for US 97 (6th Street) and North Canal Boulevard consistent with the Oregon Highway Plan for highways classified as “Statewide” and “District” within an urban area.

### ***Memorandum of Understanding –***

In moving the US 97 Reroute into the construction phase, it was determined that the original agreement between ODOT and the City needed to be revised to incorporate changes to the project, and consummate in an MOU their agreement on long-term transportation and land use issues as they relate to the US 97 Reroute. This agreement, No. 23704, has been incorporated into the IAMP by reference and is included as Appendix 8. In general the MOU between ODOT and the City of Redmond:

- Identifies the US 97 Reroute, Phase 1, as the first phase of a long-term solution for US 97 through Redmond;
- Sets forth that US 97 through Redmond will be managed as an Expressway facility from the O’Neil Junction through the Reroute Phase 1, and future phases consistent with the recommendations of the US 97 Redmond Refinement Plan;
- Requires the City to adopt the Access Management Plan for the US 97 Reroute and all the recommendations contained in the IAMP including amendments to Redmond’s comprehensive Plan, TSP, and development codes as enumerated above.

### **Cost Estimate**

Planning-level cost estimates for all recommended improvement alternatives were calculated to aid in the identification of needed funding. Cost estimates included the fundamental elements of roadway construction projects, such as the roadway structure, bridge structures, curb and sidewalk, earthwork, retaining walls, right of way, pavement removal, and traffic signals. The estimated costs are shown below in Table 1.F, with work sheets showing assumed unit costs for construction elements provided in the Appendix 5.

For the purposes of providing these estimates, it was assumed that 40% of the road-miles within the County and City would be classified as collectors, with the remaining 60% classified as local streets. All costs are in 2006 dollars and do not reflect the added cost of inflation. Note that the recommended installation of a traffic signal at the US 97/Kingwood Avenue intersection has not been included as it is already listed in the City's CIP to be constructed when warranted, with an estimated cost of \$375,650. When considering needed funding to construct the identified improvements below, it should be recognized that landowners typically construct local streets as development occurs.

**Table 1.F: Planning-Level Cost Estimates for Recommended Improvement Alternatives**

Alternative	Estimated Cost
US 97/O'Neil Highway	
Restrict turn movements to r-in/r-out	\$225,000
Offset intersection approaches	\$1.4 million
Construct overpass	\$3.2 million
Maple Ave/9th St signalization*	\$220,000
Expanded Public Street Network	
City collectors	\$9.9 million
City local streets	\$13.4 million
County collectors**	\$13.4 million
County local streets***	\$21.2 million

\* Assumes intersection geometry will be improved through projects already planned in the City CIP.

\*\* Includes \$5.9 million in "High-Priority" Streets.

\*\*\* Includes \$3.8 million in "High-Priority" Streets.

### Prioritization of Improvements

The improvement alternatives recommended as part of the IAMP have been prioritized into short, medium, and long-range actions, as shown in Table 1.G, to provide guidance for future implementation and funding. Short-range actions represent immediate needs and should be implemented at the time of interchange construction. Medium-range actions represent improvements that are not required immediately, but should be given priority over improvements identified as long-range actions. Assuming all improvements are planned for construction within a 20-year period, medium-range actions should be considered for implementation within 5 to 10 years. Long-range actions typically represent improvements of lower priority or requiring higher levels of funding. These improvements should be planned for construction within 10 to 20 years. The improvements listed in Table 1.G have also been illustrated in a Transportation Improvements Map (Figure 5.6) for the IAMP area.

It should be recognized that this prioritization of projects is not intended to imply that projects of higher priority must be implemented before projects of lower priority. Should opportunities arise, through private land development or other means, to construct specific projects earlier than the estimated time frame provided by this list, those resources should be utilized.

**Table 1.G: Transportation Improvement Prioritization**

**Short-Range Improvements (At the time of interchange construction)**

- Short-range actions from access management plan.

**Medium-Range Improvements (5 to 10 years)**

- Construct “High-Priority” public streets according to adopted Local Connectivity Plan.
- US 97/O’Neil Highway intersection improvements (right-in/right-out restrictions).
- US 97 (6th St.)/Kingwood Ave.: Construct separate left turn lanes on Kingwood Ave. and install traffic signal.
- Maple Ave./9th St.: Construct separate left turn lanes on Maple Ave. and install traffic signal.
- Medium-range actions from access management plan.

**Long-Range Improvements (10 to 20 years)**

- Construct remainder of new public streets according to adopted Local Connectivity Plan.
- Long-range actions from access management plan.
- US 97 (6th St.)/Quince Ave.: Construct separate left turn lanes on Quince Ave. and install traffic signal.
- US 97/O’Neil Highway intersection improvements (grade-separated crossing over US 97).
- King Way Realignment (grade-separated crossing over BNSF).

Note: Medium and long-range improvements could be constructed sooner than anticipated as opportunities arise through private property development or other means.

