



**STAFF FINDINGS & RECOMMENDATION**

**FILE NUMBERS:** CP 20-02, ZM 20-01  
**LOCATION:** 800 W Barclay Drive, Sisters OR 97759  
Tax Map/Lot Number: 151005D000100

**APPLICANT/  
OWNER:** Three Sisters Holdings LLC

**APPLICANT'S  
ENGINEER:** Nicholas Speros, PE, HHPR

**APPLICANT'S  
TRAFFIC ENGINEER:** Todd Mobley, PE, Lancaster Mobley

**APPLICANT'S  
LAND USE PLANNER:** Tammy Wisco, PE, AICP, Retia Consulting LLC

**CITY STAFF:** Nicole Mardell Principal Planner

**REQUEST:** The Applicant is requesting approval of a Comprehensive Plan Map and Zoning Map Amendment (Type III/IV) to redesignate the property from Urban Area Reserve to Light Industrial.

**APPLICABLE CRITERIA:** City of Sisters Development Code (SDC):  
Chapter 4.1 – Types of Applications and Review Procedures  
Chapter 4.7 – Land Use District Map and Text Amendments  
Statewide Land Use Goals  
City of Sisters Comprehensive Plan  
Oregon Administrative Rules  
Division 9 – Economic Development  
Division 12 – Transportation Planning

**HEARING DATE:** **July 16, 5:30 pm**, Sisters City Council Chambers, 520 E. Cascade Avenue, Sisters, Oregon

**PROJECT WEBSITE:** <https://www.ci.sisters.or.us/community-development/page/n-barclay-rezone-application-cp-20-02-zm-20-01>

**FINDINGS OF FACT:**

**ZONING:** Urban Area Reserve (UAR)

**COMPREHENSIVE PLAN DESIGNATION:** Urban Area Reserve (UAR)

**PROPOSAL DESCRIPTION:** The applicant is seeking to amend the comprehensive plan map and zoning map to redesignate the property from Urban Area Reserve to Light Industrial. The applicant is also seeking several comprehensive plan amendments to Chapters 9 and 14 to reflect the redesignation of the property and its impact on Economic Development and the City's industrial land supply.

Comprehensive Map (Exhibit C)

15.58 acres of Urban Area Reserve (UAR) changed Light Industrial

Zoning Map (Exhibit C)

15.58 acres of Urban Area Reserve (UAR) changed to Light Industrial

**SITE DESCRIPTION & SURROUNDING LAND USES:** The subject property is located at the northwest corner of W. Barclay Drive and N. Pine Street and is immediately adjacent to the Best Western Ponderosa Lodge zoned Highway Commercial (HC). Property to the east contains primarily industrial uses as part of the Sisters Industrial Park, zoned Light Industrial (LI). Property to the north is Deschutes National Forest area and is outside of City limits and the urban growth boundary. Property to the south is property owned by the Forest Service, including the Sisters Ranger Station, zoned Public Facility (PF). The property is currently vacant and undeveloped. Topography on the site is generally flat and heavily treed with ponderosa pine and other native underbrush species.

**BACKGROUND:** The site was annexed in 1979 through Ordinance 123. The ordinance stated that the property would maintain its County zoning status as "Urban Area Reserve". The original property was divided into three parcels through MNR 07-07 and FP 08-05. The property is Parcel 3 of Partition Plat 2008-030, is 15.58-acres in size, and constitutes a legal lot of record.

In 2010, prior to the sale of the property to its current owner, the City of Sisters received a Transportation and Growth Management Grant from the Department of Land Conservation and Development. The purpose of this grant was to identify potential development scenarios for each of the three properties (67 net acres) owned by the Forest Service in Sisters. These projects resulted in four development scenarios that included a mixture of residential, commercial, light industrial, and park space. These development scenarios were intended to spur private development interest in development of the property, as a previous sale was unsuccessful. A description of the grant project and the development scenarios were incorporated into the City's Comprehensive Plan to provide guidance for potential development scenarios.

In 2019, the property was purchased by its current owner. As the development scenarios created in the 2010 project are now outdated and do not reflect today's market conditions, the applicant is requesting to remove the graphics and detail from the Comprehensive Plan and to rezone the entirety of the property to Light Industrial.

**SUMMARY OF CONCLUSIONARY FINDINGS:** The subject applications can either be approved, approved with conditions, or denied on the basis of whether the applicable standards and criteria can be satisfied either as submitted, or as mitigated through conditions of approval. A detailed analysis of applicable standards and conclusionary findings specific to the requested Comprehensive Plan Amendments, Comprehensive Plan Map Amendment, and Zone Change are provided below.

**STAFF RECOMMENDATION:**

**ZM 20-01: Approve with Conditions.** Based on the information and findings contained in this staff report, staff concludes that the requested Zoning Map Amendment satisfies the approval criteria and recommends that the Planning Commission recommend approval of this request, with conditions (Exhibit H), to the City Council.

**CP 20-02: Approve with Conditions.** Based on the information and findings contained in this staff report, staff concludes that the requested Comprehensive Plan Text and Map Amendments satisfies the approval

criteria and recommends that the Planning Commission recommend approval of this request, with conditions (Exhibit H), to the City Council.

**EXHIBITS:**

The following Exhibits are included in this staff report:

- A. Vicinity Map**
- B. Existing Mapping**
- C. Proposed Mapping**
- D. Transportation Analysis, Addendum & Access Management Plan**
- E. Proposed Comprehensive Plan Amendments**
- F. Public Notice & Comments as of July 9, 2020**
- G. Agency Review Comments as of July 9, 2020**
- H. Recommended Draft Conditions of Approval**

**APPLICABLE CRITERIA & STAFF FINDINGS**

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**CONCLUSIONARY FINDINGS**

The following findings relate to compliance with applicable criteria. The terms “subject property” or “site” refers to the subject site under consideration. The criteria applicable to this land use application are as follows:

City of Sisters Development Code (SDC):

- Chapter 4.1 – Types of Applications and Review Procedures
- Chapter 4.7 – Land Use District Map and Text Amendments

Statewide Land Use Goals

City of Sisters Comprehensive Plan

Oregon Administrative Rules

Division 12 – Transportation Planning

**SISTERS DEVELOPMENT CODE**

**CHAPTER 4.1 – TYPES OF APPLICATIONS AND REVIEW PROCEDURES**

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**4.1.200 Description of Permit/Decision-Making Procedures**

All land use and development permit applications, except building permits, shall be decided by using the procedures contained in this Chapter. General provisions for all permits are contained in Section 4.1.700. Specific procedures for certain types of permits are contained in Section 4.1.200 through 4.1.600. The procedure “type” assigned to each permit governs the decision-making process for that permit. There are four types of permit/decision-making procedures: Type I, II, III, and IV. These procedures are described in subsections A-D below. In addition, Table 4.1.200 lists all of the City’s land use and development applications and their required permit procedure(s).

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- C. Type III Procedure (Quasi-Judicial).** Type III decisions are made by the Planning Commission after a public hearing, with appeals heard by the City Council. Type III decisions generally use discretionary approval criteria;
- D. Type IV Procedure (Legislative).** Type IV procedures apply to legislative matters. Legislative matters involve the creation, revision, or large-scale implementation of public policy (e.g., adoption of land use regulations, zone changes, and comprehensive plan amendments which

apply to entire districts). Type IV matters are considered initially by the Planning Commission with final decisions made by the City Council and appeals possible to the Oregon Land Use Board of Appeals.

Table 4.1.200 Summary of Development Decisions/Permit by Type of Decision-making Procedure		
Action	Decision Type	Applicable Regulations
Subdivision	Type III	Chapter 4.3
Land Use District Map Change		
Quasi-Judicial (no plan amendment required)	Type III/IV	Chapter 4.7
Legislative (plan amendment required)	Type IV	Chapter 4.7

- E. Notice of all Type III and IV hearings will be sent to public agencies and local jurisdictions (including those providing transportation facilities and services) that may be affected by the proposed action. Affected jurisdictions could include ODOT, the Department of Environmental Quality, the Oregon Department of Aviation, and neighboring jurisdictions.

**Staff Findings:** The proposal includes a Comprehensive Plan Map Amendment, Comprehensive Plan Text Amendment, and Zoning Map Amendment (a Type III/IV, Quasi-Judicial Land Use Action) to alter both the zoning and Comprehensive Plan designation for the property from Urban Area Reserve (UAR) to Light Industrial (LI).

Staff notes that the “Summary of Development Decisions/Permit by Type of Decision-making Procedure” table identifies quasi-judicial zone changes without a plan amendment as either a Type III or IV decision. This “summary” is inconsistent with the language of SDC 4.1.200(D), which identifies that zone changes and plan amendments only constitute a Type IV decision when such amendments “apply to entire districts”, and SDC 4.7.300, which describes “the application of adopted policy to a specific development application” as a quasi-judicial amendment that “follow the Type III procedure”. Here, the plan amendments are specific to a specific property under common ownership to facilitate a specific development application. Accordingly, the Type III procedures are the correct procedures.

Nonetheless, where there are differences between the Type III and Type IV procedures, Staff followed the procedures that allowed for greater notice and opportunity for public participation.

**4.1.500 Type III Procedure (Quasi-Judicial)**

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**Staff Findings:** Staff provided the required notice to those persons entitled to notice at least 14 calendar days before the July 16, 2020 hearing. The notice contained all of the required information. Staff also published notice in a local newspaper as would be required for a Type IV decision. The public hearing will follow the requirements of SDC 4.1.500(C) and a decision will be issued in accordance with SDC 4.1.500(D) through (F).

#### 4.1.600 Type IV Procedure (Legislative)

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**E. Decision-Making Considerations.** The recommendation by the Planning Commission and the decision by the City Council shall be based on consideration of the following factors:

1. Approval of the request is consistent with the Statewide Planning Goals;
2. Approval of the request is consistent with the Comprehensive Plan; and
3. The property and affected area is presently provided with adequate public facilities, services and transportation networks to support the use, or such facilities, services and transportation networks are planned to be provided concurrently with the development of the property. The applicant must demonstrate that the property and affected area shall be served with adequate public facilities, services and transportation networks to support maximum anticipated levels and densities of use allowed by the District without adversely impacting current levels of service provided to existing users; or applicant's proposal to provide concurrently with the development of the property such facilities, services and transportation networks needed to support maximum anticipated level and density of use allowed by the District without adversely impacting current levels of service provided to existing users.
4. Compliance with 4.7.600, Transportation Planning Rule (TPR) Compliance

**Staff Findings:** To the extent applicable, these requirements largely mirror the requirements for a quasi-judicial amendment and are more specifically addressed below.

#### 4.1.700 General Provisions

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**Staff Findings:** The submitted applications contained all of the materials set forth in this Section and was deemed complete on May 14, 2020. The subject property constitutes a lot of record for the reasons set forth above.

### CHAPTER 4.7 – LAND USE DISTRICT MAP AND TEXT AMENDMENTS

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#### 4.7.100 Purpose

The purpose of this Chapter is to provide standards and procedures for legislative and quasi-judicial amendments to this Code and the Land Use District map. These amendments will be referred to as “map and text amendments.” Amendments may be necessary from time to time to reflect changing community conditions, needs and desires, to correct mistakes, or to address changes in the law.

**Staff Finding:** Staff finds that this provision is advisory.

#### 4.7.200 Legislative Amendments

Legislative amendments are policy decisions made by City Council. They are reviewed using the Type IV procedure in Chapter 4.1, Section 600 and shall conform to Section 4.7.600, as applicable.

**Staff Finding:** The proposal involves a comprehensive map amendment (UAR to LI), zoning map amendment (UAR to LI), and Comprehensive Plan Text Amendment. Such amendments are quasi-judicial and not legislative in nature because they are specific to certain properties. However, as discussed above with respect to Type IV reference in Table 4.1.200, Type IV procedures were followed when it would afford greater notice or public participation as compared to Type III procedures.

#### 4.7.300 Quasi-Judicial Amendment

- A. Quasi-Judicial Amendments.** Quasi-judicial amendments involve the application of adopted policy to a specific development application or Code revision. Quasi-judicial map amendments shall follow the Type III procedure as governed by Chapter 4.1.500, using standards of approval in Subsection “B” below. The approval authority shall be as follows:
1. The Planning Commission shall review and recommend Land Use District map changes which do not involve comprehensive plan map amendments;
  2. The Planning Commission shall make a recommendation to the City Council on an application for a comprehensive plan map amendment. The City Council shall decide such applications; and,
  3. The Planning Commission shall make a recommendation to the City Council on a land use district change application that also involves a comprehensive plan map amendment application. The City Council shall decide both applications.

**Staff Finding:** The applicant is proposing a land use district change (UAR to LI) that also involves a Comprehensive Plan Map amendment (UAR to LI). Using the standards of approval in Subsection “C” above, the Planning Commission shall make a recommendation to the City Council on a land use district change application that also involves a comprehensive plan map amendment application and the City Council shall decide both applications.

- B. Criteria for Quasi-Judicial Amendments.** A recommendation or a decision to approve, approve with conditions or to deny an application for a quasi-judicial amendment shall be based on all of the following criteria:
1. Approval of the request is consistent with the Statewide Planning Goals;

**Staff Finding:** Findings for specific statewide planning goals with respect to the proposed zone change and comprehensive plan amendment are as follows:

Goal 1, Citizen Involvement: During the plan amendment and zone change process, public notice of the proposal was provided to affected agencies and property owners in the surrounding area. Planning staff mailed and published notice of the proposal and public hearings. The City will hold public hearings before the Planning Commission and City Council. These opportunities for public involvement satisfy Goal 1.

Goal 2, Land Use Planning: The City of Sisters, through the Sisters Development Code, adopted criteria and procedures related to review of applications that have been acknowledged as compliant with State Land Use Goal 2. In accordance with Goal 2, the applicant applied for the plan amendment and zone change following the procedures set out in the Sisters Development Code. The City will provide public notice and conduct public hearings on the application in accordance with the Sisters Development Code. Staff finds that Goal 2 is satisfied because the proposal has been submitted and reviewed in accordance with the City's acknowledged planning review process.

Goals 3 and 4, Agricultural and Forest Lands: These Goals are not applicable as the Subject Property is not designated as either Agricultural or Forest Lands nor qualify as resource lands as the Subject Property is located within an urban growth boundary.

Goal 5, Natural Resources, Scenic and Historic Areas, and Open Spaces: Goal 5 aims “*To protect natural resources and conserve scenic and historic areas and open spaces.*” The Subject Property does not contain any resources identified in the City’s Goal 5 inventory, which is a component of the City’s Comprehensive Plan. Because there is no impact on the City’s acknowledged Goal 5 inventory, the proposal does not implicate Goal 5.

Goal 6, Air, Water and Land Resources Quality: The applicant is proposing to rezone and redesignate the property from Urban Area Reserve to Light Industrial. The application does not propose any development or site work as part of this application and thus provides no change to the city's air, water, or land resources quality. Estimated impacts to the City's water and sewer systems are reviewed further below. At the time of development, the applicant will be required to provide more detailed plans relating to transportation, water, wastewater, and stormwater management on and adjacent to the site to ensure compliance with Goal 6 through the City's Development Code.

Goal 7, Areas Subject to Natural Hazards: The Subject Property does not include areas subject to flooding or landslide activity. The Subject Property is not located in a known natural disaster or hazard area. The natural hazard of wildfire for the Subject Property is the same as other properties in this geographic area. The proposal to rezone and redesignate the property from Urban Area Reserve to Light Industrial does not pose any additional natural hazard risk.

Goal 8, Recreational Needs: The proposed amendments do not impact the City's ability to plan for the recreational needs of citizens and visitors. The subject property is not noted as a needed park or recreational facility in the City's Comprehensive Plan or Parks Master Plan. The changes proposed by the applicant do not alter any park space needs within City limits. Because the proposal is to allow for industrial development, and not residential development, the proposal does not change any assumptions of the City's Parks Master Plan regarding demand for parks.

Goal 9, Economic Development: The applicant is seeking the proposed amendments in order to increase the City's industrial land supply and promote additional opportunities for industrial development. The applicant provided the following response to this goal in the burden of proof:

*The proposed amendments directly support the City's efforts to accommodate diversification and improvement of the economy by providing needed industrial lands. According to a recent EDCO report (see Attachment H), the Sisters area has missed five light industrial economic opportunities due to limited inventory. Of these five, four required one-acre or smaller lot sizes and one required a 55,000 sf lot size. By early 2020, the amount of developable LI-designated lands inside the Sisters UGB has significantly decreased. Attachments K, L, and M illustrate the status of the City's recent inventory of employment lands within the UGB. These documents clearly demonstrate a severe lack of needed industrial land within the UGB. As the attachments indicate, there is currently only one light industrial parcel of 0.58 acres remaining in the City that is not developed, constrained, or utilized with an active use. Development within the North Sisters Business Park zone has increased significantly and the occupancy rate is 100%. Current vacancy rates regionally are also lower than historic rates. Based on recent summaries by Economic Development for Central Oregon (EDCO), "Sisters has not had enough available light industrial inventory to take advantage of opportunities." EDCO further reports that the majority of light industrial lot needs in the area are currently less than one acre, but some flexibility in sizing is desired to accommodate an opportunity for a larger project.*

*Further, in 2014, more than half of the Three Sisters Business Park was rezoned from light industrial to residential. Justification for this change was the lull in lot sales and construction activity during and following the recession. The proposed comprehensive plan amendment and zone change of the subject property (from UAR to LI) support Goal 9 by replenishing a portion of these lost light industrial lands.*

Staff finds that there is a need to augment the City's supply of industrial lands to meet demand for such lands within the planning period. The redesignation and rezoning of lands within the City's urban holding

area to an industrial district will promote increased economic development opportunities within the City limits. Staff finds the proposal to be in compliance with Goal 9.

Goal 10, Housing Development: The proposed application does not affect the amount of designated residential land within the City limits. The property is designated as an urban holding zone and was not previously contemplated for housing. Staff finds the proposal complies with Goal 10.

Goal 11, Public Facilities and Services: The proposal provides additional impact to City services as the uses in the Light Industrial district require more water and sewer capacity than was previously contemplated for the urban holding area. The applicant has provided sufficient detail through its water and sewer impact analyses to determine appropriate mitigation to serve the site and ensure adequate capacity Citywide. Additional detail regarding mitigation is provided in section 4.7.300(B)(3) below.

Goal 12, Transportation: Statewide Land Use Goal 12 is implemented through OAR 660 Division 12 and more specifically the "Transportation Planning Rule" (TRP) in OAR 660-12-0060. The applicant provided a Traffic Impact Statement prepared by Lancaster Mobley titled "Updated Transportation Impact Study for Sisters Industrial Subdivision" and dated May 6, 2020. The City Traffic Engineer reviewed the traffic study for compliance with Goal 12 and the TRP. The analysis noted a significant impact to three City intersections: US 20/Barclay Drive, US 20/Pine Street, and US 20/Locust Street. The applicant proposed to mitigate the degradation of the three intersections through a pro-rata share of the cost (\$98,469) to construct a single-lane roundabout at US 20/Locust Street. This roundabout project and partial funding sources have been identified in the City's Transportation System Plan.

The analysis showed that there would still be significant impact to the three intersections even if the US 20/Locust Street Roundabout were constructed. To ensure compliance with the TRP, the City's Traffic Engineer is requiring the applicant to instead provide a pro-rata share (\$98,604 as detailed below) toward improvements for the City's Alternate Route. The Alternative Route, as the name suggests, is a project contemplated by the City's TSP to establish a route through Barclay Drive as an alternative to Highway 20 in an effort to reduce demand on the three impacted intersections. This payment would specifically support: variable messaging signs, alternate route wayfinding signs, and completion of the Barclay/Locust roundabout. The Oregon Department of Transportation Provided a response to this requirement and are in agreement with the proposed mitigation conditions of approval surrounding transportation and TRP compliance. Additional detail regarding mitigation is provided in section 4.7.300(B)(3) below.

Goal 13, Energy Conservation: The applicant is proposing to redesignate the property from Urban Area Reserve to Light Industrial. The location of the subject property adjacent to Highway 20 and other LI zones will facilitate energy conservation than location of need industrial lands at more remote locations.

Goal 14, Urbanization: The proposed application seeks to redesignate existing land within the City limits and the City's Urban Growth Boundary from a holding zone to a Light Industrial Zone. The proposed amendments directly support the City's efforts to accommodate urban populations and employment inside the urban growth boundary by creating needed employment land within the UGB.

Per the applicant's response in the burden of proof:

*According to a recent EDCO report (see Attachment H), the Sisters area has missed five light industrial economic opportunities due to limited inventory. Of these five, four required one-acre or smaller lot sizes and one required a 55,000 sf lot size.*

*By early 2020, the amount of developable LI-designated lands inside the Sisters UGB has significantly decreased. Attachments K, L, and M illustrate the status of the City's recent inventory of employment lands within the UGB. These documents clearly demonstrate a severe lack of needed industrial land within the UGB. As the attachments indicate, there is currently only one light industrial parcel of 0.58 acres remaining in the City that is not developed, constrained, or utilized with an active use. Development within the North Sisters Business Park zone has increased significantly and the occupancy rate is 100%. Current vacancy rates regionally are also lower than historic rates. Based on recent summaries by Economic Development for Central Oregon (EDCO), "Sisters has not had enough available light industrial inventory to take advantage of opportunities." EDCO further reports that the majority of light industrial lot needs in the area are currently less than one acre, but some flexibility in sizing is desired to accommodate an opportunity for a larger project.*

*Further, in 2014, more than half of the Three Sisters Business Park was rezoned from light industrial to residential. Justification for this change was the lull in lot sales and construction activity during and following the recession. The proposed comprehensive plan amendment and zone change of the subject property (from UAR to LI) support Goal 14 by replenishing a portion of these lost light industrial lands.*

Staff agrees that the proposed amendments are supportive of utilizing land effectively within City Limits to accommodate future industrial land need.

Goals 15 through 19: Goals 15, 16, 17, 18 and 19 are not applicable because they only pertain to areas in western Oregon.

2. Approval of the request is consistent with the Comprehensive Plan;

**Staff Finding:** Compliance with applicable policies are discussed below.

3. The property and affected area is presently provided with adequate public facilities, services and transportation networks to support the use, or such facilities, services and transportation networks are planned to be provided concurrently with the development of the property. The applicant shall update the City of Sisters Master Plans for Water, Sewer, Parks and Transportation Systems subject to City Council approval, to reflect impacts of the rezoning on those facilities and long-range plans. The applicant must demonstrate that the property and affected area shall be served with adequate public facilities, services and transportation networks to support maximum anticipated levels and densities of use allowed by the District without adversely impacting current levels of service provided to existing users; or applicant's proposal to provide concurrently with the development of the property such facilities, services and transportation networks needed to support maximum anticipated level and density of use allowed by the District without adversely impacting current levels of service provided to existing users; and,

**Staff Finding:** The applicant has provided detail regarding impacts to water, sewer, and transportation systems resulting from anticipated uses of the subject property under the proposed zoning. The property currently does not contain any designated park or open space, therefore this item will remain unaffected. Specific details on impacts to public facilities are addressed below.

#### Water Impacts

The applicant's engineer provided a water and sewer analysis memorandum dated May 6, 2020 for review by the City. The applicant provided the following water analysis:

*This memo addresses two water service issues. Available Fire Flow and Water Rights.*

*Fire Flow - As shown on Attachments 1 and 2, Conceptual FH Layout and Fire Flow Calculation Worksheets, although a 12-inch water main will need to be constructed to meet the City's water system needs, a minimum sized 8-inch water main is adequate to serve the property and meet required fire flows of 2,500 gpm (or 1,500 gpm if the facilities are sprinklered). In conjunction with a future Preliminary Plat package submittal, the water system layout will be finalized, fire flow calculations re-verified, and any potential reimbursements identified. City staff has previously confirmed adequate water is available to serve the property.*

*Water Rights – As requested, a water volume analysis based on land use was performed to determine the acreage of water mitigation rights necessary to be purchased by the City and the corresponding fee required to be paid at building permit issuance to offset this City cost. Water volumes are typically calculated on a per capita basis, but this approach is not applicable to non-residential uses and the WCFPU does [not] identify any water usage rates associated with non-residential uses. As directed by City staff, the water volume analysis shall utilize a volume of 2,000 gallons per acre per day (gpad) for the subject property.*

*With this water usage rate the acres of water rights to be purchased and the associated fee is calculated as follows:*

*15.58 acres x (2,000 gallons / acre / day) = 11,373,400 gallons / year = 34.90 acre-ft / year*

*Reduce by 180 days per year (use 0.5) and 40% consumption factor ➡*

*(34.90 acre-ft / year) x 0.5 x 0.40 = 6.98 acre-ft / year*

*One acre purchased of water rights provides 1.8 acre-ft / acre / year at a cost of \$6,800 / acre.*

*Acres needed to be purchased □ (6.98 acre-ft) / (1.8 acre-ft / acre) = 3.88 acres*

*Fee Calculation ➡ 3.88 acres x (\$6,800 / acre) = \$26,384 total due at building permit issuance.*

*The fee total is for the entire project and will be divided on a per lot/acreage basis.*

The City Engineer reviewed the water analysis and found the following mitigation is required to reduce the proposal's impact on the City's water infrastructure

**Water Main Extension:** A 12" water main is shown across the property in the City's Water Capital Facilities Plan. Development on the property shall include the extension of a 12" water main extending from the existing water main at the northeast corner of the Ponderosa Lodge to the existing water main in North Pine Street, per the City Water Capital Facilities Plan. Reimbursement for cost of construction of this water main upsized from 8" to 12" may be submitted to the City if the developer is able to provide evidence that development on the property does not require 12" water main to provide adequate domestic and fire flows.

**Water Mitigation:** No water demand is allocated for this property as UAR zoned land. The developer has proposed a water mitigation fee for the anticipated EDU increase on the property. The water mitigation fee is based on typical City calculations for water mitigation. The calculated water right acreage is 3.88 acres at \$6,800 per acre, a calculated total of \$26,384. Water mitigation fees for 3.88 acres of water rights shall be required at the time of building permit. Cost per acre is \$6,800. Total water mitigation cost is \$26,384, which may be provided proportionally as building permits are obtained at the cost of \$705.45 per EDU (\$26,384 total mitigation required / 37.4 EDUs = \$705.45 per EDU). This number will continue to be refined at the time of subdivision or future land use application review.

### Sewer Impacts

The applicant's engineer provided a water and sewer memorandum analysis dated May 6, 2020 for review by the City. Per the City's Wastewater System Capital Facilities Plan (WWCFP) dated February 2016, a Light industrial property is assumed to generate 1 Equivalent Dwelling Unit (EDU) per 20,000 square feet. The EDU calculation determines the anticipated design flow from City systems to provide for uses in that specific land use district.

The applicant provided the following sewer analysis:

*15.58 acres Light Industrial x (43,560 SF / acre) x (1 EDU / 20,000 SF Light Industrial) = 34 EDU's.*

*As requested by city staff, a 10% increase was conservatively added to account for some potential higher sewer uses within the development. The EDU project total then becomes  $34.0 \times 1.1 = 37.4$  EDU's.*

*The corresponding design flow in gallons per minute can then be calculated. In the [Wastewater System Capital Facilities Plan Update], a design flow of 125 gallons per day (gpd) is assigned to each EDU, however City staff has stated the actual flow is 165 gpd per EDU (75 gpcd x 2.2 capita/dwelling) and requested the design flow calculation utilize this value. Utilizing this more conservative value, the design flow of the project is:  $37.4 \text{ EDU} \times 165 \text{ gpd} / \text{EDU} \times (1 \text{ day} / 1,440 \text{ minutes}) \times 2.4 \text{ peak factor} = 10.3 \text{ gpm}$ , rounded to 10 gpm. The analysis of the downstream sanitary sewer infrastructure components confirms that the existing system is adequate to accommodate the additional design flow of 10 gpm.*

The analysis goes on to discuss anticipate impacts to specific pump stations and gravity lines within the City to be impacted by this additional projected usage. The City Engineer reviewed the proposal for compliance and found the need for the following mitigation measures based on the sewer analysis:

**Pump Station #1:** Upgrades to Pump Station #1 are included in the WWCFP, an impact fee is required at a rate of \$1,372 toward Pump Station #1 upgrades.

**Barclay Sewer Main and Locust Interceptor:** The property in its current zoning has no allocated sewer use in the WWCFP. The Barclay Sewer Main is nearing capacity and the Locust Interceptor is included in the WWCFP to alleviate flows in the collection system. An impact fee is required at a rate of \$19,546 toward Locust Interceptor Improvements. Additionally, the Developer shall provide and install telemetry equipment at Pump Station #2 and #4 to eliminate simultaneous pumping.

**Pump Station #2:** The property in its current zoning has no allocated sewer use in the WWCFP. Pump Station #2 has limited wet well capacity. The memo provided by the applicant indicates that the development will generate 37.4 EDUs or 10 gpm. The adjacent development on the south side of Barclay will drain at 27 gpm above the amount anticipated by the master plan. To mitigate these impacts, the project shall be required to contribute 10/37 times the cost of the wet well expansion and emergency backup generator. The anticipated cost of the improvements are \$100,000 based on cost analysis of similar improvements. An impact fee of \$27,027 is required toward Pump Station #2 wet well capacity improvements and an emergency backup generator.

### Transportation

The applicant provided a Transportation Impact Study dated May 6, 2020 by Lancaster Mobley. In summary, the analysis found the following:

- Due to insufficient traffic volumes, traffic signal warrants are not projected to be met at the unsignalized study intersections of W. Barclay Drive at N. Pine Street and N. Pine Street at US Highway 20 under any of the analysis scenarios.

- Three of the study intersections are either currently operating or projected to operate with v/c ratios in excess of the maximum allowable ODOT performance standards:
  - US Highway 20 at W. Barclay Drive: Per the City’s Transportation System Plan (TSP), placing additional emphasis on Barclay Drive as an alternate route, particularly for trucks, will help distribute demand. This emphasis would serve to balance volumes at the roundabout, improving operation and extending the capacity of the intersection.
  - N. Pine Street at US Highway 20: During peak hours when delays are long, drivers will self-select how they enter US Highway 20 to avoid excessive delays. Local traffic may choose a number of other routes to avoid US Highway 20 and utilize the local street system. For this reason, no mitigation is recommended.
  - N. Locust Street at US Highway 20: The applicant proposes mitigation in the form of a proportional share payment for improvements at the intersection of N. Locust Street at US Highway 20. The identified proportional share payment of \$98,469 will be due as a lump sum prior to site development.

Within the application, the applicant states the Transportation Planning Rule is met and the proposal will either (a) not produce levels of service or access that are inconsistent with the functional classification of existing transportation facilities, or (b) for the intersection that will be impacted, the proportional share of payment will mitigate the impacts.

The City’s Traffic Engineer reviewed the proposal and found the proposed mitigation payment of \$98,469 toward the Locust/20 Roundabout to be unsatisfactory in meeting the Transportation Planning Rule. The single lane roundabout is already included within the City’s Transportation System Plan with partial funding. The applicant’s analysis notes that even with the roundabout in place, there would still be a significant impact to the system associated with the rezone. Accordingly, this mitigation (although generally supported) would not meet the mitigation criteria within subsection (2) of the Plan and Land Use Regulation Amendments section of the Transportation Planning Rule.

The City’s Traffic Engineer found that improvements to the US 20 Alternate Route along Barclay Drive, as noted in the applicant’s traffic report, would better mitigate significant impacts in the immediate and long term. As traffic would be diverted from Highway 20 and onto the alternative route, better relief could be provided for those intersections identified to be impacted. The City’s Traffic Engineer and the Oregon Department of Transportation are therefore requiring the following method for mitigation associated with the proposal. Half of the mitigation payment will be required immediately following the decision, and the other half is required at the time of the 100<sup>th</sup> trip on the property.

**Alternate Route Improvements:**

- Variable Message Signs for eastbound and westbound US 20 traffic (Est. \$400,000 with overhead mount, cabinet, and wireless communication system)
- Alternate Route Wayfinding Signage (Est. \$10,000 with fabrication/installation)
- Completion of single-lane US 20/Locust roundabout (Assumed funded, \$0)
- Completion of Barclay/Locust roundabout (50% costs from SDC, 50% unfunded -\$1,250,000)

Total Unfunded Projects: \$1,660,000

Estimated Pro-Rata Impact to US 20: 89 / 1,498<sub>1</sub> Through Trips = 5.94%

**Total Contribution: \$98,604**

Additionally, staff has added a condition of approval regarding a trip cap of 201 trips to carry forward with the property and to be included in the conditions of approval agreement. The intent of the trip cap is to

provide a tracking mechanism for city staff to monitor as future development occurs. As the transportation study provided by the applicant estimates a worst-case scenario of 201 trips, staff finds it is unlikely that this trip cap will be exceeded. If a future development application were estimated to exceed this limit, additional transportation analysis and mitigation may be required.

4. Evidence of change in the neighborhood or community or a mistake or inconsistency in the comprehensive plan or land use district map regarding the property which is the subject of the application; and the provisions of Section 4.7.600, as is determined to be applicable by the city of Sisters.

**Staff Finding:** The basis for all three proposed actions (Comprehensive Plan text amendment, Comprehensive Plan map amendment, zone change) as cited by the applicant is due to the rapid recent growth of the City and the current and projected lack of industrial lands available within City limits. The applicant provided several sources of information, including the City's Buildable Lands Inventory, noting the lack of available land supply for industrial lands as well as information from Economic Development of Central Oregon noting a lack of vacancy and several missed opportunities for industrial development and job creation within the City. In 2007, two industrial areas were rezoned from Light Industrial to Residential to accommodate residential subdivisions (ClearPine and Kuivato/Grand Peaks). The applicant states that the removal of this land contributed to the decrease in available industrial space and that the proposal to redesignate the subject property could provide additional land area to meet this need. Staff finds that the rapid growth of the City's population, in conjunction with the low supply and vacancy of existing industrial lands warrants the request for the rezoning and redesignation of the property from Urban Area Reserve to Light Industrial.

#### **4.7.400 Conditions of Approval**

A quasi-judicial decision may be for denial, approval, or approval with conditions. A legislative decision may be approved or denied.

**Staff Finding:** This section is procedural.

#### **4.7.500 Record of Amendments**

The Community Development Department shall maintain a record of amendments to the text of this Code and the Land Use Districts map in a format convenient for public use.

**Staff Finding:** This section is advisory. If approved, the Community Development Department will maintain a record of amendments to the Land Use Districts map in a format convenient for public use.

#### **4.7.600 Transportation Planning Rule Compliance**

- A. When a development application includes a proposed comprehensive plan amendment or land use district change, the proposal shall be reviewed by the City to determine whether it significantly affects a transportation facility, in accordance with Oregon Administrative Rule (OAR) 660-012-0060. Significant means the proposal would:
  1. Change the functional classification of an existing or planned transportation facility. This would occur, for example, when a proposal is projected to cause future traffic to exceed the capacity of "collector" street classification, requiring a change in the classification to an "arterial" street, as identified by the Transportation System Plan; or
  2. Change the standards implementing a functional classification system; or
  3. Allow types or levels of land use that would result in levels of travel or access what are inconsistent with the functional classification of a transportation facility; or

4. The effect of the proposal would reduce the performance standards of a public utility or facility below the minimum acceptable level identified in the Transportation System Plan.
- B.** Amendments to the Comprehensive Plan and land use standards which significantly affect a transportation facility shall assure that allowed land uses are consistent with the function, capacity, and level of service of the facility identified in the Transportation System Plan. This shall be accomplished by one of the following:
1. Limiting allowed land uses to be consistent with the planned function of the transportation facility; or
  2. Amending the Transportation System Plan to ensure that existing, improved, or new transportation facilities are adequate to support the proposed land uses consistent with the requirement of the Transportation Planning Rule; or,
  3. Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes of transportation.

**Staff Finding:** This provision largely mirrors the requirements of OAR 660-012-0060 – Transportation Planning Rule which is reviewed below.

**OAR 660-012-0060, Transportation Planning Rule  
660-012-0060 Plan and Land Use Regulation Amendments**

**(1)** If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:

- (a)** Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);

**Staff Finding:** The proposed application, as discussed in the traffic study and City Traffic Engineer’s analysis will not result in the need for additional changes to the functional classification of existing or planned transportation facilities. Accordingly, this section is not triggered.

- (b)** Change standards implementing a functional classification system; or

**Staff Finding:** The proposed application, as discussed in the traffic study and City Traffic Engineer’s analysis will not change any standards implementing the functional classification system. Accordingly, this section is not triggered.

- (c)** Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.

- (A)** Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;
- (B)** Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or

- (C) Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.

**Staff Finding:** The proposed zone change will not produce types or levels of travel or access that are inconsistent with the functional classification of the existing transportation facility. Upon rezoning properties within the subject site, three study intersections are currently or projected to operate with v/c ratios in excess of acceptable levels of operation per their respective jurisdictional standards. However, these intersections may be reasonably mitigated through a pro-rata payment toward the alternate route improvements as required by the City Traffic Engineer and discussed further below.

- (2) If a local government determines that there would be a significant effect, then the local government must ensure that allowed land uses are consistent with the identified function, capacity, and performance standards of the facility measured at the end of the planning period identified in the adopted TSP through one or a combination of the remedies listed in (a) through (e) below, unless the amendment meets the balancing test in subsection (2)(e) of this section or qualifies for partial mitigation in section (11) of this rule. A local government using subsection (2)(e), section (3), section (10) or section (11) to approve an amendment recognizes that additional motor vehicle traffic congestion may result and that other facility providers would not be expected to provide additional capacity for motor vehicles in response to this congestion.
  - (a) Adopting measures that demonstrate allowed land uses are consistent with the planned function, capacity, and performance standards of the transportation facility.
  - (b) Amending the TSP or comprehensive plan to provide transportation facilities, improvements or services adequate to support the proposed land uses consistent with the requirements of this division; such amendments shall include a funding plan or mechanism consistent with section (4) or include an amendment to the transportation finance plan so that the facility, improvement, or service will be provided by the end of the planning period.
  - (c) Amending the TSP to modify the planned function, capacity or performance standards of the transportation facility.
  - (d) Providing other measures as a condition of development or through a development agreement or similar funding method, including, but not limited to, transportation system management measures or minor transportation improvements. Local governments shall, as part of the amendment, specify when measures or improvements provided pursuant to this subsection will be provided.
  - (e) Providing improvements that would benefit modes other than the significantly affected mode, improvements to facilities other than the significantly affected facility, or improvements at other locations, if:
    - (A) The provider of the significantly affected facility provides a written statement that the system-wide benefits are sufficient to balance the significant effect, even though the improvements would not result in consistency for all performance standards;
    - (B) The providers of facilities being improved at other locations provide written statements of approval; and
    - (C) The local jurisdictions where facilities are being improved provide written statements of approval.

**Staff Finding:** As discussed in the memo provided by the City Traffic Engineer, Joe Bessman, the traffic study proposes mitigation through payment of a pro-rata cost toward the single-lane roundabout at the US 20/Locust Street intersection. Per the City Traffic Engineer:

However, this project [Locust/20 Roundabout] is already included within City plans and has an established funding mechanism within the City's System Development Charge methodology, and is assumed within the applicant's traffic study. Even with this improvement in place the traffic study shows that there is a significant impact associated with the rezone. Accordingly, this mitigation, while generally supported by the City and ODOT, would not meet the mitigation criteria within subsection (2) of the Plan and Land Use Regulation Amendments section of the Transportation Planning Rule. As summarized by the applicant's traffic report, the solution to the capacity needs within this area is to more fully implement the identified Alternate Route. The diversion of traffic from the highway onto the Barclay – Locust corridor will provide the necessary mitigation to avoid a significant impact at these cited highway intersections. City and ODOT staff agree with these overall findings, and offer the following revisions to the applicant's proposed mitigation:

A pro-rata payment shall be provided toward improvements along US 20 and the parallel Alternate Route to support east-west mobility needs along the US 20 corridor. Improvements to either facility is considered adequate mitigation for the finding of a significant impact based on OAR 660-12-0060(2)(e). The specific improvements that were identified by the City and ODOT include the following:

**Alternate Route Improvements:**

- Variable Message Signs for eastbound and westbound US 20 traffic (Est. \$400,000 with overhead mount, cabinet, and wireless communication system)
- Alternate Route Wayfinding Signage (Est. \$10,000 with fabrication/installation)
- Completion of single-lane US 20/Locust roundabout (Assumed funded, \$0)
- Completion of Barclay/Locust roundabout (50% costs from SDC, 50% unfunded -\$1,250,000)

Total Unfunded Projects: \$1,660,000

Estimated Pro-Rata Impact to US 20:  $89 / 1,498_1$  Through Trips = 5.94%

**Total Contribution: \$98,604**

With payment of this pro-rata contribution toward needed transportation infrastructure (and payment of Transportation SDC fees at time of site plan application) the impact of the rezone is adequately balanced with the benefit provided to the City and State system, which is the combination of US 20 and the Alternate Route. These fees should be earmarked for improvements to projects that benefit either the US 20 corridor or the alternate route.

Staff finds the identified mitigation provided by the City Traffic Engineer and relating to the Alternate Route Improvements offsets the potential impacts from the project and avoids further degradation of key infrastructure in Sisters from the zone change from UAR to LI. Transportation Planning Rule 660-012-0060 is satisfied for the proposed land use.

**SISTERS COMPREHENSIVE PLAN**

**Goal 9, Policy 3.**

The City shall continue to partner with the Community Action Team of Sisters, the Chamber of Commerce, Economic Development for Central Oregon, and other economic development agencies, to improve local and regional economic development efforts, attract businesses, and enhance and diversify the City's economic base. The City will participate with these agencies in periodic updating of the Sisters Strategic Action Plan for Economic Development.

**Staff Finding:** The City routinely coordinates with multiple agencies and committees regarding economic development. In the case of this application, the Applicant coordinated with EDCO and DLCD, which in

turn, communicated with Regional Solutions. EDCO provided third party data about the economic development trends and industrial land needs in Central Oregon and in Sisters. The applicant has met this policy as they sought partnership to increase local economic development efforts through adding additional industrial land supply within City limits.

**Goal 9, Policy 4.**

The City should support efforts to attract businesses providing family-wage employment opportunities.

**Staff Finding:** Within the burden of proof, the applicant describes the correlation between the need for industrial land within the City and highlights five missed opportunities for business development as cited by EDCO. The proposed comprehensive plan text/map amendments and zone change are the first steps to entitle the land as light industrial land, in support of Goal 9, Policy 4 to attract businesses providing family-wage employment opportunities. This goal is met.

...

**Goal 9, Policy 6.**

The City shall ensure an adequate supply of land for the needs of commercial, mixed-use and light industrial purposes.

**Staff Finding:** This application directly supports Goal 9, Policy 6, by proposing to create light industrial lands to replenish the industrial lands that were rezoned to residential in past years. In recent years, several industrial areas have been rezoned to accommodate needed housing within the City. While rezoning these properties to Sun Ranch Residential, Multi-Family Residential, and Residential, it also led to a decrease in the City's industrial land supply. As stated within the applicant's burden of proof, there is currently only one light industrial parcel of 0.58 acres remaining in the City that is not developed, constrained, or utilized with an active use. The proposed application would lead to the creation of 15+ acres of industrial land within the city limits and assist in providing an adequate land supply for light industrial purposes.

**Goal 14, Policy 1.**

The City shall promote development within the UGB to minimize the cost of providing public services and infrastructure and to protect resource land outside the UGB.

**Staff Finding:** This application promotes development of a property that is currently within the UGB, City limits, and is adjacent to existing infrastructure. Staff finds the rezoning of a property that is currently designated as an urban holding zone to Light Industrial meets the intent of this goal and will lead to the protection of resource lands outside of the UGB.

**Goal 14, General Requirements for United Forest Service Properties:**

In the event that this land is purchased with the intent of developing the land with either commercial, residential or light industrial uses, then it is the policy of the City of Sisters that any comprehensive plan and/or zoning amendment that affects the future development of the properties must meet specific criteria in order for the City to be able to support a potential plan amendment for the property. These criteria are as follows:

1. The amendment shall be based on a 20-year land need analysis for both employment and housing needs, including for affordable housing. The analysis shall include an updated buildable lands inventory for employment and housing needs as part of the 20-year land need analysis. The analysis shall be consistent with statewide planning Goal 9 (Economic Development) and Goal 10 (Housing).

**Staff Finding:** Within the burden of proof, the applicant provided detail surrounding employment land trends and building activity within Sisters and the broader Central Oregon region. These documents demonstrate a dearth of light industrial lands in Sisters, which has resulted in several “lost opportunities” as businesses have had to look elsewhere for suitable developable employment land. As noted earlier in this narrative, on several occasions (2007 and 2014), industrial lands were rezoned residential to respond to land needs at that time, resulting in a significant decrease in industrial lands. The proposed comprehensive plan map amendment and zone change are the first step to entitle the subject property in order to replenish the loss of industrial lands within the city. Consistency with Statewide Planning Goal 9 is demonstrated herein, above.

The subject property has not been contemplated for residential uses, nor does the application affect the residential lands supply. The South of Barclay Parcel has been contemplated for residential uses, however, is not included in this application and must necessarily be considered separately.

2. The amendment shall demonstrate consistency and integration with the city’s 2018 update of its Transportation System Plan, as well as the state’s Transportation Planning Rule as found in OAR 660-012.

**Staff Finding:** As discussed previously, the applicant demonstrates consistency for integration with the City’s TSP and the State’s Transportation Planning Rule. No amendments to the City’s TSP are required as the Alternative Route necessary to support the zone change is already contemplated by the TSP.

3. The amendment shall demonstrate that it has maximized urban efficiency consistent with city and state planning requirements and quality in urban design.

**Staff Finding:** The proposal maximizes urban efficiency by locating Lighting Industrial zoning in proximity to Highway 20 and other Light Industrial zone lands. This location minimizes the level of urban services necessary to serve the property, minimizes transportation demand as compared to other more remote locations, and meets a need of augmenting the supply of industrial lands within the City. Compliance with city and state planning requirements are addressed in other findings within this staff report. Development of the subject will be subject to a requirement for master planning which will further insure efficient and coordinated use of the land. Development of the subject will also be subject to site plan review, which includes design review requirements. Both the City’s master planning and site plan review requirements have been acknowledged as consistent with state planning requirements.

4. The amendment shall include a development plan for the South Barclay Parcel which integrates proposed land uses, transportation and building layout and design in a manner that meets the overall community needs. The development plan shall provide detailed commitments to design context, energy efficiency and public and private financing of public improvements.

**Staff Finding:** These applications are for the property north of Barclay and do not include any portion of the property south of Barclay, as it is still owned by the Forest Service. As such, this application necessarily cannot include a development plan for the South Barclay Parcel or a park plan for the South Barclay Parcel. Applicant’s proposal includes modifying the Comprehensive Plan to eliminate the requirement for simultaneous planning of the South Barclay Parcel. Because the South Barclay Parcel is still owned by the Forest Service with no definitive development plan, staff does not find it necessary to create a development plan for the South Barclay Parcel at this time.

5. The amendment shall demonstrate consistency and integration with the 2011 City of Sisters Parks Master Plan which recommends between 5 and 47 acres to be dedicated for a future community or regional park.

**Staff Finding:** This section relates to the entirety of the Forest Service owned property within City limits. The property has since been divided into three parcels. The East Portal property (7.73 net acres) or Parcel 1, 2008-30 is identified as a future park space in the City's 2016 Parks Master Plan and also in the 2019 Sisters Country Community Vision. Staff finds the intent of this policy is being met on a separate parcel, and therefore is not applicable to the subject property.

----- **End of Conclusionary Findings** -----

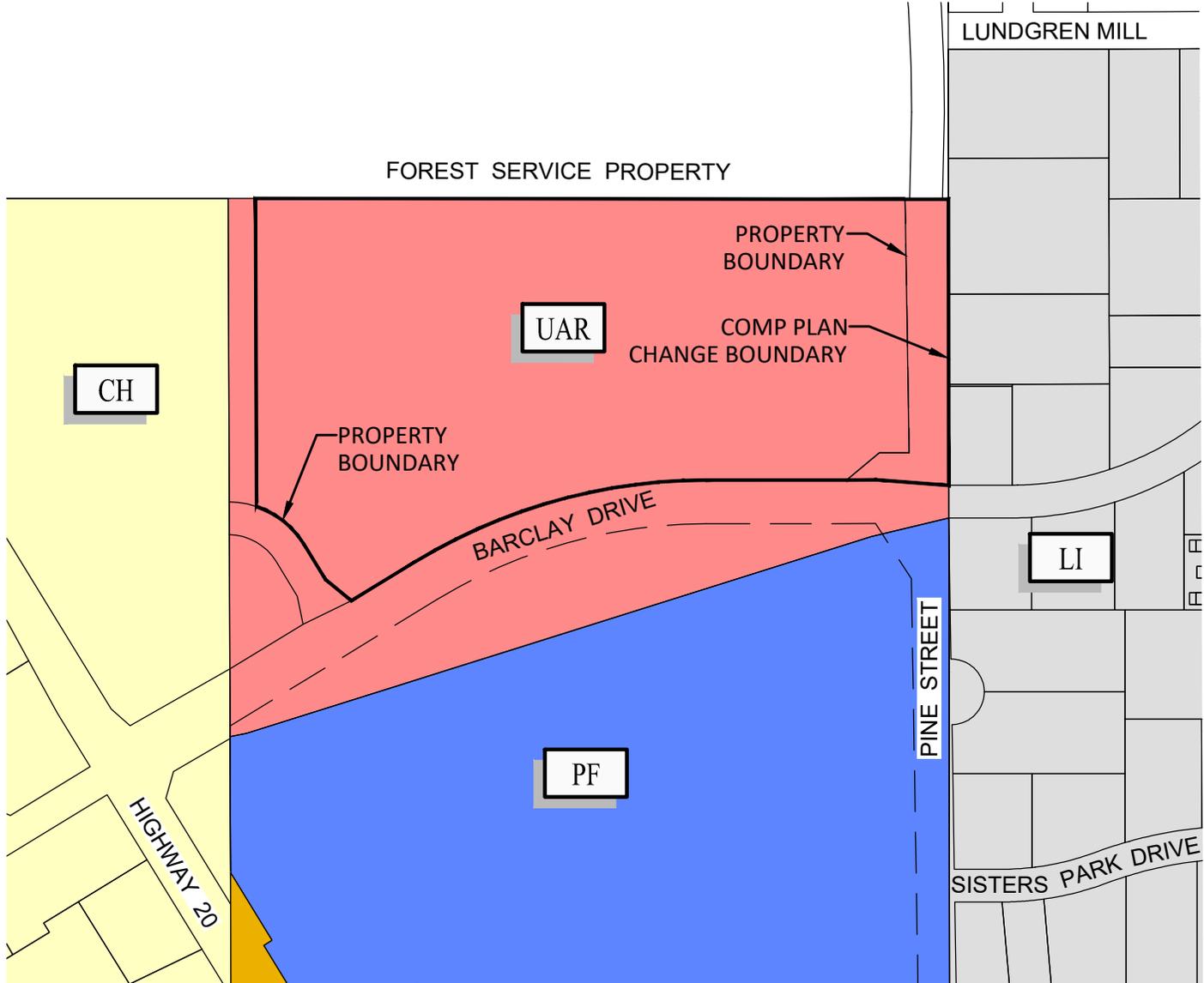




**EXHIBIT B: EXISTING MAPPING**

---

*attached*



## LEGEND

- UAR - URBAN AREA RESERVE
- LI - LIGHT INDUSTRIAL
- CH - COMMERCIAL HIGHWAY
- PF - PUBLIC FACILITY

SHEET NO.

1

DESIGNED:

DRAWN:

HHPR

CHECKED:

HHPR

DATE:

03/16/20



**Harper  
Houf Peterson  
Righellis Inc.**

ENGINEERS\*PLANNERS  
LANDSCAPE ARCHITECTS\*SURVEYORS  
250 NW Franklin Avenue, Suite 404, Bend, OR 97703  
phone: 541.318.1161 www.hhpr.com fax: 541.318.1141

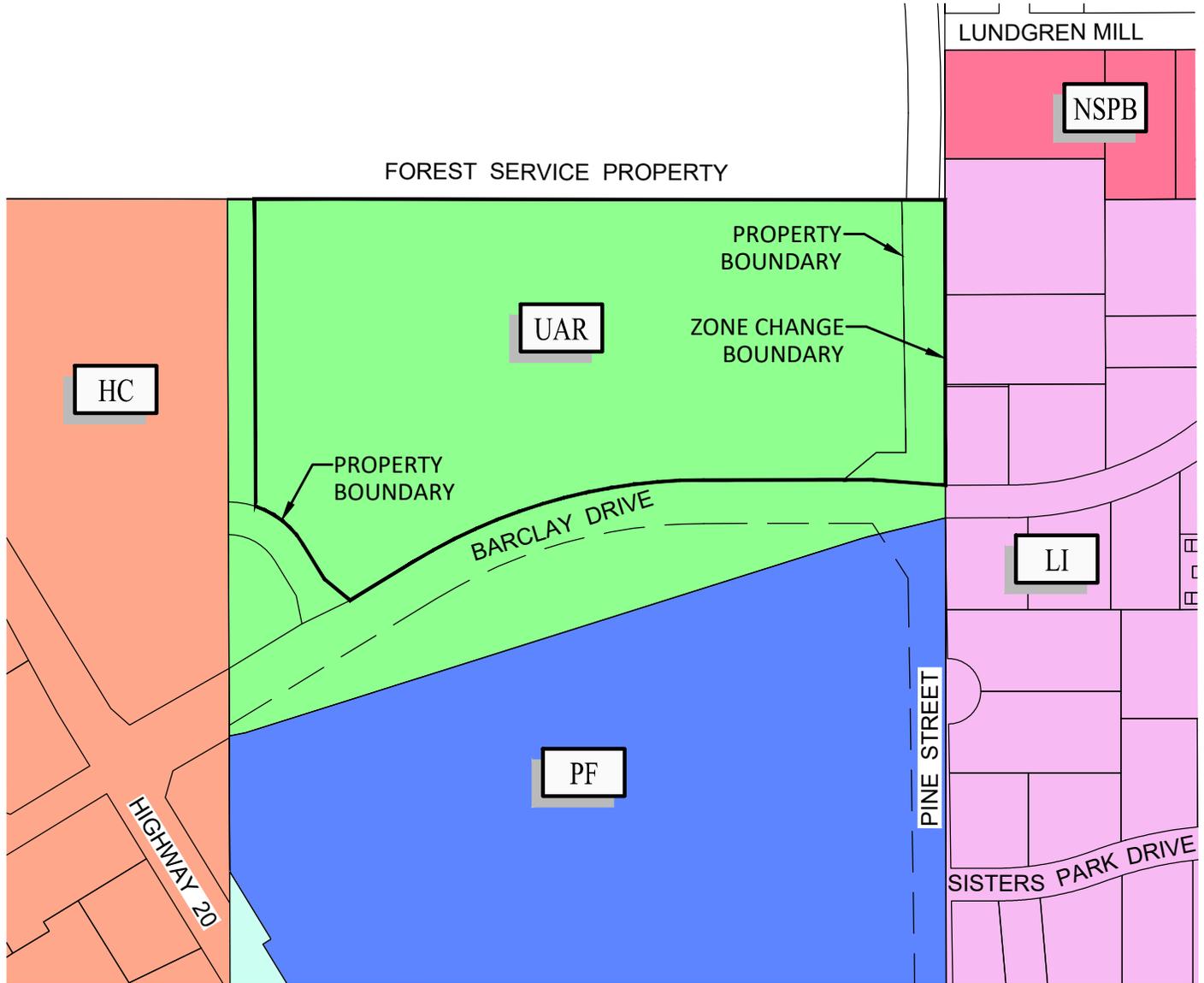
EXISTING  
COMPREHENSIVE PLAN EXHIBIT  
**USFS - PARCEL 3**  
SISTERS, OREGON

JOB NO.

KSP-01

DATE # DESCRIPTION

REVISIONS



**LEGEND**

- UAR - URBAN AREA RESERVE
- LI - LIGHT INDUSTRIAL
- HC - HIGHWAY COMMERCIAL
- NSPB - NORTH SISTERS BUSINESS PARK
- PF - PUBLIC FACILITY

SHEET NO.	<b>1</b>				
JOB NO.	KSP-01	DATE	#	DESCRIPTION	
		R E V I S I O N S			

DESIGNED:	
DRAWN:	HHPR
CHECKED:	HHPR
DATE:	03/16/20

**Harper Houf Peterson Righellis Inc.**

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250 NW Franklin Avenue, Suite 404, Bend, OR 97703  
phone: 541.318.1161 www.hhpr.com fax: 541.318.1141

EXISTING ZONING EXHIBIT

**USFS - PARCEL 3**

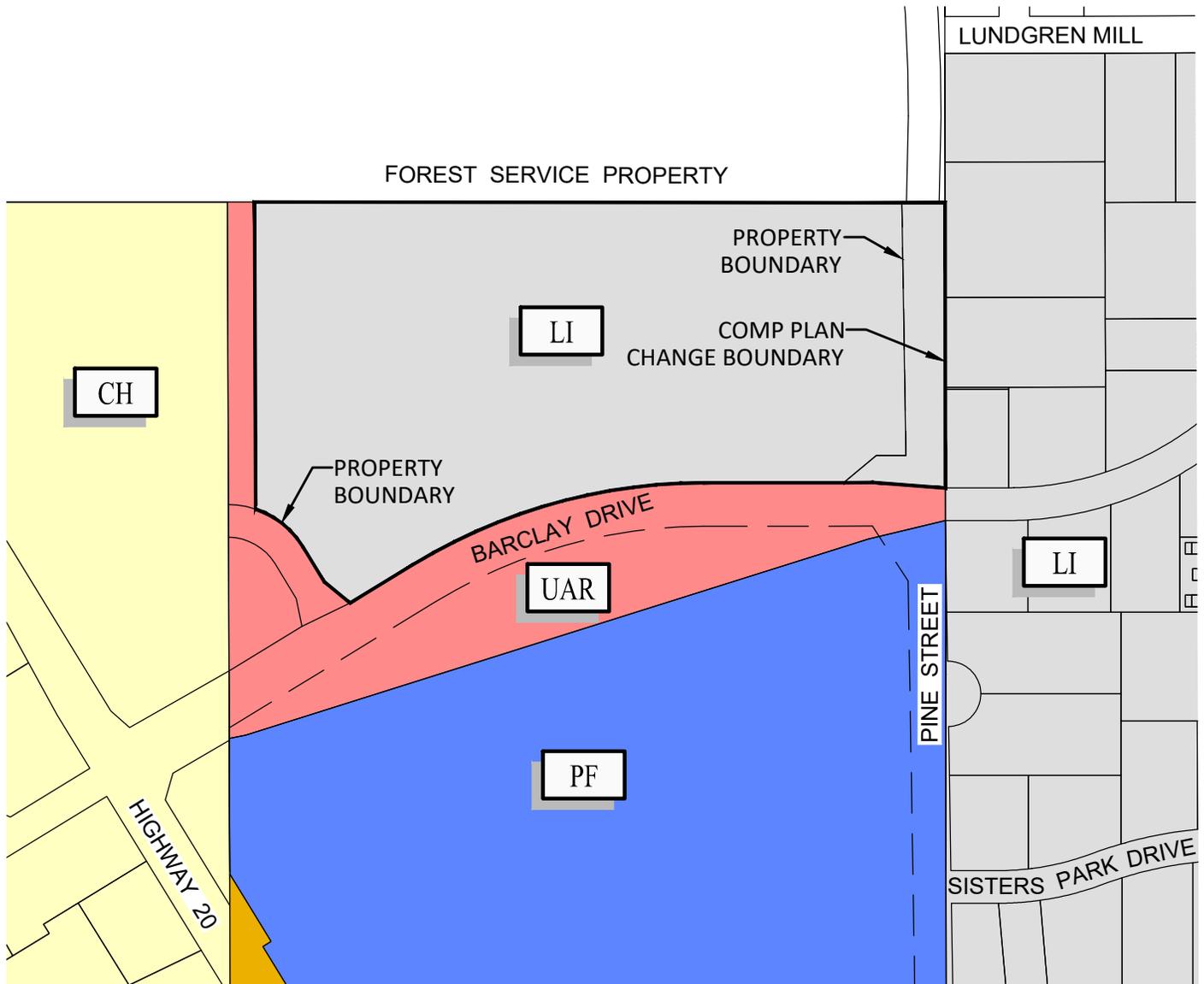
SISTERS, OREGON



**EXHIBIT C: PROPOSED MAPPING**

---

*attached*



**LEGEND**

- UAR - URBAN AREA RESERVE
- LI - LIGHT INDUSTRIAL
- CH - COMMERCIAL HIGHWAY
- PF - PUBLIC FACILITY

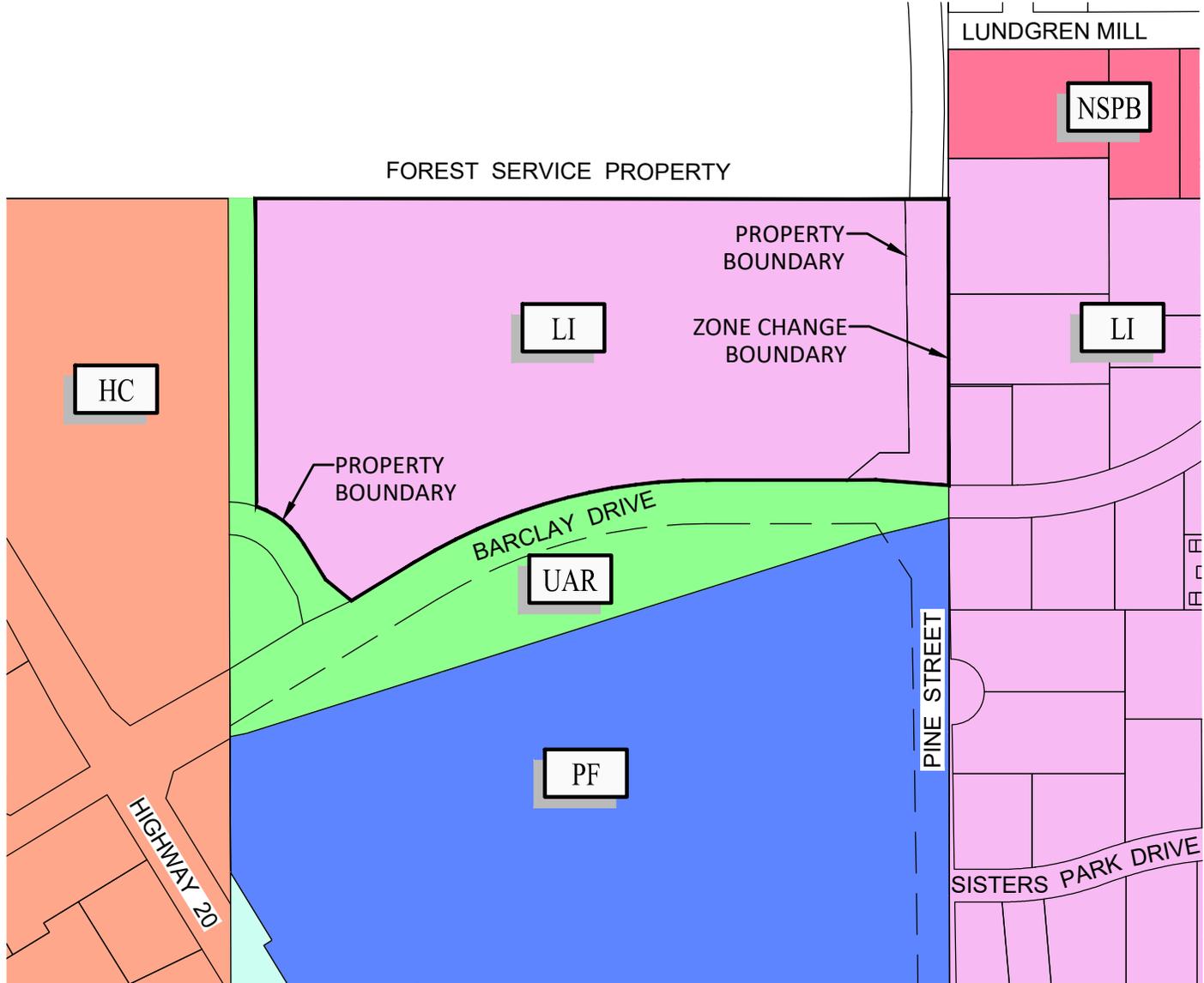
SHEET NO.	2		DESIGNED:	
JOB NO.	KSP-01		DRAWN:	HHPR
	DATE	#	CHECKED:	HHPR
	R E V I S I O N S		DATE:	03/16/20

**Harper**  
**Houf Peterson**  
**Righellis Inc.**

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phone: 541.318.1161 www.hhpr.com fax: 541.318.1141

PROPOSED  
COMPREHENSIVE PLAN EXHIBIT  
**USFS - PARCEL 3**  
SISTERS, OREGON



**LEGEND**

- UAR - URBAN AREA RESERVE
- LI - LIGHT INDUSTRIAL
- HC - HIGHWAY COMMERCIAL
- NSPB - NORTH SISTERS BUSINESS PARK
- PF - PUBLIC FACILITY

SHEET NO.	2				
JOB NO.	KSP-01	DATE	#	DESCRIPTION	
		R E V I S I O N S			

DESIGNED:	
DRAWN:	HHPR
CHECKED:	HHPR
DATE:	03/16/20

**Harper Houf Peterson Righellis Inc.**

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250 NW Franklin Avenue, Suite 404, Bend, OR 97703  
phone: 541.318.1161 www.hhpr.com fax: 541.318.1141

PROPOSED ZONING EXHIBIT

USFS - PARCEL 3

SISTERS, OREGON



**EXHIBIT D: TRANSPORTATION IMPACT STUDY AND CITY TRAFFIC ENGINEER  
RESPONSE**

---

*attached*



Date:	June 12, 2020
To:	Erik Huffman, PE, BECON
Cc:	Paul Bertagna, City of Sisters
	Miranda Wells, PE, and Don Morehouse, PE, ODOT
From:	Joe Bessman, PE
Project Reference No.:	1237
Project Name:	Sisters Industrial Subdivision (Spencer Rezone)
Subject:	Recommended Mitigation Proposal

The purpose of this memorandum is to provide a proposed mitigation for the significant impact created by the Spencer Light Industrial Rezone in Sisters, Oregon. This memorandum is based on data provided by Lancaster Engineering, dated May 6, 2020 that shows a significant impact at the following intersections:

- US 20/Barclay Drive
- US 20/Pine Street
- US 20/Locust Street

The traffic report shows that these three intersections will exceed ODOT mobility standards in the year 2040 even with the new single-lane roundabout at the US 20/Locust Street intersection regardless of the proposed rezone. The additional trips from the rezone create an incremental degradation in intersection performance, and the solution remains improvements to the Alternate Route as identified within the City's adopted Transportation System Plan.

Within the traffic study the proposed mitigation is to pay a pro-rata cost toward the single-lane roundabout at the US 20/Locust Street intersection. However, this project is already included within City plans and has an established funding mechanism within the City's System Development Charge methodology, and is assumed within the applicant's traffic study. Even with this improvement in place the traffic study shows that there is a significant impact associated with the rezone. Accordingly, this mitigation, while generally supported by the City and ODOT, would not meet the mitigation criteria within subsection (2) of the Plan and Land Use Regulation Amendments section of the Transportation Planning Rule.

As summarized by the applicant's traffic report, the solution to the capacity needs within this area is to more fully implement the identified *Alternate Route*. The diversion of traffic from the highway onto the Barclay – Locust corridor will provide the necessary mitigation to avoid a significant impact at these cited highway intersections. City and ODOT staff agree with these overall findings, and offer the following revisions to the applicant's proposed mitigation:

A pro-rata payment shall be provided toward improvements along US 20 and the parallel Alternate Route to support east-west mobility needs along the US 20 corridor. Improvements to either facility is considered adequate mitigation for the finding of a significant impact based on OAR 660-12-0060(2)(e):

*(e) Providing improvements that would benefit modes other than the significantly affected mode, improvements to facilities other than the significantly affected facility, or improvements at other locations, if:*

*(A) The provider of the significantly affected facility provides a written statement that the system-wide benefits are sufficient to balance the significant effect, even though the improvements would not result in consistency for all performance standards;*

*(B) The providers of facilities being improved at other locations provide written statements of approval; and*

*(C) The local jurisdictions where facilities are being improved provide written statements of approval.*

The specific improvements that were identified by the City and ODOT include the following:

- Variable Message Signs for eastbound and westbound US 20 traffic (Est. \$400,000 with overhead mount, cabinet, and wireless communication system).
- Alternate Route Wayfinding Signage (Est. \$10,000 with fabrication/installation)
- Completion of single-lane US 20/Locust roundabout (Assumed funded, \$0)
- Completion of Barclay/Locust roundabout (50% costs from SDC, 50% unfunded - \$1,250,000)

Total Unfunded Projects: \$1,660,000

Estimated Pro-Rata Impact to US 20:  $89 / 1,498^1$  Through Trips = 5.94%

**Total Contribution: \$98,604**

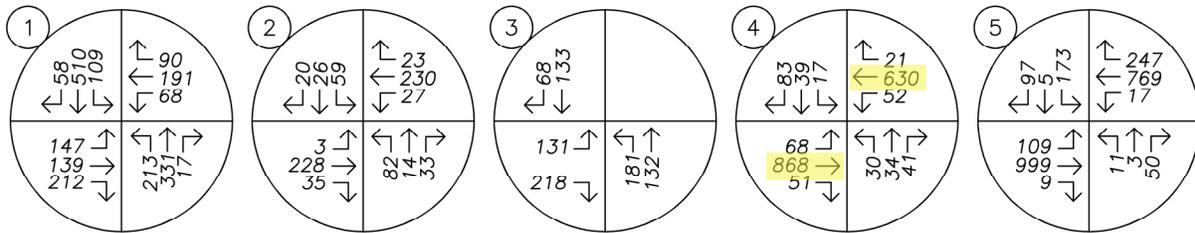
With payment of this pro-rata contribution toward needed transportation infrastructure (and payment of Transportation SDC fees at time of site plan application) the impact of the rezone is adequately balanced with the benefit provided to the City and State system, which is the combination of US 20 and the Alternate Route. These fees should be earmarked for improvements to projects that benefit either the US 20 corridor or the alternate route.

Please let me know if you have any questions on this methodology memorandum at (503) 997-4473 or via email at [joe@transightconsulting.com](mailto:joe@transightconsulting.com).

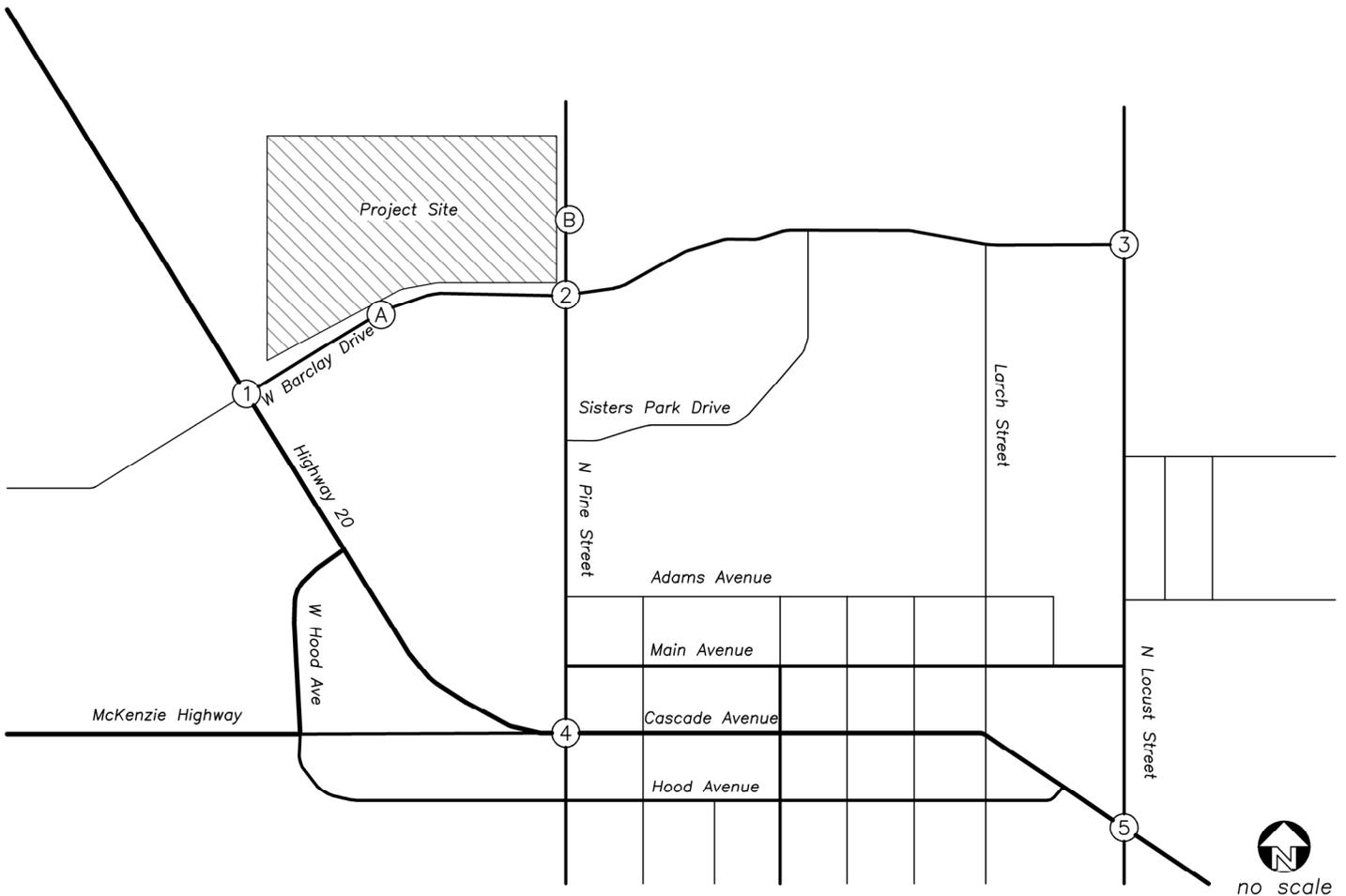
Attachments: Pro-Rata Worksheets

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<sup>1</sup> Based on projected 2040 highway through trips at US 20/Pine Street as identified within Figure 6 of the TIA (868 eastbound, 630 westbound)



NOTE: Site Accesses shown as (A) and (B)

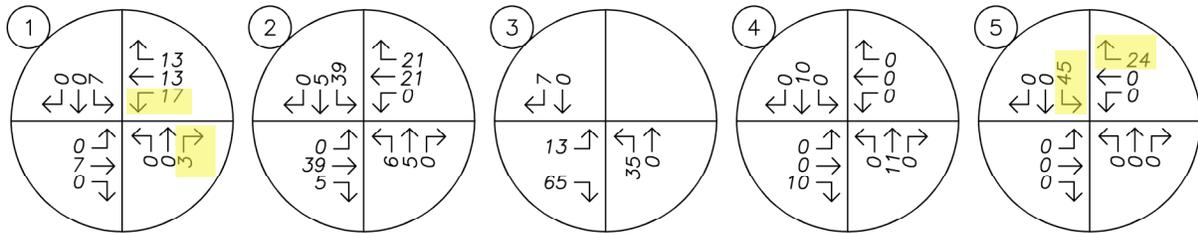


no scale

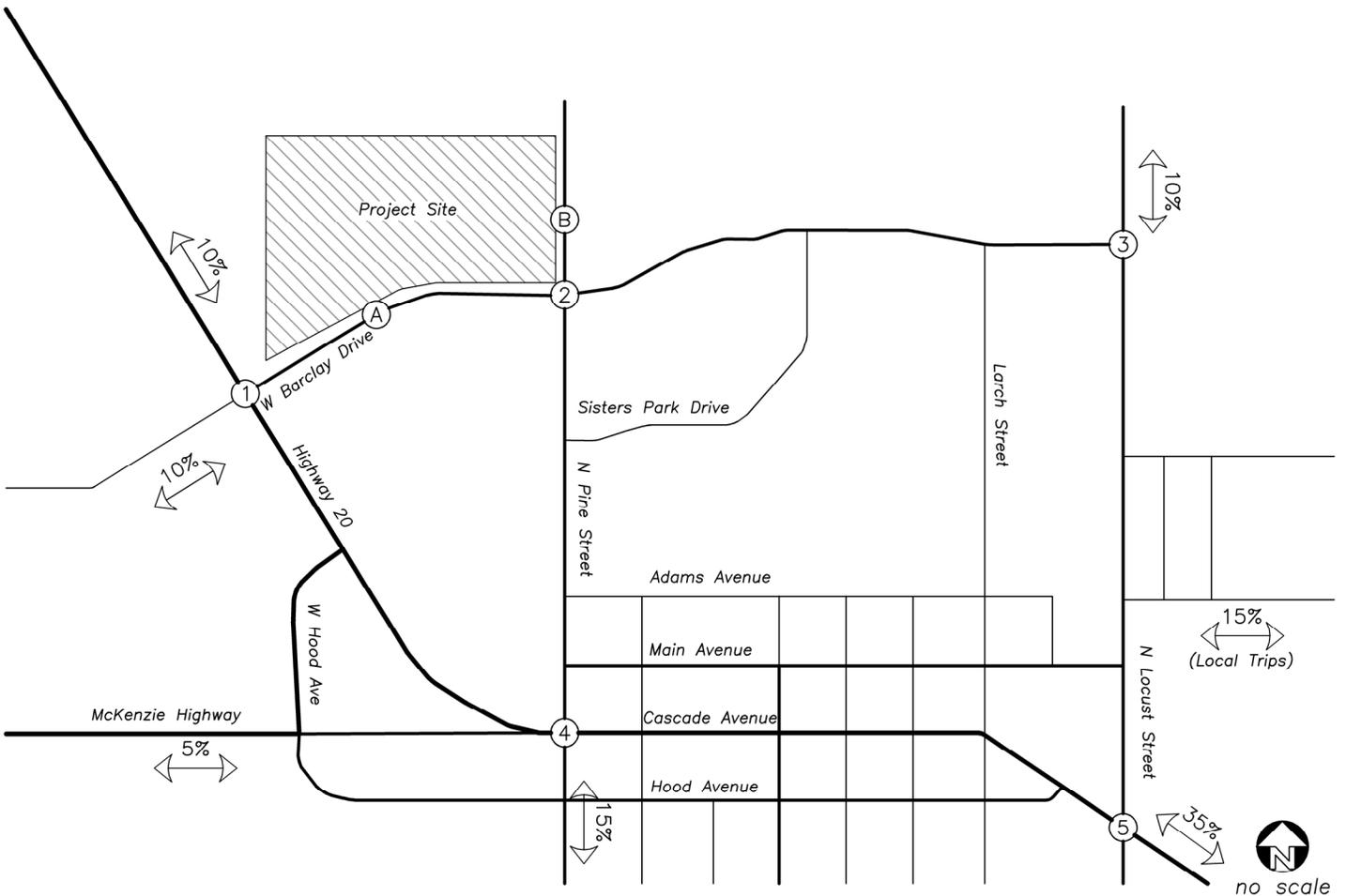
**LEGEND**

XX% PERCENT OF PRIMARY TRIPS

TRIP GENERATION			
	IN	OUT	TOTAL
PM	70	131	201



NOTE: Site Accesses shown as (A) and (B)





321 SW 4th Ave., Suite 400  
Portland, OR 97204  
503.248.0313  
lancastermobley.com

## Memorandum

To: **City of Sisters**

From: **Melissa Webb, PE**

Date: **May 6, 2020**

Subject: **Updated Transportation Impact Study for Sisters Industrial Subdivision (CP 20-02, ZC 20-01)**

---

This memorandum addresses updates to the original Transportation Impact Study (TIS) for the Sisters Industrial Subdivision, dated February 25, 2020.

In response to comments by the City of Sisters and Oregon Department of Transportation (ODOT) staff, the original report was updated and resubmitted. The updated TIS for the Sisters Industrial Subdivision is dated May 6, 2020. The comment log provided by ODOT staff is included in the appendix of the updated report, and also contains responses to each comment.

If you have any further questions or comments, please don't hesitate to contact us.

Sincerely,

A handwritten signature in blue ink that reads 'Melissa Webb'.

Melissa Webb, PE

Transportation Analyst



# Sisters Industrial Subdivision

Transportation Impact  
Study

Sisters, Oregon

Date: February 25, 2020

Revised: May 6, 2020

Prepared for: Kevin Spencer

Prepared by: Melissa Webb, PE

Todd Mobley, PE



EXPIRATION DATE: 6/30/2020

## Table of Contents

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## Executive Summary

1. The proposed project involves a change in zoning from Urban Area Reserve (UAR) to Light Industrial (LI) on a currently undeveloped site located off W Barclay Drive in Sisters, Oregon.
2. A variety of permitted land uses were assumed for all 17 industrial lots on the current site plan. In order to estimate a reasonable worst-case scenario for trip generation, it was assumed that four of the lots would have high trip-generating retail/service land uses, and the remaining 13 lots would have more traditional industrial land uses. The City of Sisters has reviewed the trip generation assumptions and agrees that it constitutes a reasonable worst-case analysis.
3. No significant trends or crash patterns were identified at any of the study intersections that are indicative of safety concerns. Accordingly, no safety mitigation is recommended per the crash data analysis.
4. The most recent site plan shows that proposed site access locations are in compliance with the access spacing standards shown in Development Code 3.1.300(l)(1). Actual site access locations will be determined at the time of a future land division applications, following the zone change.
5. Due to insufficient traffic volumes, traffic signal warrants are not projected to be met at the unsignalized study intersections of W Barclay Drive at N Pine Street and N Pine Street at US Highway 20 under any of the analysis scenarios.
6. Three study intersections are either currently operating or projected to operate with v/c ratios in excess of the maximum allowable ODOT performance standards:
  - US Highway 20 at W Barclay Drive: Per the City's Transportation System Plan (TSP), placing additional emphasis on Barclay Drive as an alternate route, particularly for trucks, will help distribute demand. This emphasis would serve to balance volumes at the roundabout, improving operation and extending the capacity of the intersection.
  - N Pine Street at US Highway 20: During peak hours when delays are long, drivers will self-select how they enter US Highway 20 to avoid excessive delays. Local traffic may choose a number of other routes to avoid US Highway 20 and utilize the local street system. For this reason, no mitigation is recommended.
  - N Locust Street at US Highway 20: The applicant proposes mitigation in the form of a proportional share payment for improvements at the intersection of N Locust Street at US Highway 20. The identified proportional share payment of \$98,469 will be due as a lump sum prior to site development.
7. The mitigation described above offsets the potential impacts from the project and avoids further degradation of key infrastructure in Sisters. Accordingly, the Transportation Planning Rule is satisfied.



## Project Description

### Introduction

The proposed project involves a change in zoning from Urban Area Reserve (UAR) to Light Industrial (LI) on a currently undeveloped site located off W Barclay Drive in Sisters, Oregon.

This report examines the impacts of the proposed change in land use on the transportation system in the vicinity of the project site. The purpose of this report is to analyze potential traffic impacts and recommend any required transportation mitigation measures to ensure safe and efficient performance of the transportation facilities that will be impacted by the proposed change in land use.

All supporting data and calculations are provided in the appendix to this report.

### Location Description

The project site is currently undeveloped and is located east of the intersection of W Barclay Drive at US Highway 20 in Sisters, Oregon. The immediate proposal is for a change in zoning from Urban Area Reserve (UAR) to Light Industrial (LI). Eventually, a land division will be proposed to subdivide the existing 17.11-acre lot into approximately 17 smaller lots, which could be occupied by various industrial land uses. The project site is shown in Figure 1.



Figure 1: Project Location (image from Google Earth)

## Vicinity Roadways

The proposed project is expected to impact four roadways near the site. Table 1 provides a description of each of the vicinity roadways.

Table 1: Roadway Characteristics

Roadway	Jurisdiction	Functional Classification	Speed (MPH)	Curbs & Sidewalks	On-Street Parking	Bicycle Lanes
US Highway 20	ODOT	State Highway/Arterial	20-35 posted	Yes	Downtown Core	Partial
W Barclay Drive	City of Sisters	Arterial	30 posted	Partial	No	Partial
N Pine Street	City of Sisters	Collector	25 posted	Partial	Yes	No
N Locust Street	City of Sisters	Arterial	20-40 posted	Partial	Partial	Partial

Table Notes: Functional Classification provided by the City of Sisters Transportation Plan (January 2010), Figure 7-1

## Study Intersections

Based on the location of the subject property, preliminary calculations of trip generation, and coordination with the City of Sisters, the following intersections were identified for analysis:

- US Highway 20 at W Barclay Drive;
- W Barclay Drive at N Pine Street;
- E Barclay Drive at N Locust Street;
- N Pine Street at US Highway 20; and
- N Locust Street at US Highway 20

A summarized description of the study intersections is provided in Table 2. A vicinity map showing the project site, vicinity streets, and study intersection configurations is shown in Figure 2.

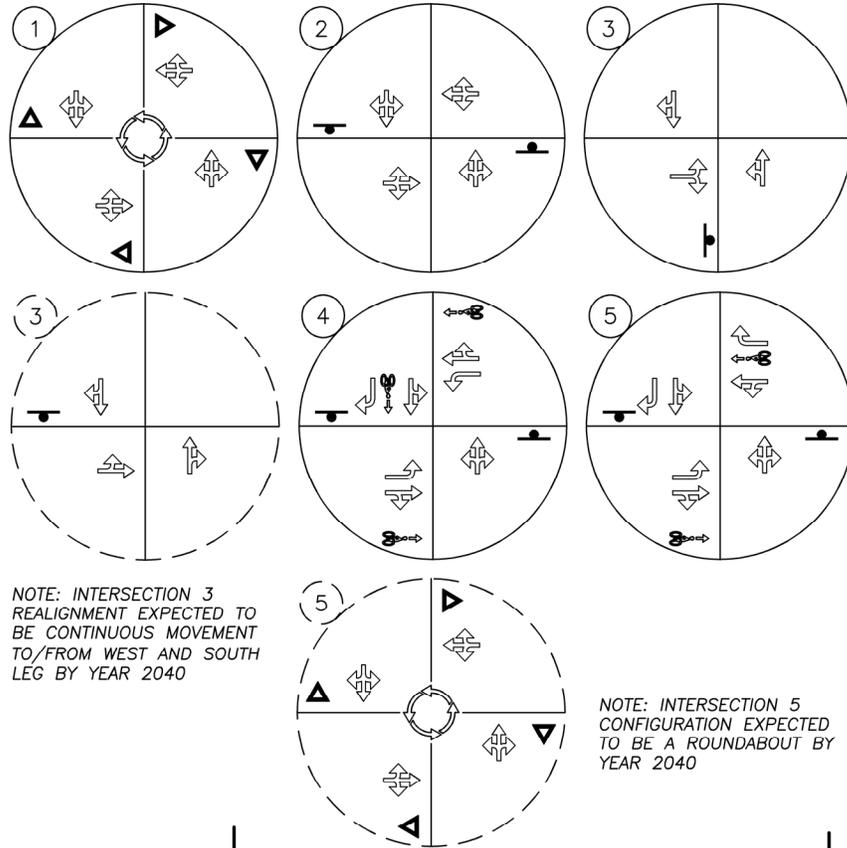
Table 2: Study Intersection Descriptions

Number	Intersection	Geometry	Traffic Control	Phasing/Stopped Approaches
1	US Highway 20 at W Barclay Drive	Roundabout	Yield-Controlled	NB/SB/EB/WB Yield-Controlled
2	W Barclay Drive at N Pine Street	Four-Legged	Stop-Controlled	NB/SB Stop-Controlled
3	E Barclay Drive at N Locust Street	Three-Legged	Stop-Controlled	EB Stop-Controlled
4	N Pine Street at US Highway 20	Four-Legged	Stop-Controlled	NB/SB Stop-Controlled
5	N Locust Street at US Highway 20	Four-Legged	Stop-Controlled	NB/SB Stop-Controlled



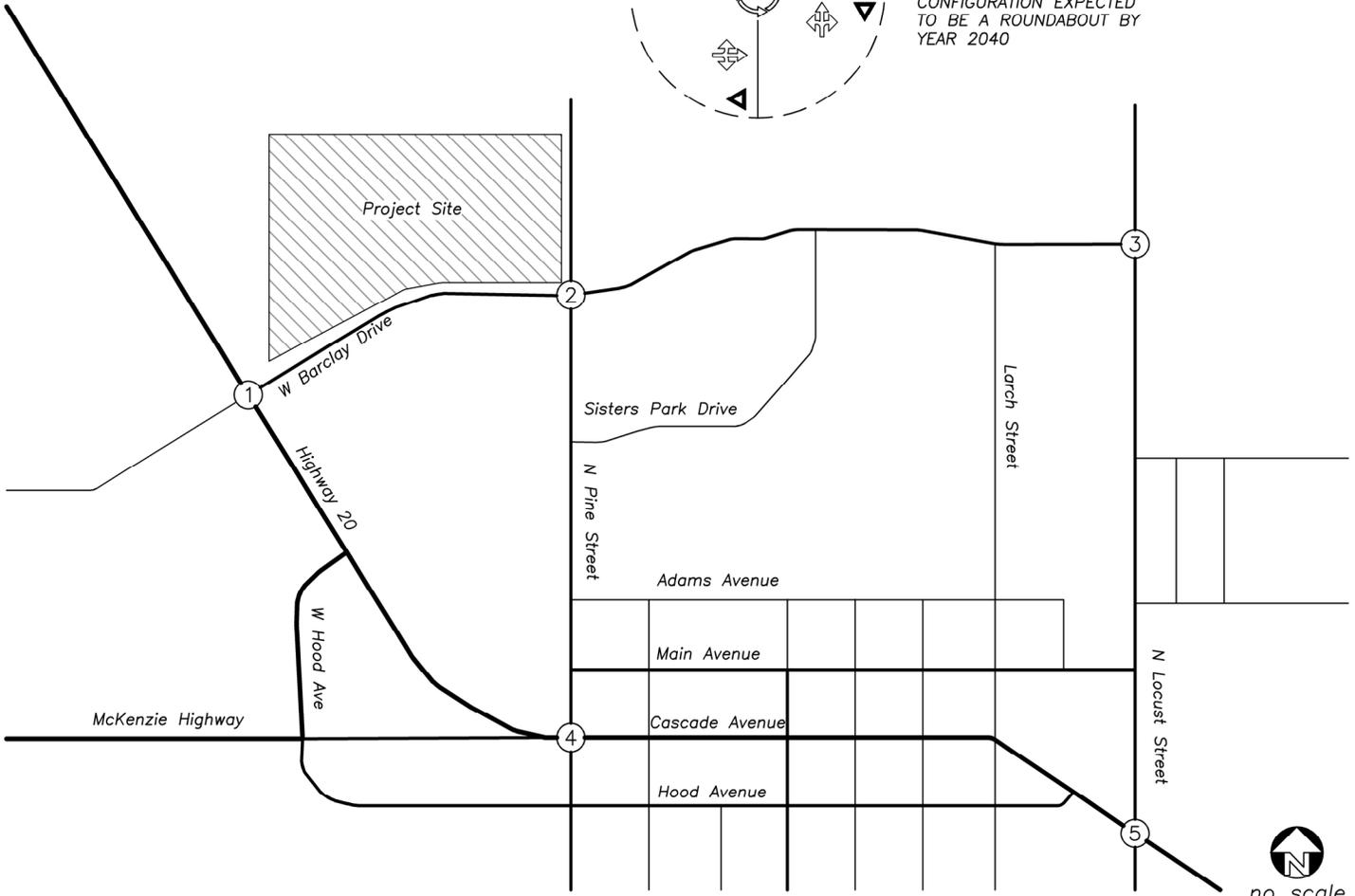
**LEGEND**

-  STUDY INTERSECTION
-  STUDY INTERSECTION
-  STOP SIGN
-  YIELD SIGN
-  ROUNDABOUT
-  BIKE LANE
-  PROJECT SITE
-  ARTERIAL ROADWAY
-  COLLECTOR ROADWAY
-  LOCAL ROADWAY



NOTE: INTERSECTION 3 REALIGNMENT EXPECTED TO BE CONTINUOUS MOVEMENT TO/FROM WEST AND SOUTH LEG BY YEAR 2040

NOTE: INTERSECTION 5 CONFIGURATION EXPECTED TO BE A ROUNDABOUT BY YEAR 2040



## Site Trips

### Trip Generation

The proposed project involves a change in zoning from Urban Area Reserve (UAR) to Light Industrial (LI) on a currently undeveloped site. Following this proposed change in zoning, a land division will be proposed to subdivide the existing 17.11-acre lot into approximately 17 smaller lots, according to the most recent site plan, which was used to guide development assumptions for the site. For each lot, a floor area ratio (FAR) was assumed in order to allow for adequate on-site parking, landscaping, etc. In general, a FAR of 25% was assumed for service or retail uses due to increased parking requirements, while industrial uses generally require less parking, so the assumed FAR was increased to 35%. A FAR of 10% was assumed for a specialty trade contractor use, as contractors typically have outdoor storage of large equipment and materials.

In order to estimate future trip generation of the site under the proposed LI zoning, a variety of permitted land uses were assumed for all 17 lots on the most recent site plan. Permitted land uses in the LI zone were determined from the City of Sister's Development Code 2.6.200. Table 2.6.1 lists permitted land uses for the LI district. In order to determine a reasonable worst-case scenario for uses in the LI district, permitted uses were chosen which were higher trip generators, but also included a mix of commercial and industrial uses. In addition, it was assumed that 4 of the lots would have a retail/service land use, and the remaining 13 lots would have an industrial land use. In addition, no reduction was made for internal trip capture within the 17-lot subdivision. The City of Sisters has agreed that this method represents a reasonable worst-case trip generation scenario.

To estimate the number of trips that will be generated, trip rates from the *Trip Generation Manual*<sup>1</sup> were used. Data for the following land use codes were used: 110 (*General Light Industrial*), 140 (*Manufacturing*), 150 (*Warehousing*), 180 (*Specialty Trade Contractor*), 640 (*Animal Hospital/Veterinary Clinic*), 842 (*Recreational Vehicle Sales*), 843 (*Automobile Parts Sales*), and 925 (*Drinking Place*). These land use codes were used to estimate the proposed zoning's trip generation based on the square footage of the buildings.

The trip generation calculations show that the proposed zoning is expected to generate 201 trips during the evening peak hour and 1,624 trips on a typical weekday. The trip generation calculations are summarized in Table 3 and detailed calculation worksheets are provided in the appendix.

---

<sup>1</sup> Institute of Transportation Engineers, *Trip Generation Manual*, 10<sup>th</sup> Edition, 2017.

Table 3: Trip Generation Summary

	ITE Code	Size	Evening Peak Hour			Weekday Total
			Enter	Exit	Total	
General Industrial	110	88,122	7	49	56	436
Manufacturing	140	34,102	7	16	23	134
Warehousing	150	21,344	1	3	4	38
Speciality Trade Contractor	180	3,049	2	4	6	32
Animal Hospital/Veterinary Clinic	640	11,217	16	24	40	241
Recreational Vehicle Sales	842	9,148	2	5	7	46
Automobile Parts Sales	843	8,494	20	22	42	470
Drinking Place	925	2,009	15	8	23	227
<b>Total</b>			<b>70</b>	<b>131</b>	<b>201</b>	<b>1,624</b>

*Note: The Sisters Transportation System Plan (TSP) did not allocate any trips to this site as part of the TSP. Therefore, for the purpose of the zone change, trip generation for development under the existing zoning was assumed to be zero.*

## Trip Distribution

The directional distribution of site trips to and from the proposed site was estimated based on locations of likely trip origins and destinations, as well as locations of major transportation facilities in the site vicinity. The following trip distribution was estimated and used for analysis. This distribution was revised in this version of this report to reflect comments received from the City of Sisters and ODOT.

- Approximately 35 percent of site trips will travel to/from the southeast along US Highway 20;
- Approximately 15 percent of site trips will travel to/from the south along S Pine Street;
- Approximately 15 percent of site trips will travel to/from local destinations along N Locust Street;
- Approximately 10 percent of site trips will travel to/from the northwest along US Highway 20;
- Approximately 10 percent of site trips will travel to/from the west along McKinney Butte Road;

- Approximately 10 percent of site trips will travel to/from the north along Camp Polk Road; and
- Approximately 5 percent of site trips will travel to/from the west along Highway 242 (McKenzie Highway);

The following assumptions were used for trip distribution:

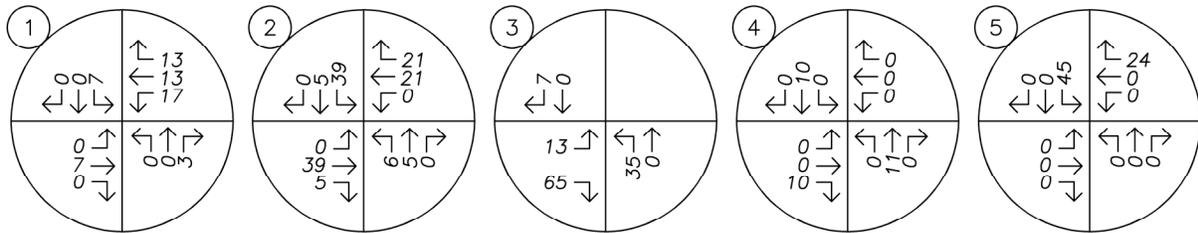
- For trips traveling to the project site north along N Pine Street: At the intersection of W Barclay Drive at N Pine Street, it was assumed that half of the trips would continue straight and use the site access at N Pine Street, and half of the trips would turn left and use the site access at W Barclay Drive.
- For trips traveling from the project site south along S Pine Street: It was assumed that half of the trips would exit the site, travel south along N Pine Street, cross US Highway 20, and continue southbound along S Pine Street. The other half of the trips were assumed to exit the site, travel west along W Barclay Drive to the roundabout at US Highway 20, travel southbound along US Highway 20, and make a right-turn onto S Pine Street and continue southbound.
- For trips traveling to the project site from the east along W Barclay Drive: At the intersection of W Barclay Drive at N Pine Street, it was assumed that half of the trips would continue straight and use the site access at W Barclay Drive, and half of the trips would turn right and use the site access at N Pine Street.
- For trips traveling from the project site to the east along W Barclay Drive: It was assumed that half of the trips would exit via the site access at W Barclay Drive and continue straight at the intersection of W Barclay Drive at N Pine Street. It was also assumed that half the trips would exit via the site access at N Pine Street and turn left onto W Barclay Drive at the intersection of W Barclay Drive at N Pine Street.

Figure 3 shows the site distribution and assignment for the proposed zone change.

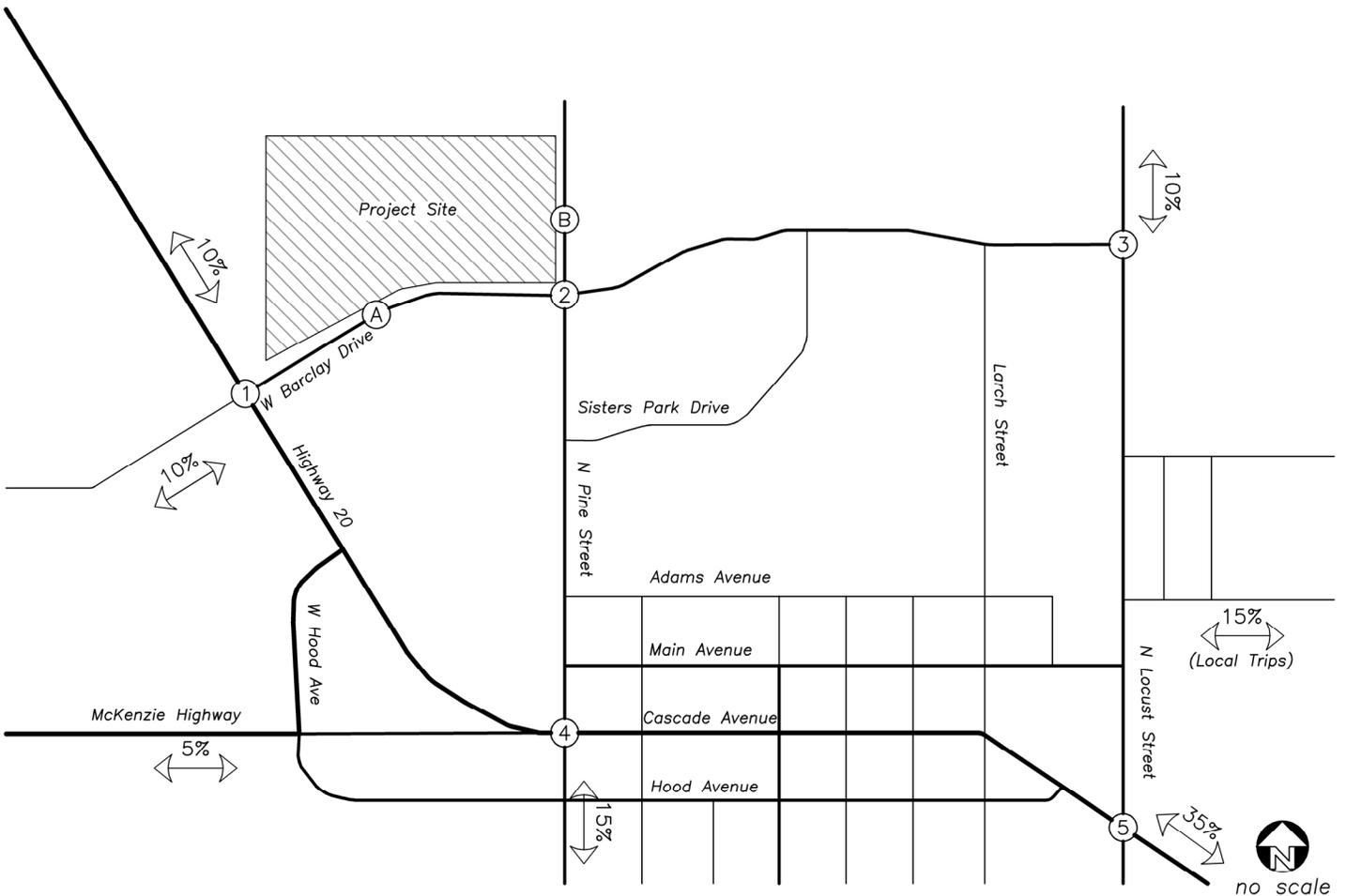
**LEGEND**

XX% PERCENT OF PRIMARY TRIPS

TRIP GENERATION			
	IN	OUT	TOTAL
PM	70	131	201



NOTE: Site Accesses shown as (A) and (B)



## Traffic Volumes

### Existing Conditions

Traffic counts were conducted at the study intersections on October 15, 2019, from 4:00 PM to 6:00 PM, and again on October 16, 2019, from 7:00 AM to 9:00 PM. At the time of the counts, schools were in session and Highway 242 (McKenzie Highway) was still open over the pass. Turning movement volumes corresponding to the system peak hour were used for analysis.

Since US Highway 20 is under the jurisdiction of the Oregon Department of Transportation (ODOT), procedures described in ODOT's *Analysis Procedures Manual* were used to seasonally adjust existing traffic volumes to reflect the 30<sup>th</sup>-highest hour in a typical year. Using a map of seasonal trends, this portion of US Highway 20 was determined to show a summer trend, and a seasonal adjustment factor (SAF) of 1.18349 was applied to through volumes along US Highway 20.

The existing seasonally-adjusted traffic volumes at the study intersections are shown in Figure 4.

### Background Conditions

To provide analysis of the impact of the proposed land use, an estimate of future traffic volumes is required. A growth rate must be applied to recorded traffic volumes in order to calculate future volumes.

Growth rates for through traffic on US Highway 20 were derived using ODOT's 2038 Future Volume Table. Corresponding data was used for each of the three intersections along US Highway 20:

- Data corresponding to Milepost 100.5 (ODOT Highway 16) was used for the intersection of US Highway 20 at W Barclay Drive;
- Data corresponding to Milepost 92.52 (ODOT Highway 15) was used for the intersection of N Pine Street at US Highway 20; and
- Data corresponding to Milepost 92.85 (ODOT Highway 15) was used for the intersection of N Locust Street at US Highway 20.

The following growth rates were applied to US Highway 20 through volumes over a 21-year period to determine year 2040 background volumes:

- US Highway 20 at W Barclay Drive – 1.02386
- N Pine Street at US Highway 20 – 1.16458
- N Locust Street at US Highway 20 – 1.30706

For non-ODOT facilities, a compounded growth rate of two percent per year was applied to the existing traffic volumes over a 21-year period to determine year 2040 background volumes.

In addition to the expected background traffic growth in the site vicinity, the nearby McKenzie Meadows subdivision will impact future volumes at the study intersections. This development is proposed for the site west of McKinney Ranch Road and east of Sisters High School, on the north side of W McKinney Butte Road, and will include 150 single-family homes and 55 units of low-rise multi-family housing. Since this development will likely

be contributing trips to the transportation system by 2040, the site trips it is projected to generate were included in the 2040 background traffic volumes. A figure showing the in-process site trips generated by this development that are expected to impact the study intersections is provided in the appendix.

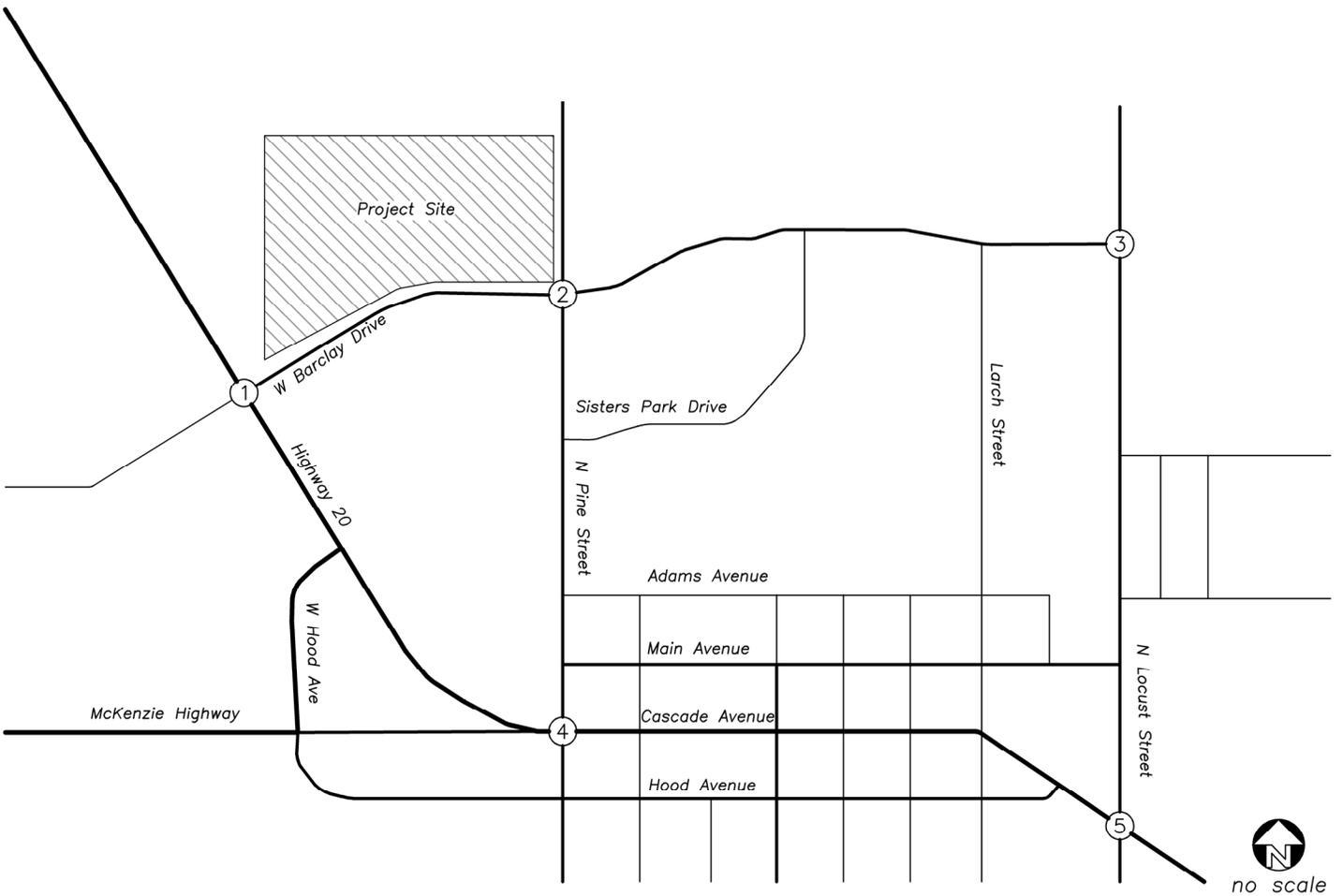
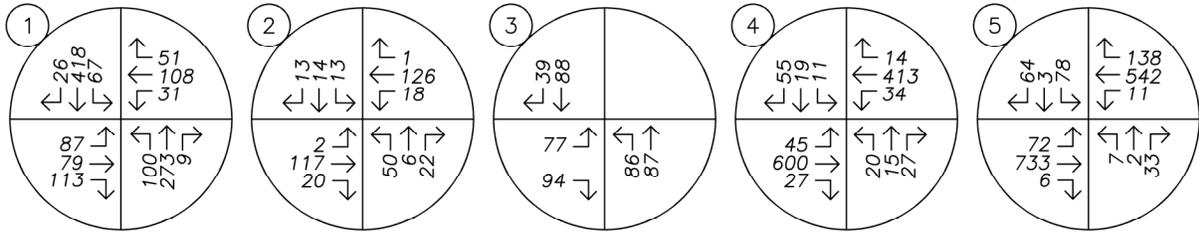
The Threewind Master Plan is also expected to impact future volumes at the study intersections. This development is proposed for the site southeast of W McKinney Butte Road and west of W Hood Avenue, and will include 50 units of multi-family housing and 28,000 square feet of commercial space. Since this development will likely be contributing trips to the transportation system by 2040, the site trips it is projected to generate were included in the 2040 background traffic volumes. A figure showing the in-process site trips generated by this development that are expected to impact the study intersections is provided in the appendix.

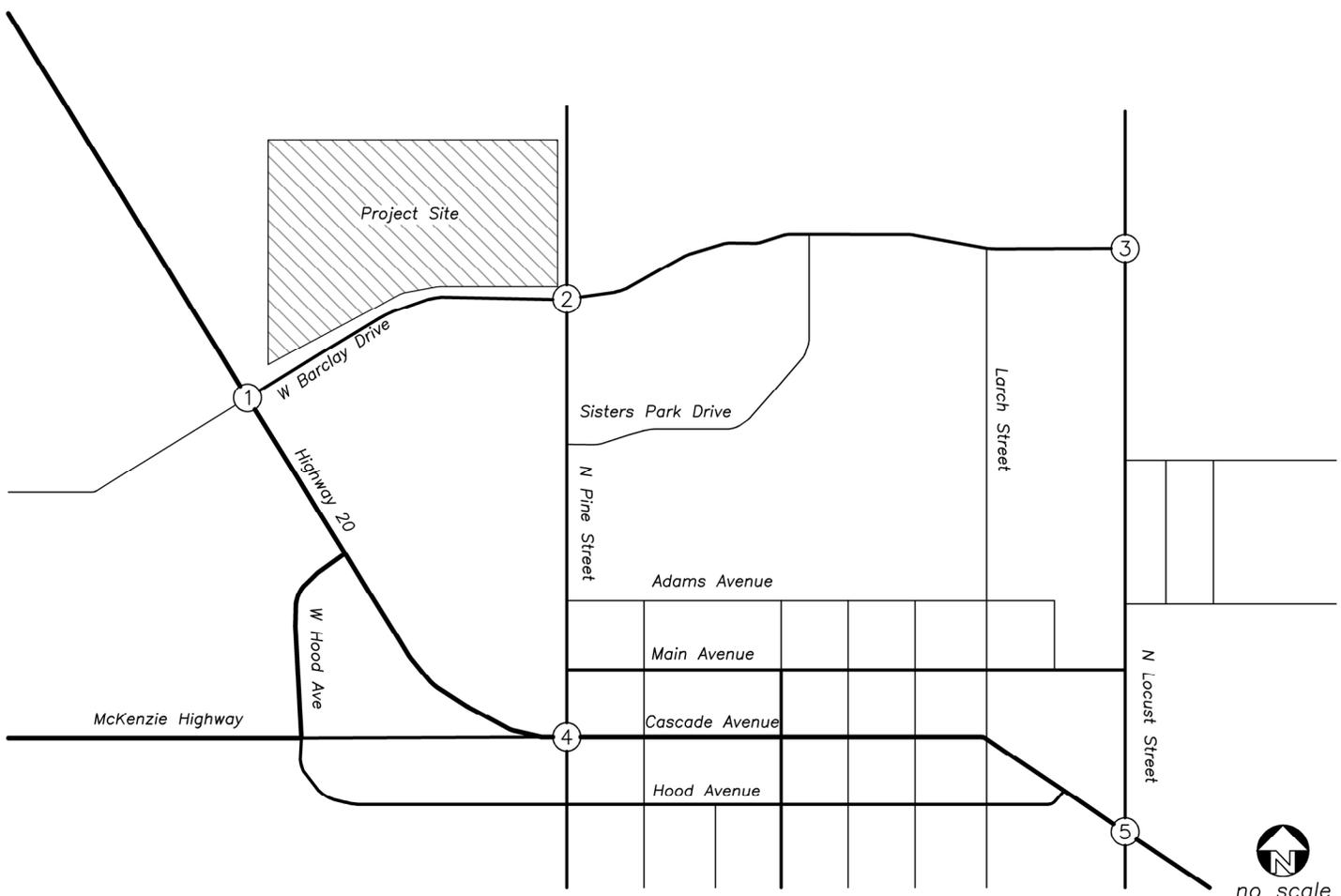
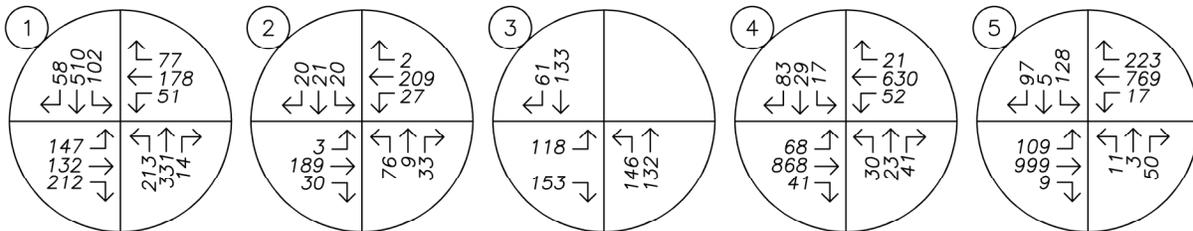
Finally, the Dollar General is also expected to impact future volumes at the study intersections. This development is proposed for the site southeast of McKinney Butte Road, east of N Wheeler Loop, and northwest of the existing Bi-Mart store, and includes construction of a 9,100 square foot building. Since this development will likely be contributing trips to the transportation system by 2040, the site trips it is projected to generate were included in the 2040 background traffic volumes. A figure showing the in-process site trips generated by this development that are expected to impact the study intersections is provided in the appendix.

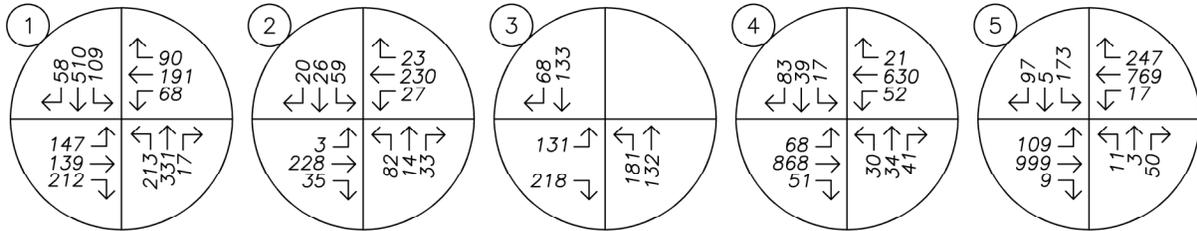
Figure 5 shows the projected year 2040 background traffic volumes during the morning and evening peak hours.

## Buildout Conditions

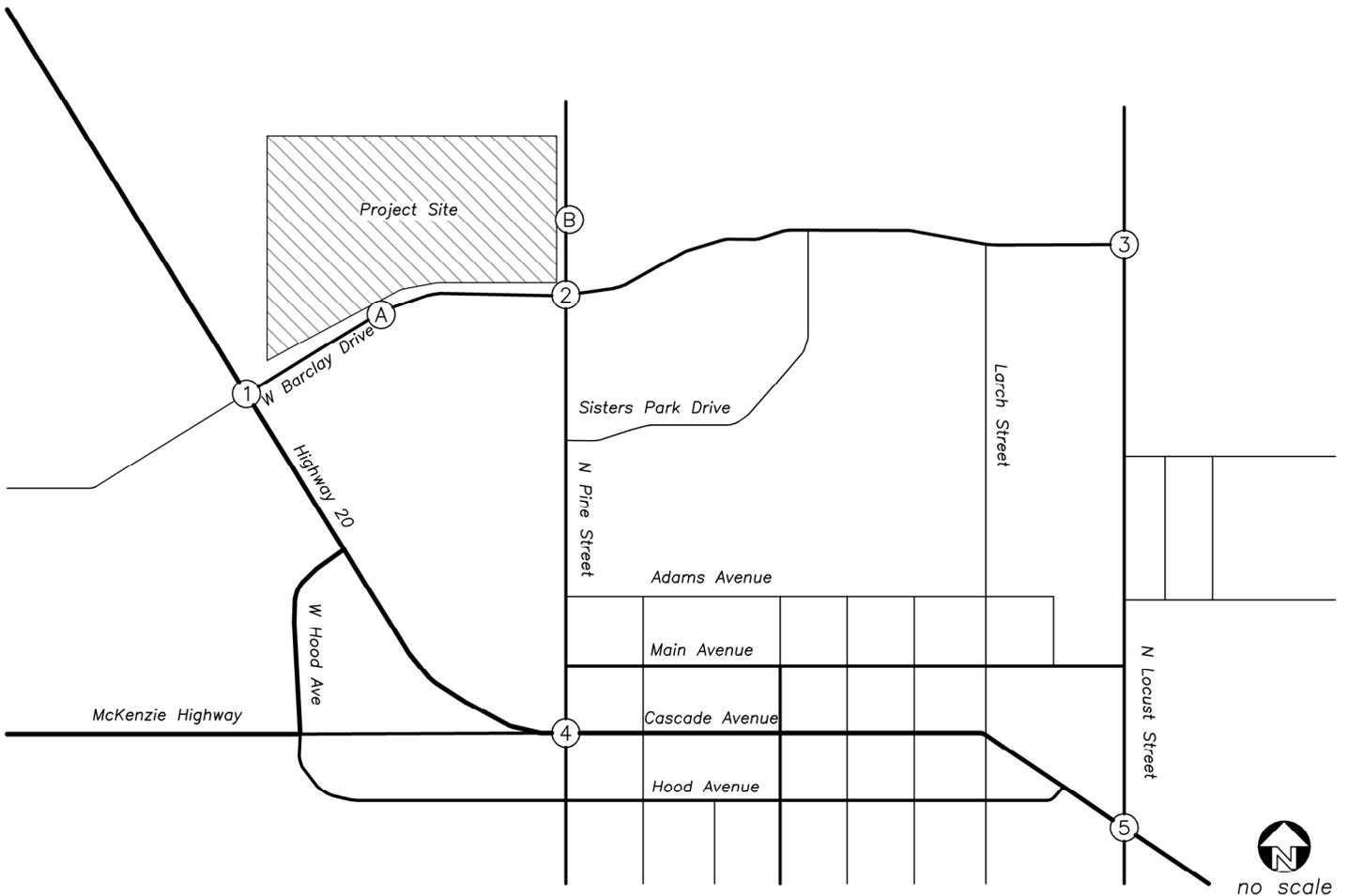
Figure 6 shows year 2040 buildout traffic volumes generated by the proposed land use.







NOTE: Site Accesses shown as Ⓐ and Ⓑ



## Safety Analysis

### Crash History Review

Using data obtained from ODOT's Crash Data System, a review of approximately five years of the most recent available crash history (January 2013 through December 2017) was performed at the study intersections. The crash data was evaluated based on the number of crashes, the type of collisions, and the severity of the collisions. Crash severity is based on injuries sustained by people involved in the crash, and includes five categories:

- PDO – property damage only;
- Injury C – possible injury or complaint of pain;
- Injury B – non-incapacitating injury;
- Injury A – incapacitating injury (i.e. bleeding or broken bones); and
- Fatality

Crash rates provide the ability to compare safety risks at different intersection by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates were calculated using the common assumption that traffic counted during the evening peak hour represents approximately 10 percent of the annual average daily traffic (AADT) at the intersection. Crash rates in excess of 1.0 crashes per million entering vehicles (CMEV) may be indicative of design deficiencies and therefore require a need for further investigation and possible mitigation.

Table 4 provides a summary of crash types while Table 5 summarizes crash severities and rates for each of the study intersections. Detailed crash data is provided in the appendix to this report.

Table 4: Crash Type Summary

	Intersection	Rear End	Turn	Angle	Crash Type			Ped	Bike	Total Crashes
					Fixed Object	Side swipe	Other			
1	US Highway 20 at W Barclay Drive	0	0	5	1	0	0	0	0	6
2	W Barclay Drive at N Pine Street	0	0	3	0	0	0	0	0	3
3	E Barclay Drive at N Locust Street	0	1	0	0	0	0	0	0	1
4	N Pine Street at US Highway 20	3	1	0	0	0	0	1	0	5
5	N Locust Street at US Highway 20	3	2	1	0	0	0	0	0	6

Table 5: Crash Severity and Rate Summary

	Intersection	Crash Severity					Total Crashes	AADT	Crash Rate
		PDO	Injury C	Injury B	Injury A	Fatality			
1	US Highway 20 at W Barclay Drive	3	0	1	2	0	6	12,560	0.26
2	W Barclay Drive at N Pine Street	0	0	3	0	0	3	4,020	0.41
3	E Barclay Drive at N Locust Street	0	1	0	0	0	1	4,710	0.12
4	N Pine Street at US Highway 20	2	3	0	0	0	5	11,230	0.24
5	N Locust Street at US Highway 20	1	5	0	0	0	6	14,910	0.22

**BOLDED** text indicates a crash rate in excess of 1.00 CMEV.

Based on a review of the crash data, there were several crashes which involved either a pedestrian or were classified as "Incapacitating Injury – Bleeding, Broken Bones" (*Injury A*) or "Non-Incapacitating Injury" (*Injury B*). An

in-depth analysis of these crashes is detailed in the following sections to determine any potential crash patterns indicative of safety issues.

### **US Highway 20 at W Barclay Drive**

The intersection of US Highway 20 at W Barclay Drive had two crashes resulting in injuries consistent with *Injury A* classification. The first crash occurred when the driver of a westbound vehicle struck a southbound-traveling motorcycle. Both the motorcyclist and passenger sustained injuries consistent with *Injury A* classification. The second crash occurred when the driver of a northbound vehicle failed to yield right-of-way to an westbound-traveling vehicle and struck the westbound vehicle. All three occupants of the westbound vehicle sustained injuries consistent with *Injury A* classification.

The intersection also had one crash resulting in injuries consistent with *Injury B* classification. The crash occurred when the driver of a westbound vehicle failed to yield right-of-way to a southbound-traveling vehicle and struck the southbound vehicle. The driver of the southbound vehicle and three passengers sustained injuries consistent with *Injury B* classification.

It should be noted that all of the crashes in the analysis period occurred in 2013, which was before construction of the existing roundabout at the intersection of US Highway 20 at W Barclay Drive.

### **W Barclay Drive at N Pine Street**

The intersection of W Barclay Drive at N Pine Street had three crashes resulting in injuries consistent with *Injury B* classification. The first crash occurred when the driver of a southbound-traveling vehicle ran a stop sign and collided with an eastbound-traveling vehicle. The crash reported noted that "inattention" was a factor in the collision. The southbound-traveling vehicle overturned after the collision, and the driver sustained injuries consistent with *Injury B* classification, while the driver and passenger of the eastbound-traveling vehicle sustained injuries consistent with *Injury C* classification.

The second crash occurred when the driver of a northbound-traveling vehicle ran a stop sign and collided with a westbound-traveling vehicle. The northbound-traveling vehicle overturned after the collision, and the driver and passenger both sustained injuries consistent with *Injury B* classification. The driver of the westbound-traveling vehicle did not report any injuries.

The third crash occurred when the driver of a southbound-traveling vehicle ran a stop sign and collided with a westbound-traveling vehicle. The driver of the southbound-traveling vehicle sustained injuries consistent with *Injury B* classification, while the passenger sustained injuries consistent with *Injury C* classification. Both the driver of the westbound-traveling vehicle and the passenger sustained injuries consistent with *Injury B* classification.

Based on a review of the crash data at the intersection of W Barclay Drive at N Pine Street, it was noted that all three collisions occurred in 2017 and were the result of either a northbound or southbound-traveling vehicle failing to stop at the stop signs located along N Pine Street. Upon review of the study intersection, it was noted that the northbound approach of N Pine Street has a "Stop Ahead" warning sign as well as a flashing stop sign. The southbound approach of N Pine Street also has a flashing stop sign. Both of the flashing stop signs were in place by May of 2018 and appear to have been installed following the three crashes in 2017. The preliminary crash data from January 2018 to December 2018 shows that there were no reported crashes at the intersection during this analysis period.

## N Pine Street at US Highway 20

The intersection of N Pine Street at US Highway 20 had one crash which involved a pedestrian and was classified as "Possible Injury or Complaint of Pain" (*Injury C*). The crash occurred when the driver of a westbound vehicle failed to yield right-of-way to a southbound pedestrian crossing in a marked crosswalk. The pedestrian sustained injuries consistent with *Injury C* classification.

Based on an analysis of the available crash data, all intersections were calculated as having a crash rate below 1.00 CMEV. No significant trends or crash patterns were identified at any of the study intersections that are indicative of safety concerns. Accordingly, no safety mitigation is recommended per the crash data analysis.

## Sight Distance Evaluation

Actual site access locations will be determined at the time of a future land division applications, following the zone change. The most recent site plan has one site access along W Barclay Drive, approximately 330 feet from the current site access driveway to the Best Western Ponderosa Lodge, and a second site access along N Pine Street, approximately 297 feet from the intersection of N Pine Street at W Barclay Drive.

The City of Sisters Development Code 3.1.300(I)(1) identifies access spacing standards for various roadway classifications. W Barclay Drive is classified by the City of Sisters as an Arterial, and the minimum driveway-to-driveway spacing along an arterial roadway is 330 feet. In addition, the minimum roadway-to-driveway spacing along an arterial roadway is also 330 feet. N Pine Street is classified by the City of Sisters as a minor collector, and the minimum roadway-to-driveway spacing along a collector is 100 feet.

The most recent site plan shows that proposed site access locations are in compliance with the access spacing standards shown in Development Code 3.1.300(I)(1).

## Warrant Analysis

Left-turn lane warrants and preliminary traffic signal warrants were examined for the study intersections where such treatments would be applicable.

### Left-Turn Lane Warrants

Left-turn lane warrants were examined for the study intersections where such treatments would be applicable.

A left-turn refuge lane is primarily a safety consideration for the major street, removing left-turning vehicles from the through traffic stream. The left-turn lane warrants were examined using methodologies provided in the ODOT's *Analysis Procedures Manual (APM)*. Left-turn lane warrants were evaluated based on the number of advancing and opposing vehicles, number of turning vehicles, travel speed, and the number of through lanes.

Left-turn lane warrants were not examined for the intersection of E Barclay Drive at N Locust Street. This intersection is identified in the *2018 Sisters Transportation System Plan (TSP) Refinement*<sup>2</sup>, and a future project includes the realignment of the intersection to make a continuous movement to/from the west and south legs.

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<sup>2</sup> Kittelson & Associates, *Sisters Transportation System Plan Refinement*, June 2018.

Left-turn lane warrants were also not examined for the intersection of N Locust Street at US Highway 20. This intersection is identified in the City's TSP Refinement, and a future project includes the construction of a roundabout.

Left-turn lane warrants are projected to be met under the year 2040 buildout scenario for the intersection of W Barclay Drive at N Pine Street, specifically for the westbound approach.

### **Preliminary Traffic Signal Warrants**

Preliminary traffic signal warrants were examined for the following unsignalized study intersections to determine whether the installation of a new traffic signal will be warranted at the intersection upon completion of the proposed zone change:

- W Barclay Drive at N Pine Street;
- N Pine Street at US Highway 20.

Due to insufficient traffic volumes, traffic signal warrants are not projected to be met at the unsignalized study intersections under any of the analysis scenarios. Traffic signal warrants were not examined for the intersection of N Locust Street at US Highway 20 due to the intersection being listed in City's TSP Refinement as a candidate for a future roundabout. It was assumed in this study that the roundabout would be in place by the year 2040. In addition, traffic signal warrants were not examined for the intersection of E Barclay Drive at N Locust Street due to the intersection being listed in the City's TSP Refinement as a candidate for a future intersection realignment. It was assumed in this study that the realignment would be in place by the year 2040.

## **Operational Analysis**

A capacity and delay analysis were conducted for each of the study intersections per the unsignalized intersection analysis methodologies in the *Highway Capacity Manual* (HCM)<sup>3</sup>. Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection.

## **Performance Standards**

The study intersections of US Highway 20 at W Barclay Drive, N Pine Street at US Highway 20, and N Locust Street at US Highway 20 are under the jurisdiction of ODOT. The applicable minimum operation standard for this facility is established under the *Oregon Highway Plan*<sup>4</sup> and is based on the v/c ratio of the intersection. According to the Oregon Highway Plan, US Highway 20 is a freight route on a statewide highway, and has a maximum allowable v/c ratio of 0.85. The above mentioned intersections along US Highway 20 were analyzed according to this standard.

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<sup>3</sup> Transportation Research Board, *Highway Capacity Manual 6<sup>th</sup> Edition*, 2016.

<sup>4</sup> Oregon Department of Transportation, *1999 Oregon Highway Plan: Including amendments November 1999 through May 2015*, 1999.

The study intersections of W Barclay Drive at N Pine Street and E Barclay Drive at N Locust Street, both two-way stop-controlled intersections, are under the jurisdiction of the City of Sisters. The City's TSP Refinement states that two-way stop-controlled intersections should have a v/c ratio no greater than 0.90.

## Delay & Capacity Analysis

The LOS, delay, and v/c results of the capacity analysis are shown in Table 6 for the evening peak hour. Detailed calculations as well as tables showing the relationship between delay and LOS are included in the appendix to this report.

Table 6: Capacity Analysis Summary

	PM Peak Hour		
	LOS	Delay (s)	v / c
<b>US Highway 20 at W Barclay Drive</b>			
2019 Existing Conditions	A	9	0.53
2040 Background Conditions	C	22	<b>0.86</b>
2040 Buildout Conditions	D	25	<b>0.89</b>
<b>W Barclay Drive at N Pine Street</b>			
2019 Existing Conditions	B	12	0.11
2040 Background Conditions	C	18	0.24
2040 Buildout Conditions	C	22	0.30
<b>E Barclay Drive at N Locust Street</b>			
2019 Existing Conditions	B	13	0.15
2040 Background Conditions (with realignment)	C	18	0.32
2040 Buildout Conditions (with realignment)	C	22	0.38
<b>N Pine Street at US Highway 20</b>			
2019 Existing Conditions	F	57	0.23
2040 Background Conditions	F	>200	<b>2.08</b>
2040 Buildout Conditions	F	>200	<b>3.61</b>
<b>N Locust Street at US Highway 20</b>			
2019 Existing Conditions	F	>200	<b>1.10</b>
2040 Background Conditions (with roundabout)	E	45	<b>1.06</b>
2040 Buildout Conditions (with roundabout)	F	55	<b>1.11</b>

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection. **BOLDED** results indicate operation above acceptable jurisdictional standards

Based on the results of the operational analysis, there are three intersections that are either currently or projected to operate with v/c ratios in excess of minimum ODOT performance standards:

- US Highway 20 at W Barclay Drive
- N Pine Street at US Highway 20

- N Locust Street at US Highway 20

Further inspection and potential mitigations at the intersections listed above are discussed within the following *Mitigation Analysis* section.

All other study intersections are currently operating acceptably per City of Sisters standards and are projected to continue operating acceptably through the 2040 planning horizon, regardless of the potential increase in site trip generation upon rezoning the site. No operational mitigation is necessary or recommended at these intersections.

## Mitigation Analysis

As determined within the *Operational Analysis* section, there are three study intersections that are projected to exceed acceptable levels of operation per ODOT performance standards. The following narrative discusses potential mitigative measures which may improve operation of study intersections to acceptable levels. The City of Sisters TSP Refinement, Deschutes County TSP, and ODOT's Statewide Transportation Improvement Plan (STIP) were reviewed to determine any planned projects at these intersections.

### US Highway 20 at W Barclay Drive

The intersection of US Highway 20 at W Barclay Drive is projected to exceed ODOT's maximum v/c ratio of 0.85 under year 2040 buildout conditions due to high southbound through volumes of traffic. However, the intersection remains within capacity and with delays that are not excessive (level of service D). US Highway 20 through Sisters is a key freight corridor for the Central Oregon region. An Alternate Route for the movement of trucks through Sisters is planned to route through trucks off of US Highway 20 along Barclay Drive and N Locust Street during peak periods of congestion.

Currently, vehicles choosing to use W Barclay Drive for eastbound travel experience long delays when turning left onto US Highway 20 from N Locust Street. Future upgrades to the Alternate Route include widening Barclay Drive to a 3-lane arterial section between Pine Street and N Locust Street, as well as realignment of N Locust Street at the Barclay Drive intersection to remove stop control on the predominant movement. In addition, a roundabout is planned for the intersection of US Highway 20 at N Locust Street, which would reduce long delays for vehicles turning left onto US Highway 20 from N Locust Street, thus making the Alternate Route a reasonable choice for vehicles traveling both eastbound and westbound to bypass downtown Sisters.

The City of Sisters TSP Refinement notes that intelligent transportation system (ITS) technology, which detects congestion on the highway and directs traffic onto the Alternate Route, is suggested as part of the Alternate Route. In conjunction with ITS technology, variable-message signs (VMS) could be placed along US Highway 20 to direct traffic onto the Alternate Route, thus relieving congestion along US Highway 20 through downtown Sisters.

### N Pine Street at US Highway 20

The intersection of N Pine Street at US Highway 20 is projected to exceed ODOT's maximum v/c ratio of 0.85 under year 2040 background conditions. This is due primarily to a relatively high northbound left-turn volume

from N Pine Street onto US Highway 20. The intersection operates acceptably for existing conditions, but delays increase in future years, regardless of the zoning change of the project site. No mitigations to improve capacity are recommended at this intersection for the following reason:

- During peak hours when delays are long, drivers will self-select how they enter US Highway 20 to avoid excessive delays. Local traffic may choose a number of other routes to avoid US Highway 20 and utilize the local street system.

In addition, the Motor Vehicle Master Plan Projects table (Table 7-5) in the City's TSP Refinement lists a possible mitigation of restricting northbound and southbound approaches at the intersection to right-turns only. The intersection should be monitored to determine whether these movement restrictions become necessary in the future.

## N Locust Street at US Highway 20

The intersection of N Locust Street at US Highway 20 is also projected to operate above acceptable ODOT standards; however, this issue is projected to occur regardless of whether the proposed zoning change is approved. The City of Sisters is aware the intersection fails to meet operational standards, and recently conducted a roundabout feasibility study at the intersection.

According to the City's TSP Refinement, near-term mitigation at the intersection includes the installation of a mini-roundabout with the intent of addressing near-term capacity and safety deficiencies. It is my understanding that following preliminary investigation into the feasibility of a mini-roundabout, the City and ODOT have decided not to further pursue this interim option. In addition, a long-term mitigation improvement includes the installation of a full-size roundabout at the intersection. Initial traffic forecasts and analysis performed for the City's TSP Refinement indicate that a single-lane roundabout would operate acceptably through 2030 but not for the entire planning horizon.

Based on the operational analysis results either with or without the proposed zone change, it is recommended that design options to add capacity be explored, such as the addition of a westbound right-turn slip lane. However, capacity enhancements such as additional lanes can affect safety at the intersection, particularly for vulnerable roadway users. The City of Sisters and ODOT will need to balance safety and capacity when deciding the configuration of this intersection improvement. For the purpose of this 2040 planning horizon analysis, it was assumed that a standard, single-lane roundabout would be constructed.

Proposed Mitigation: The applicant proposes mitigation in the form of a proportional share payment for improvement of the intersection of N Locust Street at US Highway 20. Improvement of this intersection is the largest planned intersection improvement in Sisters and that project cost and implementation would far exceed the rough proportionality of the impacts of this site development. Therefore, a proportional share fee is proposed and explained further in the *Proportional Share Mitigation Assessment* section.

## Proportional Share Mitigation Assessment

Proportional share fees were evaluated at the intersection of N Locust Street at US Highway 20. Table 7 provides the methodology used to calculate proportional share fees based on the proposed zone change’s trip generation impacts.

Table 7: Proportional Share Methodology Summary

N Locust Street at US Highway 20	
Mitigation Project Summary	Construct Roundabout
City TSP Project ID	2A
Peak Hour	Weekday PM
Scenario When Mitigation is Triggered	Existing (2019)
2040 Background Traffic Volume (X)	2420
Project Trips (PT)	69
Proportional Share (% $, PT/(PT+X)$ )	2.77%
Project Cost Estimate (\$)	\$3.552M
<b>Proportional Share Cost</b>	<b>\$98,469</b>

Table Notes: Table 7 of the 2019 City of Sisters *Transportation System Development Charge Update, Final Report*, shows that SDCs are planned to pay for 4% of the total project cost, with ODOT funding the remaining 96%. Since development of the industrial subdivision on the subject site will pay SDCs, the project cost was taken to be the ODOT share, which is \$3,552,000.

Recognizing that it is based on a reasonable worst-case development scenario, the proportional share payment amount will not be reduced or refunded if the site develops at a lower intensity. As a result, and also recognizing that the site will develop over a period of years, the applicant proposes that the proportional share payment of \$98,469 will be due as a lump sum prior to site development.

## Transportation Planning Rule

The Transportation Planning Rule (TPR) is in place to ensure that the transportation system is capable of supporting possible increases in traffic intensity that could result from changes to adopted plans and land-use regulations. The applicable elements of the TPR are each quoted directly in italics below, with responses following.

### 660-012-0060 Plan and Land Use Regulation Amendments

1. *If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:*

- (a) *Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);*
- (b) *Change standards implementing a functional classification system; or*
- (c) *Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.*
  - (A) *Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;*
  - (B) *Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or*
  - (C) *Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.*

Based on the analysis findings in this report, subsections (a) and (b) are not triggered since the proposed zone change will not impact or alter the functional classification of any existing or planned facility, and the proposal does not include a change to any functional classification standards.

Upon rezoning properties within the subject site, three study intersections are currently or projected to operate with v/c ratios in excess of acceptable levels of operation per their respective jurisdictional standards. However, these intersections may be reasonably mitigated as detailed in the *Mitigation Analysis* section of this report.

The identified mitigation offsets the potential impacts from the project and avoids further degradation of key infrastructure in Sisters. Accordingly, the Transportation Planning Rule is satisfied.

## Conclusions

The proposed project involves a change in zoning from Urban Area Reserve (UAR) to Light Industrial (LI) on a currently undeveloped site located off W Barclay Drive in Sisters, Oregon.

A variety of permitted land uses were assumed for all 17 lots on the current site plan. In order to have a “worst-case scenario” estimate of trip generation, it was assumed that four of the lots would have a retail/service land use, and the remaining 13 lots would have an industrial land use. The trip generation calculations show that the proposed variety of land uses is projected to generate 201 trips during the evening peak hour.

All intersections were calculated as having a crash rate below 1.00 CMEV. No significant trends or crash patterns were identified at any of the study intersections that are indicative of safety concerns. Accordingly, no safety mitigation is recommended per the crash data analysis.

The most recent site plan shows that proposed site access locations are in compliance with the access spacing standards shown in Development Code 3.1.300(I)(1). Actual site access locations will be determined at the time of a future land division applications, following the zone change.

Due to insufficient traffic volumes, traffic signal warrants are not projected to be met at the unsignalized study intersections of W Barclay Drive at N Pine Street and N Pine Street at US Highway 20 under any of the analysis scenarios.

Three study intersections are either currently operating or projected to operate with v/c ratios in excess of the maximum allowable ODOT performance standards:

- US Highway 20 at W Barclay Drive: Per the City's Transportation System Plan (TSP), placing additional emphasis on Barclay Drive as an alternate route, particularly for trucks, will help distribute demand. This emphasis would serve to balance volumes at the roundabout, improving operation and extending the capacity of the intersection.
- N Pine Street at US Highway 20: During peak hours when delays are long, drivers will self-select how they enter US Highway 20 to avoid excessive delays. Local traffic may choose a number of other routes to avoid US Highway 20 and utilize the local street system. For this reason, no mitigation is recommended.
- N Locust Street at US Highway 20: The applicant proposes mitigation in the form of a proportional share payment for improvements at the intersection of N Locust Street at US Highway 20. The identified proportional share payment of \$98,469 will be due as a lump sum prior to site development.

The mitigation described above offsets the potential impacts from the project and avoids further degradation of key infrastructure in Sisters. Accordingly, the Transportation Planning Rule is satisfied.

# Appendix







## TRIP GENERATION CALCULATIONS

*Land Use:* General Light Industrial  
*Land Use Code:* 110  
*Setting/Location:* General Urban/Suburban  
*Variable:* 1,000 Square Feet of Gross Floor Area  
*Variable Quantity:* 88.1

### AM PEAK HOUR

*Trip Rate:* 0.70

	Enter	Exit	Total
Directional Distribution	88%	12%	
Trip Ends	<b>55</b>	<b>7</b>	<b>62</b>

### PM PEAK HOUR

*Trip Rate:* 0.63

	Enter	Exit	Total
Directional Distribution	13%	87%	
Trip Ends	<b>7</b>	<b>49</b>	<b>56</b>

### WEEKDAY

*Trip Rate:* 4.96

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>218</b>	<b>218</b>	<b>436</b>

### SATURDAY

*Trip Rate:* 1.99

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>88</b>	<b>88</b>	<b>176</b>



## TRIP GENERATION CALCULATIONS

*Land Use:* Manufacturing  
*Land Use Code:* 140  
*Setting/Location:* General Urban/Suburban  
*Variable:* 1,000 Square Feet  
*Variable Quantity:* 34.1

### AM PEAK HOUR

*Trip Rate:* 0.62

	Enter	Exit	Total
Directional Distribution	77%	23%	
Trip Ends	<b>16</b>	<b>5</b>	<b>21</b>

### PM PEAK HOUR

*Trip Rate:* 0.67

	Enter	Exit	Total
Directional Distribution	31%	69%	
Trip Ends	<b>7</b>	<b>16</b>	<b>23</b>

### WEEKDAY

*Trip Rate:* 3.93

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>67</b>	<b>67</b>	<b>134</b>

### SATURDAY

*Trip Rate:* 6.42

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>109</b>	<b>109</b>	<b>218</b>



## TRIP GENERATION CALCULATIONS

*Land Use:* Warehousing  
*Land Use Code:* 150  
*Variable:* 1,000 Square Feet  
*Variable Quantity:* 21.3

### AM PEAK HOUR

*Trip Rate:* 0.17

	Enter	Exit	Total
Directional Distribution	77%	23%	
Trip Ends	3	1	4

### PM PEAK HOUR

*Trip Rate:* 0.19

	Enter	Exit	Total
Directional Distribution	27%	73%	
Trip Ends	1	3	4

### WEEKDAY

*Trip Rate:* 1.74

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	19	19	38

### SATURDAY

*Trip Rate:* 0.15

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	2	2	4



## TRIP GENERATION CALCULATIONS

*Land Use:* Specialty Trade Contractor  
*Land Use Code:* 180  
*Setting/Location:* General Urban/Suburban  
*Variable:* 1,000 Sq. Ft. GFA  
*Variable Value:* 3.1

### AM PEAK HOUR

*Trip Rate:* 1.66

	Enter	Exit	Total
Directional Distribution	73%	27%	
Trip Ends	<b>4</b>	<b>1</b>	<b>5</b>

### PM PEAK HOUR

*Trip Rate:* 1.97

	Enter	Exit	Total
Directional Distribution	32%	68%	
Trip Ends	<b>2</b>	<b>4</b>	<b>6</b>

### WEEKDAY

*Trip Rate:* 10.22

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>16</b>	<b>16</b>	<b>32</b>



## TRIP GENERATION CALCULATIONS

*Land Use:* Animal Hospital/Veterinary Clinic  
*Land Use Code:* 640  
*Variable:* 1000 Sq Ft Gross Floor Area  
*Variable Value:* 11.2

### AM PEAK HOUR

*Trip Rate:* 3.64

	Enter	Exit	Total
Directional Distribution	67%	33%	
Trip Ends	<b>27</b>	<b>14</b>	<b>41</b>

### PM PEAK HOUR

*Trip Rate:* 3.53

	Enter	Exit	Total
Directional Distribution	40%	60%	
Trip Ends	<b>16</b>	<b>24</b>	<b>40</b>

### WEEKDAY

*Trip Rate:* 21.5

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>121</b>	<b>120</b>	<b>241</b>



## TRIP GENERATION CALCULATIONS

*Land Use:* Recreational Vehicle Sales  
*Land Use Code:* 842  
*Setting/Location:* General Urban/Suburban  
*Variable:* 1,000 Sq. Ft. GFA  
*Variable Value:* 9.1

### AM PEAK HOUR

*Trip Rate:* 0.46

	Enter	Exit	Total
Directional Distribution	85%	15%	
Trip Ends	<b>3</b>	<b>1</b>	<b>4</b>

### PM PEAK HOUR

*Trip Rate:* 0.77

	Enter	Exit	Total
Directional Distribution	31%	69%	
Trip Ends	<b>2</b>	<b>5</b>	<b>7</b>

### WEEKDAY

*Trip Rate:* 5.00

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>23</b>	<b>23</b>	<b>46</b>



## TRIP GENERATION CALCULATIONS

*Land Use:* Automobile Parts Sales  
*Land Use Code:* 843  
*Setting/Location:* General Urban/Suburban  
*Variable:* 1,000 Sq. Ft. GFA  
*Variable Value:* 8.5

### AM PEAK HOUR

*Trip Rate:* 2.59

	Enter	Exit	Total
Directional Distribution	55%	45%	
Trip Ends	<b>12</b>	<b>10</b>	<b>22</b>

### PM PEAK HOUR

*Trip Rate:* 4.91

	Enter	Exit	Total
Directional Distribution	48%	52%	
Trip Ends	<b>20</b>	<b>22</b>	<b>42</b>

### WEEKDAY

*Trip Rate:* 55.34

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>235</b>	<b>235</b>	<b>470</b>

### SAT PEAK HOUR OF GENERATOR

*Trip Rate:* 11.53

	Enter	Exit	Total
Directional Distribution	51%	49%	
Trip Ends	<b>50</b>	<b>48</b>	<b>98</b>



## TRIP GENERATION CALCULATIONS

*Land Use:* Drinking Place  
*Land Use Code:* 925  
*Setting/Location:* General Urban/Suburban  
*Variable:* 1,000 Sq. Ft. GFA  
*Variable Value:* 2

### PM PEAK HOUR

*Trip Rate:* 11.36

	Enter	Exit	Total
Directional Distribution	66%	34%	
Trip Ends	<b>15</b>	<b>8</b>	<b>23</b>

### WEEKDAY

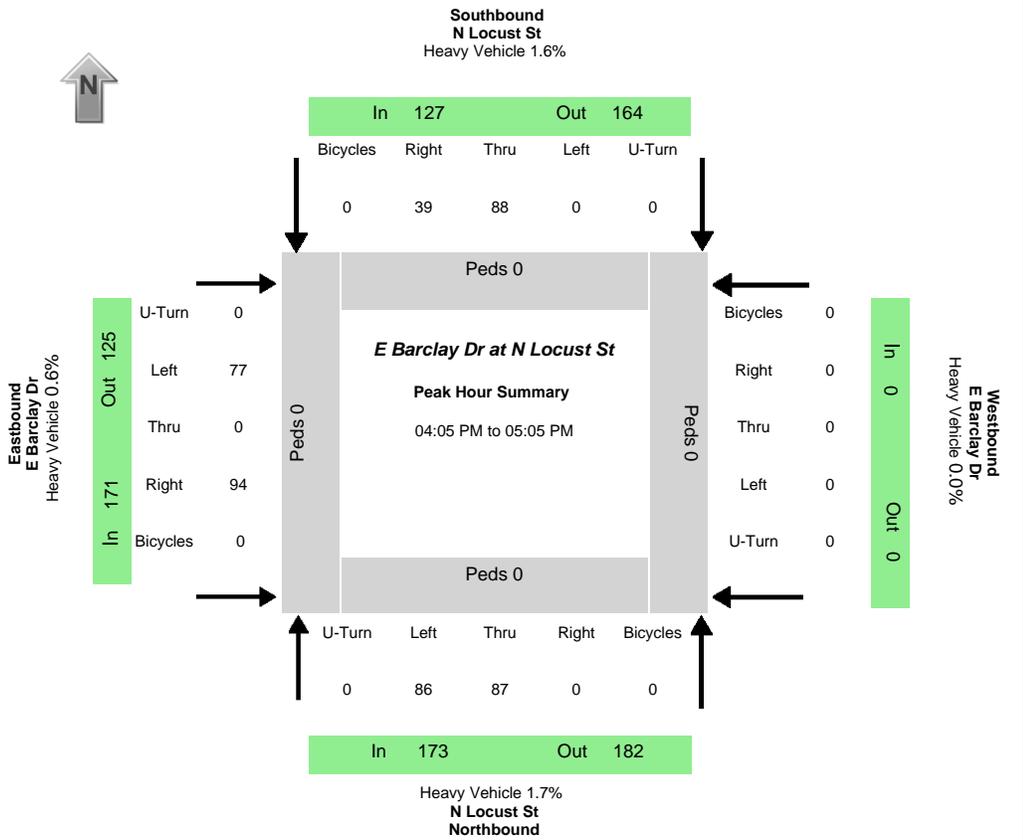
*Trip Rate:* 113.60

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>114</b>	<b>113</b>	<b>227</b>

Note: Weekday rate assumed to be ten times the PM peak hour.

Data Provided by K-D-N.com 503-594-4224

N/S street	N Locust St
E/W street	E Barclay Dr
City, State	Sisters OR
Site Notes	
Location	44.297603 - -121.543743
Start Date	Tuesday, October 15, 2019
Start Time	04:00:00 PM
Weather	
Study ID #	
Peak Hour Start	04:05:00 PM
Peak 15 Min Start	04:35:00 PM
PHF (15-Min Int)	0.93



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
86	87	0	0	0	88	39	0	77	0	94	0	0	0	0	0	173	127	171	0	182	164	125	0
Percent Heavy Vehicles																							
3.5%	0.0%	0.0%	0.0%	0.0%	2.3%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	1.6%	0.6%	0.0%	1.6%	0.0%	2.4%	0.0%

PHV - Bicycles														PHV - Pedestrians							
Northbound				Southbound				Eastbound				Westbound				Sum	in Crosswalk				Sum
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		NB	SB	EB	WB	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

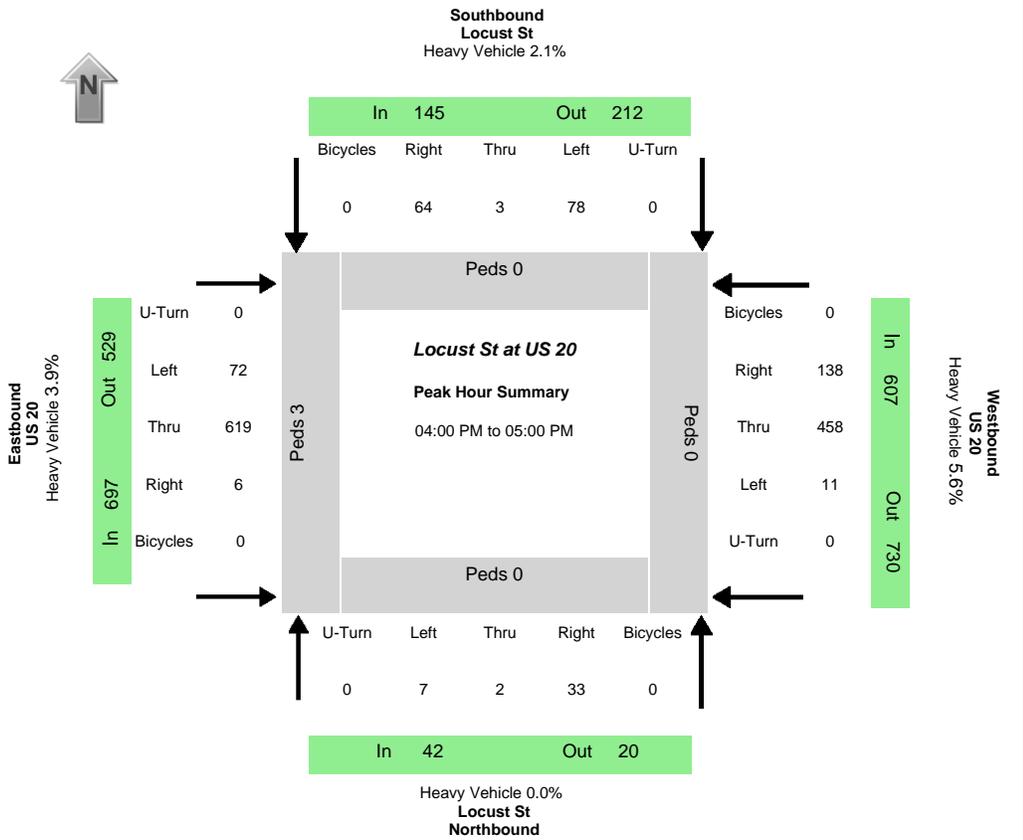
Time	Northbound N Locust St				Southbound N Locust St				Eastbound E Barclay Dr				Westbound E Barclay Dr				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn														
04:00:00 PM	8	13	0	0	0	4	3	0	3	0	5	0	0	0	0	0		
04:05:00 PM	12	6	0	0	0	8	3	0	5	0	8	0	0	0	0	0		
04:10:00 PM	7	9	0	0	0	7	1	0	7	0	9	0	0	0	0	0	118	
04:15:00 PM	8	7	0	0	0	9	3	0	5	0	7	0	0	0	0	0	121	
04:20:00 PM	8	5	0	0	0	9	5	0	8	0	4	0	0	0	0	0	118	
04:25:00 PM	9	6	0	0	0	3	4	0	3	0	8	0	0	0	0	0	111	
04:30:00 PM	7	9	0	0	0	6	3	0	3	0	6	0	0	0	0	0	106	
04:35:00 PM	4	8	0	0	0	7	3	0	11	0	12	0	0	0	0	0	112	
04:40:00 PM	7	5	0	0	0	8	7	0	7	0	9	0	0	0	0	0	122	
04:45:00 PM	5	9	0	0	0	7	3	0	7	0	8	0	0	0	0	0	127	
04:50:00 PM	10	8	0	0	0	8	1	0	8	0	9	0	0	0	0	0	126	
04:55:00 PM	0	8	0	0	0	6	5	0	7	0	6	0	0	0	0	0	115	466
05:00:00 PM	9	7	0	0	0	10	1	0	6	0	8	0	0	0	0	0	117	471
05:05:00 PM	9	9	0	0	0	3	1	0	5	0	6	0	0	0	0	0	106	462
05:10:00 PM	9	4	0	0	0	5	2	0	7	0	8	0	0	0	0	0	109	457
05:15:00 PM	5	10	0	0	0	8	5	0	4	0	10	0	0	0	0	0	110	460
05:20:00 PM	5	6	0	0	0	6	6	0	6	0	8	0	0	0	0	0	114	458
05:25:00 PM	6	17	0	0	0	3	2	0	3	0	0	0	0	0	0	0	110	456
05:30:00 PM	7	7	0	0	0	7	2	0	11	0	7	0	0	0	0	0	109	463
05:35:00 PM	5	11	0	0	0	7	4	0	6	0	5	0	0	0	0	0	110	456
05:40:00 PM	5	8	0	0	0	4	5	0	3	0	5	0	0	0	0	0	109	443
05:45:00 PM	7	11	0	0	0	7	3	0	2	0	2	0	0	0	0	0	100	436
05:50:00 PM	9	5	0	0	0	8	0	0	5	0	7	0	0	0	0	0	96	426
05:55:00 PM	7	3	0	0	0	6	1	0	9	0	2	0	0	0	0	0	94	422



KEY DATA NETWORK

Data Provided by K-D-N.com 503-594-4224

N/S street	Locust St
E/W street	US 20
City, State	Sisters OR
Site Notes	
Location	44.290153 - -121.543805
Start Date	Tuesday, October 15, 2019
Start Time	04:00:00 PM
Weather	
Study ID #	
Peak Hour Start	04:00:00 PM
Peak 15 Min Start	04:20:00 PM
PHF (15-Min Int)	0.94



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
7	2	33	0	78	3	64	0	72	619	6	0	11	458	138	0	42	145	697	607	20	212	529	730
Percent Heavy Vehicles																							
0.0%	0.0%	0.0%	0.0%	2.6%	0.0%	1.6%	0.0%	1.4%	4.2%	0.0%	0.0%	0.0%	5.2%	7.2%	0.0%	0.0%	2.1%	3.9%	5.6%	0.0%	5.2%	4.7%	3.8%

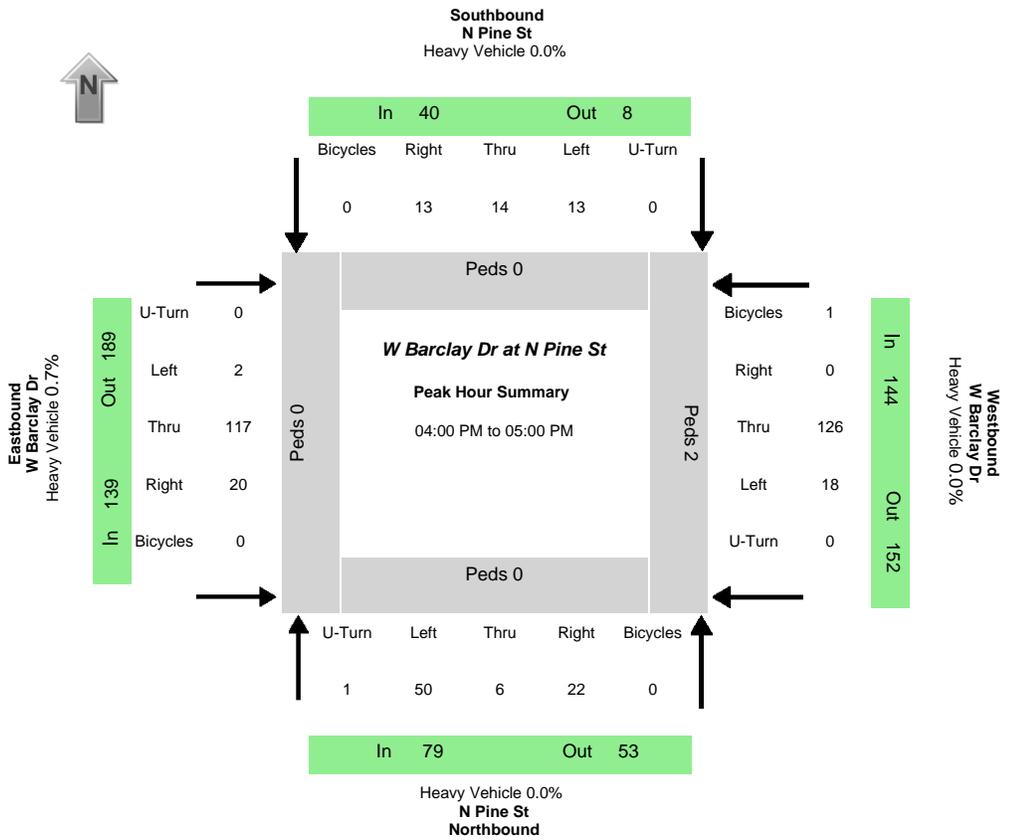
PHV - Bicycles														PHV - Pedestrians							
Northbound				Southbound				Eastbound				Westbound				in Crosswalk					
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3

All Vehicle Volumes																		
Time	Northbound Locust St				Southbound Locust St				Eastbound US 20				Westbound US 20				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
04:00:00 PM	7	0	0	0	7	0	3	0	10	35	1	0	2	46	20	0		
04:05:00 PM	0	1	2	0	5	0	8	0	4	53	1	0	1	39	17	0		
04:10:00 PM	1	1	8	0	6	0	4	0	4	59	1	0	1	31	10	0	382	
04:15:00 PM	0	0	3	0	6	0	6	0	5	42	1	0	0	40	11	0	371	
04:20:00 PM	0	0	3	0	7	0	2	0	7	50	0	0	3	40	16	0	368	
04:25:00 PM	2	0	5	0	7	0	4	0	5	62	0	0	0	42	12	0	381	
04:30:00 PM	1	0	2	0	5	0	5	0	6	62	0	0	0	41	6	0	395	
04:35:00 PM	0	0	1	0	8	0	3	0	4	53	0	0	1	34	5	0	376	
04:40:00 PM	0	0	3	0	9	0	2	0	7	47	0	0	2	37	12	0	356	
04:45:00 PM	1	0	2	0	4	0	10	0	7	57	0	0	0	38	11	0	358	
04:50:00 PM	1	0	0	0	4	2	10	0	6	63	1	0	0	41	11	0	388	
04:55:00 PM	0	0	4	0	10	1	7	0	7	36	1	0	1	29	7	0	372	1491
05:00:00 PM	1	0	1	0	7	1	0	0	9	45	1	0	2	31	13	0	353	1477
05:05:00 PM	0	0	3	0	6	0	5	0	7	75	0	0	0	30	9	0	349	1481
05:10:00 PM	0	0	4	0	7	1	2	0	1	61	0	0	4	17	9	0	352	1461
05:15:00 PM	0	1	3	0	15	0	3	0	3	46	1	0	7	28	11	0	359	1465
05:20:00 PM	0	0	2	0	11	0	4	0	5	39	1	0	4	28	14	0	332	1445
05:25:00 PM	1	0	2	0	3	0	3	0	5	78	1	0	0	25	15	0	359	1439
05:30:00 PM	0	0	1	0	2	0	5	0	7	64	1	0	3	32	12	0	368	1438
05:35:00 PM	0	1	2	0	7	0	4	0	4	28	0	0	1	30	13	0	350	1419
05:40:00 PM	0	0	0	0	4	1	5	0	5	38	0	0	3	26	17	0	316	1399
05:45:00 PM	0	0	4	0	5	0	4	0	6	56	0	0	3	31	7	0	305	1385
05:50:00 PM	0	1	4	0	7	1	5	0	4	55	0	0	4	30	11	0	337	1368
05:55:00 PM	0	1	1	0	9	0	5	0	5	30	1	0	1	30	11	0	332	1359



KEY DATA NETWORK

Data Provided by K-D-N.com 503-594-4224	
N/S street	N Pine St
E/W street	W Barclay Dr
City, State	Sisters OR
Site Notes	
Location	44.29704 - -121.55394
Start Date	Tuesday, October 15, 2019
Start Time	04:00:00 PM
Weather	
Study ID #	
Peak Hour Start	04:00:00 PM
Peak 15 Min Start	04:30:00 PM
PHF (15-Min Int)	0.84



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
50	6	22	1	13	14	13	0	2	117	20	0	18	126	0	0	79	40	139	144	53	8	189	152
Percent Heavy Vehicles																							
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.7%

PHV - Bicycles														PHV - Pedestrians							
Northbound				Southbound				Eastbound				Westbound				in Crosswalk					
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2	2

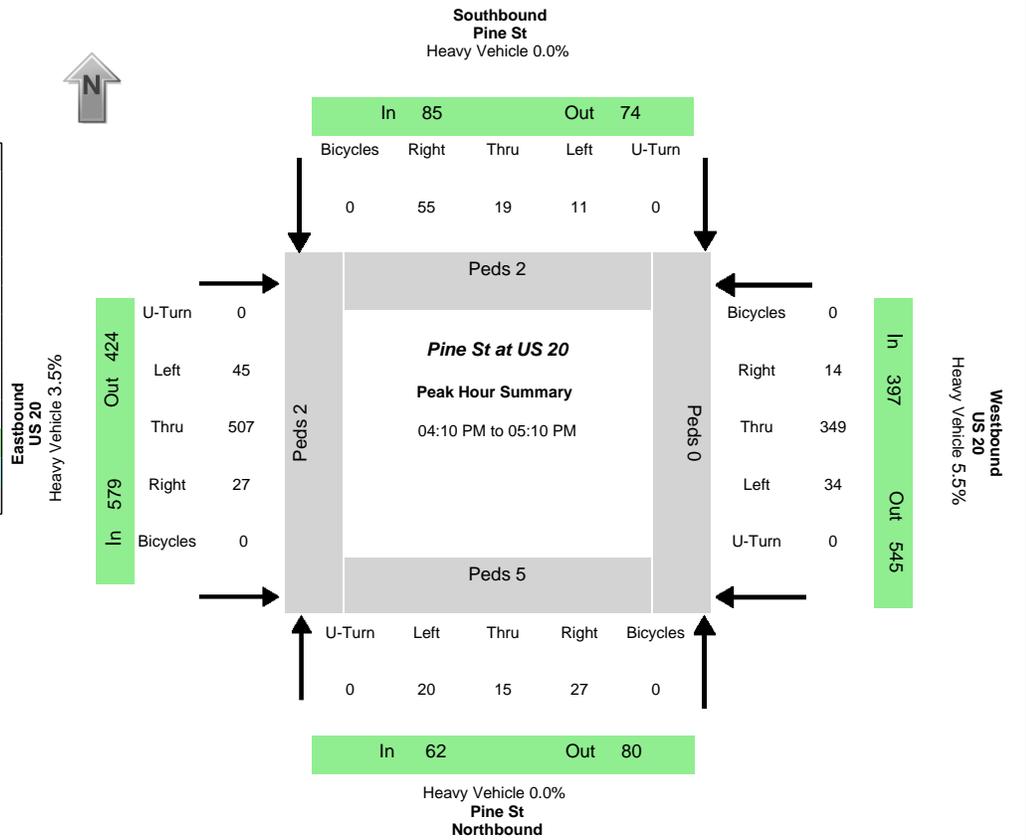
All Vehicle Volumes																		
Time	Northbound N Pine St				Southbound N Pine St				Eastbound W Barclay Dr				Westbound W Barclay Dr				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
04:00:00 PM	6	1	2	1	0	2	3	0	0	5	2	0	3	10	0	0		
04:05:00 PM	3	2	1	0	0	0	1	0	0	11	1	0	3	11	0	0		
04:10:00 PM	4	0	3	0	0	0	0	0	0	13	2	0	0	11	0	0	101	
04:15:00 PM	1	0	1	0	0	2	0	0	0	10	6	0	1	8	0	0	95	
04:20:00 PM	3	0	1	0	1	1	1	0	0	9	1	0	2	15	0	0	96	
04:25:00 PM	2	0	2	0	0	2	0	0	1	5	2	0	1	9	0	0	87	
04:30:00 PM	7	1	2	0	4	2	2	0	0	6	1	0	3	8	0	0	94	
04:35:00 PM	6	0	1	0	3	2	2	0	0	16	1	0	2	11	0	0	104	
04:40:00 PM	5	0	2	0	4	1	2	0	1	6	1	0	0	17	0	0	119	
04:45:00 PM	5	0	2	0	0	1	1	0	0	10	1	0	1	10	0	0	114	
04:50:00 PM	4	1	2	0	0	0	1	0	0	13	1	0	2	9	0	0	103	
04:55:00 PM	4	1	3	0	1	1	0	0	0	13	1	0	0	7	0	0	95	402
05:00:00 PM	3	0	2	0	1	0	2	0	0	11	1	0	1	6	0	0	91	394
05:05:00 PM	2	0	3	0	1	1	0	0	0	12	2	0	1	13	0	0	93	396
05:10:00 PM	5	1	1	0	0	1	0	0	0	14	1	0	1	12	1	0	99	400
05:15:00 PM	7	0	2	0	0	0	2	0	0	10	0	0	0	8	0	0	101	400
05:20:00 PM	3	0	0	0	0	0	0	0	1	8	0	0	0	17	1	0	96	396
05:25:00 PM	2	0	0	0	0	1	0	0	0	5	2	0	0	5	0	0	74	387
05:30:00 PM	2	1	5	0	0	0	0	0	1	7	0	0	0	7	0	0	68	374
05:35:00 PM	1	1	1	0	1	1	0	0	0	11	0	0	0	14	0	0	68	360
05:40:00 PM	6	1	0	0	0	1	0	0	0	8	2	0	0	8	0	0	79	347
05:45:00 PM	3	0	0	0	0	0	0	0	1	8	1	0	2	6	0	0	77	337
05:50:00 PM	0	0	2	0	0	0	2	0	0	10	0	0	0	16	0	0	77	334
05:55:00 PM	1	2	0	0	0	0	3	0	0	7	2	0	0	10	0	0	76	328



KEY DATA NETWORK

Data Provided by K-D-N.com 503-594-4224

N/S street	Pine St
E/W street	US 20
City, State	Sisters OR
Site Notes	
Location	44.291346 - -121.553807
Start Date	Tuesday, October 15, 2019
Start Time	04:00:00 PM
Weather	
Study ID #	
Peak Hour Start	04:10:00 PM
Peak 15 Min Start	04:20:00 PM
PHF (15-Min Int)	0.91



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
20	15	27	0	11	19	55	0	45	507	27	0	34	349	14	0	62	85	579	397	80	74	424	545
Percent Heavy Vehicles																							
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.9%	0.0%	0.0%	0.0%	6.3%	0.0%	0.0%	0.0%	0.0%	3.5%	5.5%	0.0%	0.0%	5.2%	3.7%

PHV - Bicycles												PHV - Pedestrians									
Northbound				Southbound				Eastbound				Westbound				in Crosswalk					
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	0	9

Time	Northbound Pine St				Southbound Pine St				Eastbound US 20				Westbound US 20				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
04:00:00 PM	0	3	2	0	3	1	8	0	5	43	2	0	2	23	2	0		
04:05:00 PM	3	2	5	0	2	2	8	0	3	43	2	0	4	22	3	0		
04:10:00 PM	3	1	8	0	1	4	5	0	3	34	3	0	6	31	1	0	293	
04:15:00 PM	3	2	2	0	2	0	5	0	5	23	2	0	4	21	4	0	272	
04:20:00 PM	2	2	0	0	0	1	5	0	4	42	2	0	3	37	0	0	271	
04:25:00 PM	2	0	4	0	0	3	3	0	4	48	4	0	2	34	2	0	277	
04:30:00 PM	0	1	1	0	1	2	6	0	6	54	4	0	0	28	1	0	308	
04:35:00 PM	0	3	4	0	2	2	3	0	0	28	1	0	3	29	1	0	286	
04:40:00 PM	2	2	1	0	1	1	6	0	3	41	1	0	3	30	1	0	272	
04:45:00 PM	1	1	1	0	1	4	1	0	5	66	1	0	1	26	0	0	276	
04:50:00 PM	0	0	2	0	0	2	4	0	4	33	4	0	3	35	0	0	287	
04:55:00 PM	4	0	2	0	1	0	6	0	3	34	2	0	3	26	2	0	278	1120
05:00:00 PM	2	3	0	0	1	0	6	0	5	29	1	0	2	27	1	0	247	1103
05:05:00 PM	1	0	2	0	1	0	5	0	3	75	2	0	4	25	1	0	279	1123
05:10:00 PM	2	2	2	0	0	2	4	0	4	37	5	0	7	14	0	0	275	1102
05:15:00 PM	1	1	0	0	2	0	2	0	0	28	2	0	4	14	1	0	253	1084
05:20:00 PM	1	0	4	0	1	0	2	0	2	21	2	0	6	27	1	0	201	1053
05:25:00 PM	3	0	1	0	0	0	3	0	6	76	3	0	3	15	1	0	233	1058
05:30:00 PM	0	2	2	0	1	0	6	0	5	41	1	0	4	23	0	0	263	1039
05:35:00 PM	1	0	1	0	1	0	1	0	0	22	1	0	2	20	1	0	246	1013
05:40:00 PM	2	3	0	0	2	0	2	0	3	51	3	0	3	32	1	0	237	1023
05:45:00 PM	1	0	1	0	2	0	4	0	3	66	1	0	4	16	1	0	251	1014
05:50:00 PM	1	1	2	0	1	0	4	0	1	23	1	0	3	21	3	0	262	988
05:55:00 PM	1	1	0	0	0	1	5	0	1	15	3	0	2	30	2	0	221	966



Key Data Network  
5477 SW Joshua St

Tualatin, Oregon, United States 97062  
503.804.3294 conley@k-d-n.com  
Key People serving Key Clients

Count Name: Hwy 20 at W  
Barclay Rd  
Site Code:  
Start Date: 10/15/2019  
Page No: 1

Location: 44.295756, -  
121.559593

### Turning Movement Data

Start Time	Hwy 20 Northbound						Hwy 20 Southbound						W McKinney Butte Rd Eastbound					W Barclay Rd Westbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:00 PM	20	59	4	0	0	83	21	85	3	0	0	109	28	12	26	0	66	15	19	17	0	0	51	309
4:15 PM	25	69	1	0	0	95	18	95	9	0	0	122	20	14	29	0	63	3	26	12	0	0	41	321
4:30 PM	31	56	3	0	0	90	14	66	6	1	0	87	21	19	31	0	71	16	30	14	0	0	60	308
4:45 PM	22	63	2	0	1	87	15	90	6	0	0	111	19	25	27	0	71	8	25	12	0	0	45	314
Hourly Total	98	247	10	0	1	355	68	336	24	1	0	429	88	70	113	0	271	42	100	55	0	0	197	1252
5:00 PM	22	43	3	0	0	68	20	102	5	0	0	127	27	21	26	0	74	4	27	13	0	0	44	313
5:15 PM	15	49	3	0	0	67	18	108	5	0	1	131	24	11	31	0	66	7	28	12	0	0	47	311
5:30 PM	21	48	5	0	0	74	13	39	1	0	1	53	18	13	29	0	60	3	28	6	0	0	37	224
5:45 PM	32	37	2	0	0	71	17	74	8	0	0	99	24	13	23	0	60	6	27	9	0	0	42	272
Hourly Total	90	177	13	0	0	280	68	323	19	0	2	410	93	58	109	0	260	20	110	40	0	0	170	1120
Grand Total	188	424	23	0	1	635	136	659	43	1	2	839	181	128	222	0	531	62	210	95	0	0	367	2372
Approach %	29.6	66.8	3.6	0.0	-	-	16.2	78.5	5.1	0.1	-	-	34.1	24.1	41.8	0.0	-	16.9	57.2	25.9	0.0	-	-	-
Total %	7.9	17.9	1.0	0.0	-	26.8	5.7	27.8	1.8	0.0	-	35.4	7.6	5.4	9.4	0.0	22.4	2.6	8.9	4.0	0.0	-	15.5	-
Lights	185	391	23	0	-	599	135	601	42	0	-	778	178	126	218	0	522	61	209	92	0	-	362	2261
% Lights	98.4	92.2	100.0	-	-	94.3	99.3	91.2	97.7	0.0	-	92.7	98.3	98.4	98.2	-	98.3	98.4	99.5	96.8	-	-	98.6	95.3
Other Vehicles	3	33	0	0	-	36	1	58	1	1	-	61	3	2	4	0	9	1	1	3	0	-	5	111
% Other Vehicles	1.6	7.8	0.0	-	-	5.7	0.7	8.8	2.3	100.0	-	7.3	1.7	1.6	1.8	-	1.7	1.6	0.5	3.2	-	-	1.4	4.7
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
All Pedestrians	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	0	-	-
% All Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-

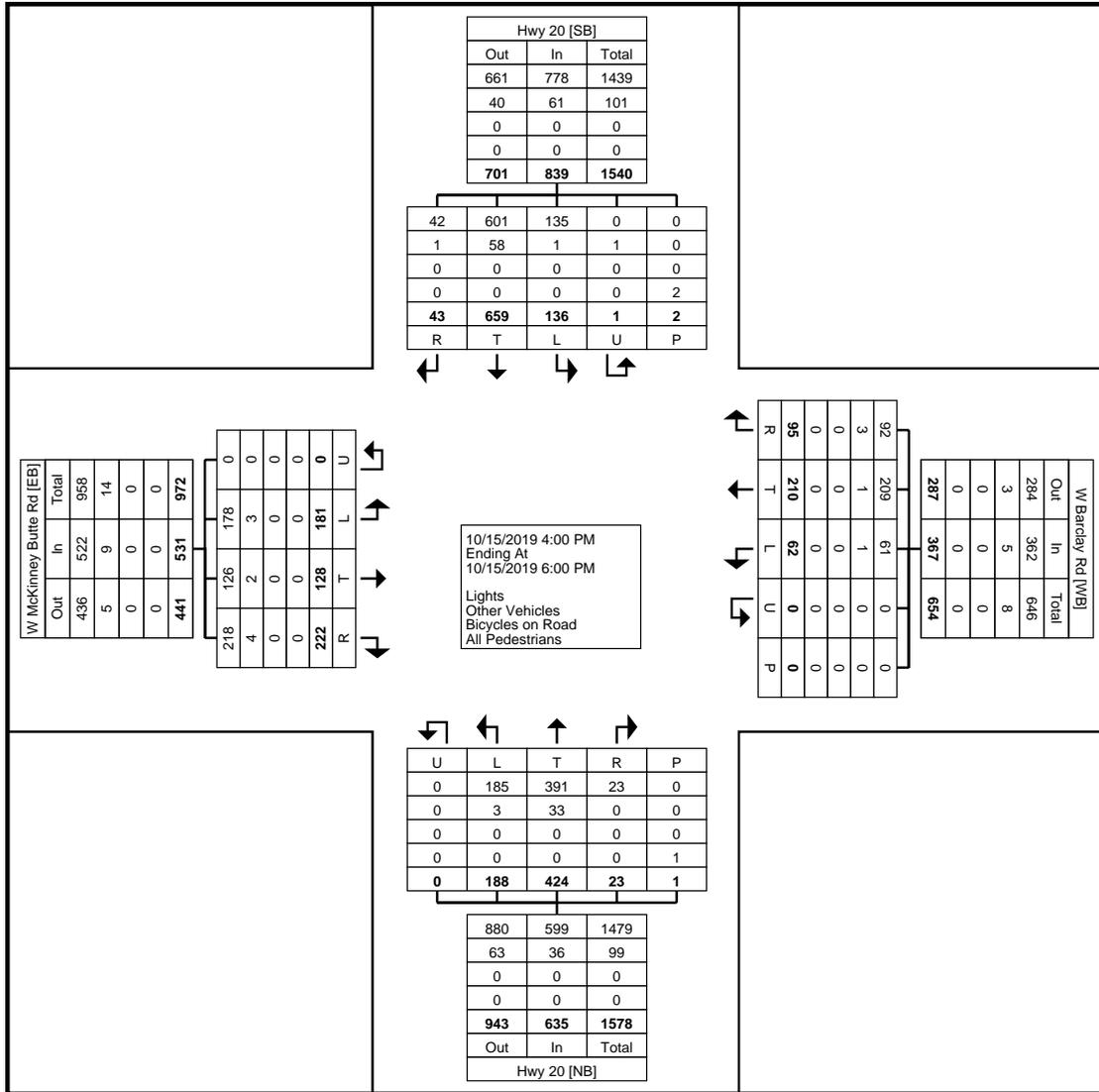


Key Data Network  
5477 SW Joshua St

Tualatin, Oregon, United States 97062  
503.804.3294 conley@k-d-n.com  
Key People serving Key Clients

Count Name: Hwy 20 at W  
Barclay Rd  
Site Code:  
Start Date: 10/15/2019  
Page No: 2

Location: 44.295756, -  
121.559593



Turning Movement Data Plot



KEY DATA NETWORK

Key Data Network  
5477 SW Joshua St

Tualatin, Oregon, United States 97062  
503.804.3294 conley@k-d-n.com  
Key People serving Key Clients

Count Name: Hwy 20 at W  
Barclay Rd  
Site Code:  
Start Date: 10/15/2019  
Page No: 3

Location: 44.295756, -  
121.559593

### Approach Data

Start Time	Nb Street Northbound						Sb Street Southbound						Eb Street Eastbound				Wb Street Westbound					
	Peds CCW	Peds CW	Circul ating	Out	In	Next	Peds CCW	Peds CW	Circul ating	Out	In	Next	Circul ating	Out	In	Next	Peds CCW	Peds CW	Circul ating	Out	In	Next
4:00 PM	0	0	62	126	82	4	0	0	53	106	108	3	119	42	66	26	0	0	106	39	50	17
4:15 PM	0	0	53	126	97	1	0	0	53	100	123	9	117	59	64	29	0	0	116	32	41	12
4:30 PM	0	0	54	114	89	3	0	0	78	94	87	6	98	66	71	31	0	0	108	37	60	14
4:45 PM	0	1	60	125	88	2	0	0	57	93	112	6	114	53	72	27	0	0	106	42	46	12
Hourly Total	0	1	229	491	356	10	0	0	241	393	430	24	448	220	273	113	0	0	436	150	197	55
5:00 PM	0	0	67	132	68	3	0	0	54	83	128	5	127	53	73	26	0	0	92	44	45	13
5:15 PM	0	0	51	145	68	3	1	0	48	84	131	5	134	47	66	31	0	0	90	31	46	12
5:30 PM	0	0	46	70	74	5	0	1	52	73	53	1	55	50	62	29	0	0	86	30	36	6
5:45 PM	0	0	54	104	71	2	0	0	66	71	99	8	97	67	60	23	0	0	93	32	43	9
Hourly Total	0	0	218	451	281	13	1	1	220	311	411	19	413	217	261	109	0	0	361	137	170	40
Grand Total	0	1	447	942	637	23	1	1	461	704	841	43	861	437	534	222	0	0	797	287	367	95
Approach %	-	-	21.8	46.0	31.1	1.1	-	-	22.5	34.4	41.0	2.1	41.9	21.3	26.0	10.8	-	-	51.6	18.6	23.7	6.1
Total %	-	-	5.8	12.2	8.3	0.3	-	-	6.0	9.1	10.9	0.6	11.2	5.7	6.9	2.9	-	-	10.4	3.7	4.8	1.2
Lights	-	-	439	876	600	23	-	-	457	662	781	42	801	432	524	218	-	-	756	283	363	92
% Lights	-	-	98.2	93.0	94.2	100.0	-	-	99.1	94.0	92.9	97.7	93.0	98.9	98.1	98.2	-	-	94.9	98.6	98.9	96.8
Other Vehicles	-	-	8	66	37	0	-	-	4	41	60	1	60	5	10	4	-	-	41	4	4	3
% Other Vehicles	-	-	1.8	7.0	5.8	0.0	-	-	0.9	5.8	7.1	2.3	7.0	1.1	1.9	1.8	-	-	5.1	1.4	1.1	3.2
Bicycles on Road	-	-	0	0	0	0	-	-	0	1	0	0	0	0	0	0	-	-	0	0	0	0
% Bicycles on Road	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0
Bicycles on Crosswalk	0	1	-	-	-	-	1	0	-	-	-	-	-	-	-	-	0	0	-	-	-	-
% Bicycles on Crosswalk	-	100.0	-	-	-	-	100.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	0	0	-	-	-	-	0	1	-	-	-	-	-	-	-	-	0	0	-	-	-	-
% Pedestrians	-	0.0	-	-	-	-	0.0	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-



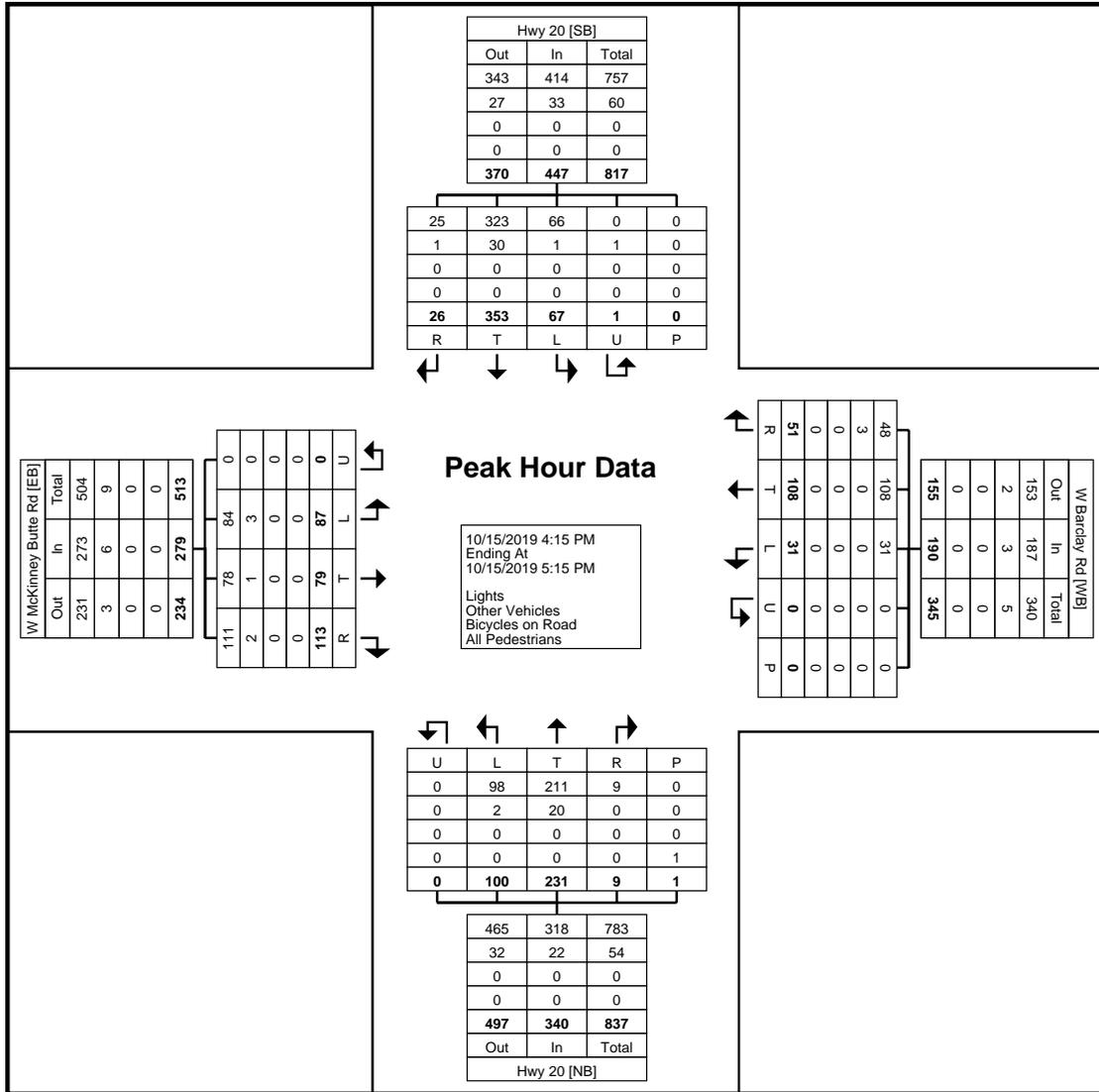


Key Data Network  
5477 SW Joshua St

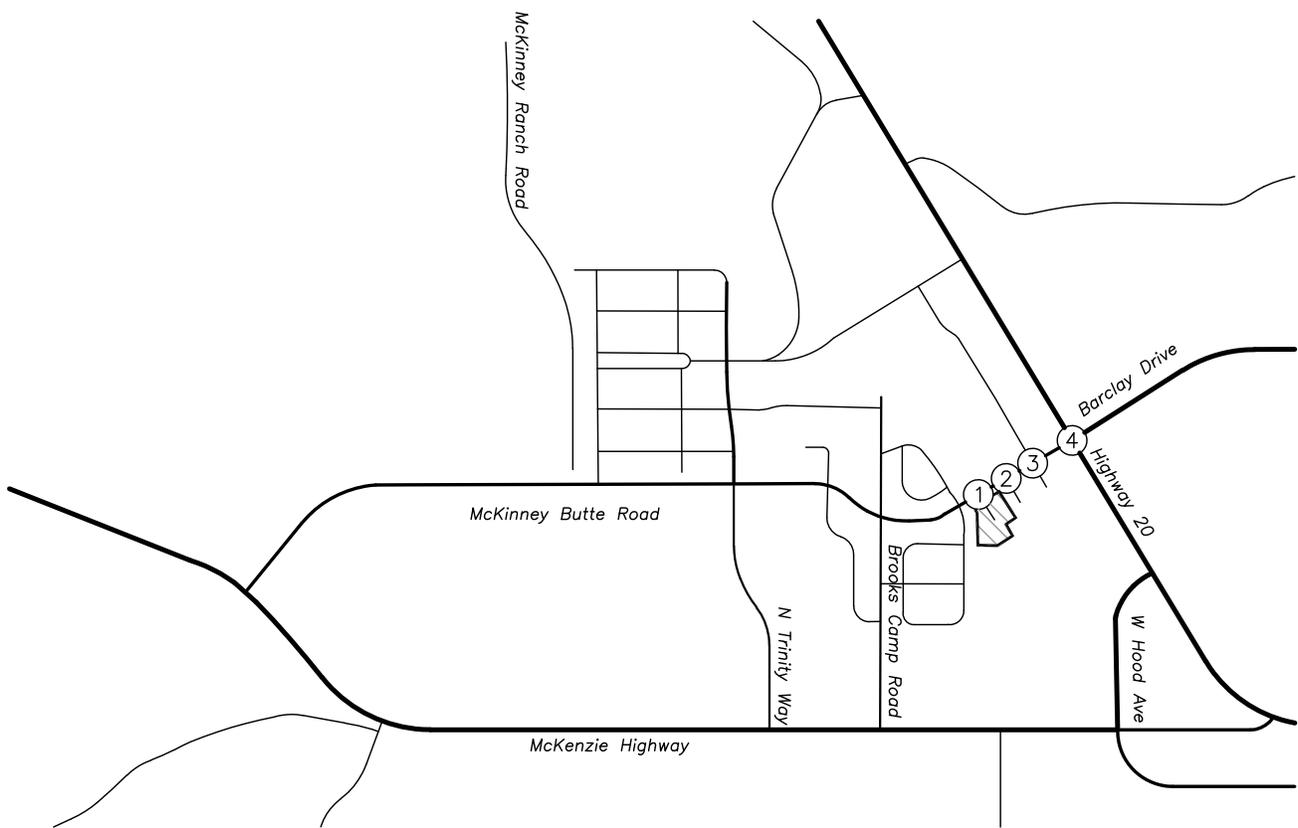
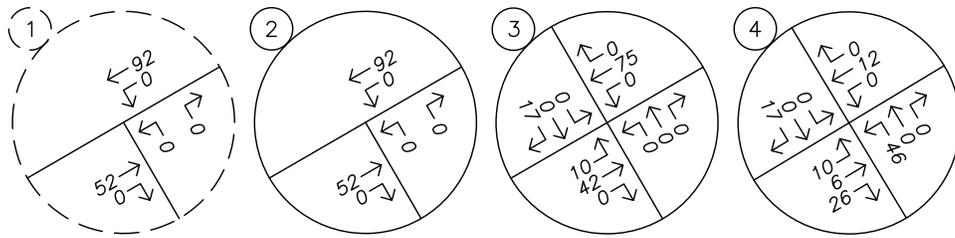
Tualatin, Oregon, United States 97062  
503.804.3294 conley@k-d-n.com  
Key People serving Key Clients

Count Name: Hwy 20 at W  
Barclay Rd  
Site Code:  
Start Date: 10/15/2019  
Page No: 5

Location: 44.295756, -  
121.559593



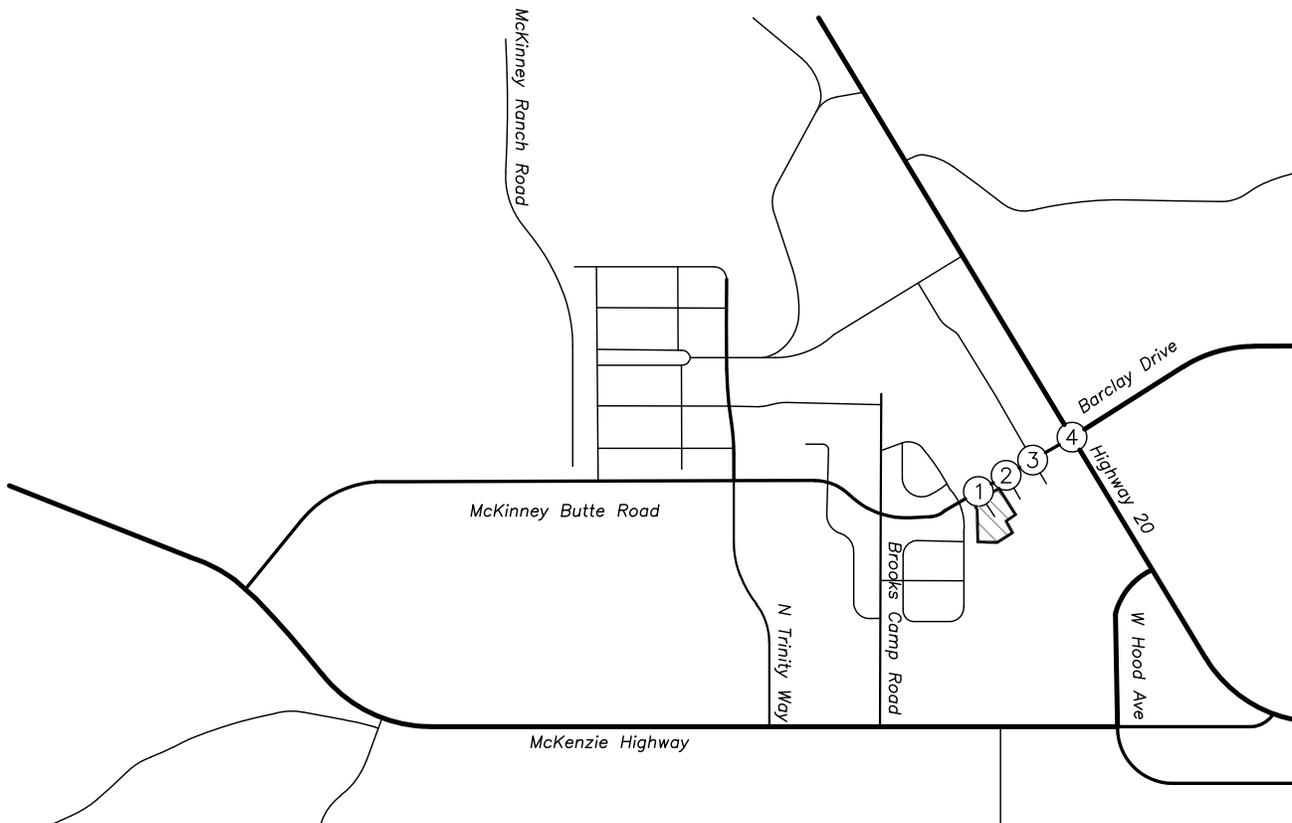
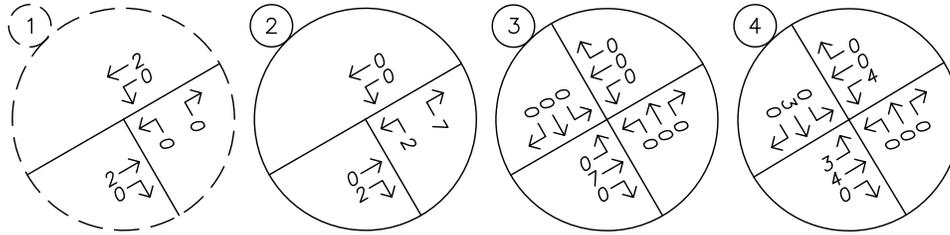
Turning Movement Peak Hour Data Plot (4:15 PM)



TRAFFIC VOLUMES  
 In-Process Trips - McKenzie Meadows  
 PM Peak Hour



FIGURE  
 --  
 PAGE  
 --



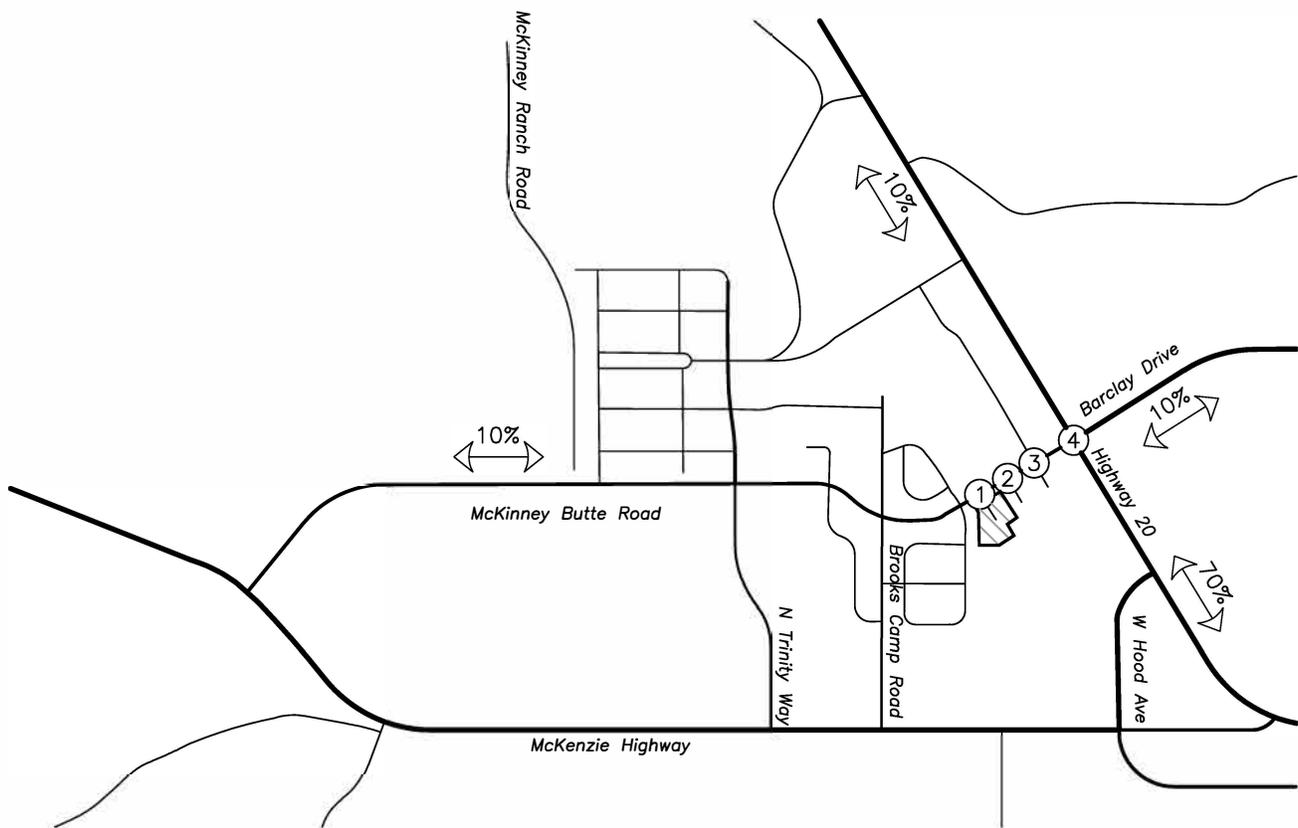
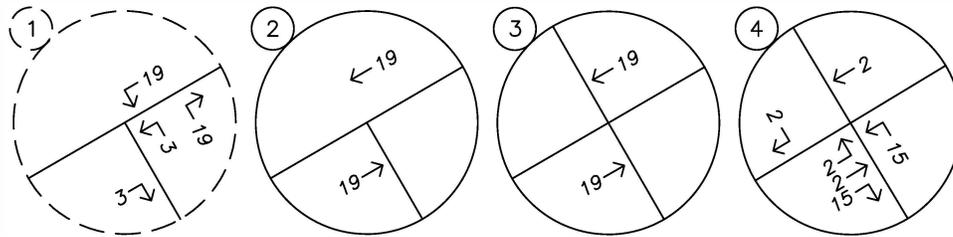
TRAFFIC VOLUMES  
 In-Process Trips – Threewind Master Plan  
 PM Peak Hour



**LEGEND**

XX% PERCENT OF PRIMARY TRIPS

TRIP GENERATION			
	IN	OUT	TOTAL
AM	8	3	11
PM	22	22	44



**TRAFFIC VOLUMES**  
 In-Process Trips – Dollar General  
 PM Peak Hour



**FIGURE 5**

**PAGE 10**















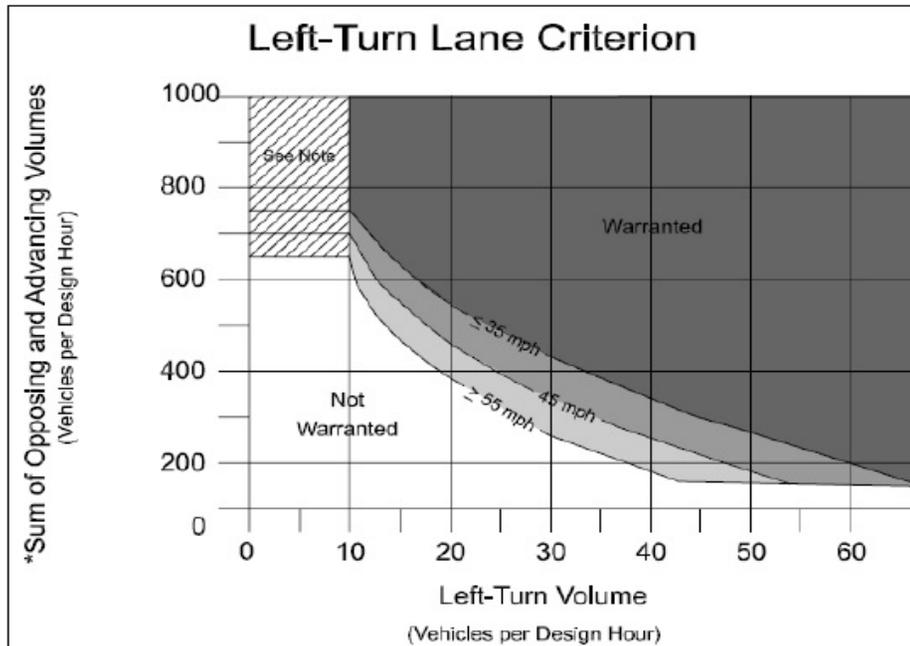




Project: 19091 Sisters Industrial Subdivision  
 Intersection: W Barclay Drive at N Pine Street  
 Date: 2/25/2020  
 Scenario: 2040 Buildout, Westbound Approach

Speed? 30 mph

<b>AM Peak Hour</b>		<b>PM Peak Hour</b>	
Left-Turn Volume		Left-Turn Volume	27
Approaching DHV # of Advancing Through Lanes		Approaching DHV # of Advancing Through Lanes	278 1
Opposing DHV # of Opposing Through Lanes		Opposing DHV # of Opposing Through Lanes	303 1
<b>O+A DHV</b>		<b>O+A DHV</b>	<b>581</b>
Lane Needed?		Lane Needed?	<b>Yes</b>



Source: Oregon DOT Analysis Procedures Manual 2008

$*(\text{Advancing Vol} / \# \text{ of Advancing Through Lanes}) + (\text{Opposing Vol} / \# \text{ of Opposing Through Lanes})$

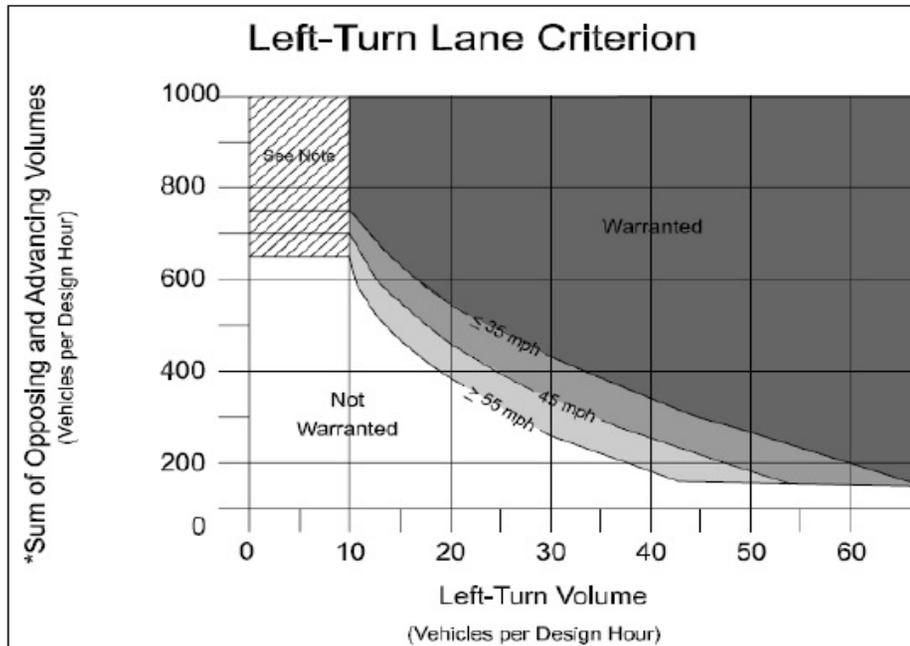
Note: The criterion is not met from zero to ten left turn vehicles per hour, but careful consideration should be given to installing a left turn lane due to the increased potential for accidents in the through lanes. While the turn volumes are low, the adverse safety and operational impacts may require installation of a left turn. The final determination will be based on a field study.



Project: 19091 Sisters Industrial Subdivision  
 Intersection: W Barclay Drive at N Pine Street  
 Date: 2/25/2020  
 Scenario: 2040 Buildout, Eastbound Approach

Speed? 30 mph

<b>AM Peak Hour</b>		<b>PM Peak Hour</b>	
Left-Turn Volume		Left-Turn Volume	3
Approaching DHV # of Advancing Through Lanes		Approaching DHV # of Advancing Through Lanes	306 1
Opposing DHV # of Opposing Through Lanes		Opposing DHV # of Opposing Through Lanes	251 1
<b>O+A DHV</b>		<b>O+A DHV</b>	<b>557</b>
Lane Needed?		Lane Needed?	<b>No</b>



Source: Oregon DOT Analysis Procedures Manual 2008

$*(\text{Advancing Vol} / \# \text{ of Advancing Through Lanes}) + (\text{Opposing Vol} / \# \text{ of Opposing Through Lanes})$

Note: The criterion is not met from zero to ten left turn vehicles per hour, but careful consideration should be given to installing a left turn lane due to the increased potential for accidents in the through lanes. While the turn volumes are low, the adverse safety and operational impacts may require installation of a left turn. The final determination will be based on a field study.

# Traffic Signal Warrant Analysis



Project: 19091 - Sisters Industrial Subdivision  
 Date: 1/27/2020  
 Scenario: SW 11th Street Extension

Major Street:	US Highway 20	Minor Street:	N Pine Street
Number of Lanes:	1	Number of Lanes:	2
PM Peak Hour Volumes:	1,680	PM Peak Hour Volumes:	121

**Warrant Used:**

\_\_\_\_\_ 100 percent of standard warrants used  
      X       70 percent of standard warrants used due to 85th percentile speed in excess  
 \_\_\_\_\_ of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
<b>WARRANT 1, CONDITION A</b>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<b>WARRANT 1, CONDITION B</b>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	16,800	6,200	
Minor Street*	1,210	2,500	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	16,800	9,300	
Minor Street*	1,210	1,250	<b>No</b>
<i>Combination Warrant</i>			
Major Street	16,800	7,440	
Minor Street*	1,210	2,000	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 25%

# Traffic Signal Warrant Analysis



Project: 19091 - Sisters Industrial Subdivision  
 Date: 1/27/2020  
 Scenario: SW 11th Street Extension

Major Street:	W Barclay Drive	Minor Street:	N Pine Street
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	584	PM Peak Hour Volumes:	116

**Warrant Used:**

\_\_\_\_\_ 100 percent of standard warrants used  
      X       70 percent of standard warrants used due to 85th percentile speed in excess  
 \_\_\_\_\_ of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
<b>WARRANT 1, CONDITION A</b>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<b>WARRANT 1, CONDITION B</b>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	5,840	6,200	
Minor Street*	1,160	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	5,840	9,300	
Minor Street*	1,160	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	5,840	7,440	
Minor Street*	1,160	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 25%

Vistro File: Z:\...\Spencer Industrial Park PM.vistro

Scenario 4 Existing Volumes

Report File: Z:\...\Existing.pdf

4/30/2020

**Intersection Analysis Summary**

<b>ID</b>	<b>Intersection Name</b>	<b>Control Type</b>	<b>Method</b>	<b>Worst Mvmt</b>	<b>V/C</b>	<b>Delay (s/veh)</b>	<b>LOS</b>
1	US 20 at W Barclay Drive	Roundabout	HCM 6th Edition	SEB Thru		8.9	A
2	N Pine Street at W Barclay Drive	Two-way stop	HCM 6th Edition	NB Left	0.106	12.4	B
3	N Locust Street at W Barclay Drive	Two-way stop	HCM 6th Edition	EB Left	0.145	13.0	B
4	Pine Street at US 20	Two-way stop	HCM 6th Edition	NB Left	0.232	57.2	F
5	Locust Street at US 20	Two-way stop	HCM 6th Edition	SB Left	1.103	240.7	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: US 20 at W Barclay Drive**

Control Type:	Roundabout	Delay (sec / veh):	8.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

**Intersection Setup**

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Approach												
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right									
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Base Volume Input [veh/h]	87	79	113	31	108	51	100	273	9	67	418	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	2.20	2.20	1.60	1.60	1.60	6.50	6.50	6.50	7.40	7.40	7.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	79	113	31	108	51	100	273	9	67	418	26
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	20	29	8	28	13	26	70	2	17	107	7
Total Analysis Volume [veh/h]	89	81	115	32	110	52	102	279	9	68	427	27
Pedestrian Volume [ped/h]	0			0			1			0		

**Intersection Settings**

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	564			497			247			253		
Exiting Flow Rate [veh/h]	249			165			609			441		
Demand Flow Rate [veh/h]	87	79	113	31	108	51	100	273	9	67	418	26
Adjusted Demand Flow Rate [veh/h]	89	81	115	32	110	52	102	279	9	68	427	27

**Lanes**

Overwrite Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Overwrite Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.98			0.98			0.94			0.93		
Entry Flow Rate [veh/h]	292			198			416			561		
Capacity of Entry and Bypass Lanes [veh/h]	777			832			1073			1067		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	760			819			1008			993		
X, volume / capacity	0.38			0.24			0.39			0.53		

**Movement, Approach, & Intersection Results**

Lane LOS	A			A			A			B		
95th-Percentile Queue Length [veh]	1.75			0.92			1.85			3.16		
95th-Percentile Queue Length [ft]	43.76			23.03			46.27			78.93		
Approach Delay [s/veh]	9.44			6.95			7.75			10.20		
Approach LOS	A			A			A			B		
Intersection Delay [s/veh]	8.90											
Intersection LOS	A											

**Intersection Level Of Service Report**  
**Intersection 2: N Pine Street at W Barclay Drive**

Control Type:	Two-way stop	Delay (sec / veh):	12.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.106

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration	⊕			⊕			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	50	6	22	13	14	13	2	117	20	18	126	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.70	7.00	0.70	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	6	22	13	14	13	2	117	20	18	126	0
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	2	7	4	4	4	1	35	6	5	38	0
Total Analysis Volume [veh/h]	60	7	26	15	17	15	2	139	24	21	150	0
Pedestrian Volume [ped/h]	0			0			0			2		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.11	0.01	0.03	0.03	0.03	0.02	0.00	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	12.35	12.31	10.00	11.84	11.87	9.44	7.50	0.00	0.00	7.56	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.51	0.51	0.51	0.24	0.24	0.24	0.00	0.00	0.00	0.04	0.04	0.04
95th-Percentile Queue Length [ft/ln]	12.87	12.87	12.87	5.94	5.94	5.94	0.10	0.10	0.10	1.12	1.12	1.12
d_A, Approach Delay [s/veh]	11.69			11.08			0.09			0.93		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	3.74											
Intersection LOS	B											

**Intersection Level Of Service Report**  
**Intersection 3: N Locust Street at W Barclay Drive**

Control Type:	Two-way stop	Delay (sec / veh):	13.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.145

**Intersection Setup**

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration	↰		↱		↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	86	87	88	39	77	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.70	1.70	1.60	1.60	0.60	0.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	87	88	39	77	94
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	23	24	10	21	25
Total Analysis Volume [veh/h]	92	94	95	42	83	101
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.06	0.00	0.00	0.00	0.15	0.11
d_M, Delay for Movement [s/veh]	7.65	0.00	0.00	0.00	12.95	10.49
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.20	0.20	0.00	0.00	1.00	1.00
95th-Percentile Queue Length [ft/ln]	5.08	5.08	0.00	0.00	24.96	24.96
d_A, Approach Delay [s/veh]	3.79		0.00		11.60	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	5.60					
Intersection LOS	B					

**Intersection Level Of Service Report  
Intersection 4: Pine Street at US 20**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 57.2  
 Level Of Service: F  
 Volume to Capacity (v/c): 0.232

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	20	15	27	11	19	55	45	600	27	34	413	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	3.50	3.50	3.50	5.50	5.50	5.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	15	27	11	19	55	45	600	27	34	413	14
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	4	7	3	5	15	12	165	7	9	113	4
Total Analysis Volume [veh/h]	22	16	30	12	21	60	49	659	30	37	454	15
Pedestrian Volume [ped/h]	5			2			2			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.23	0.11	0.07	0.11	0.15	0.10	0.05	0.01	0.00	0.04	0.00	0.00
d_M, Delay for Movement [s/veh]	57.25	44.40	27.24	48.87	40.18	11.68	8.49	0.00	0.00	9.26	0.00	0.00
Movement LOS	F	E	D	E	E	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.81	1.81	1.81	0.98	0.98	0.33	0.14	0.00	0.00	0.13	0.00	0.00
95th-Percentile Queue Length [ft/ln]	45.35	45.35	45.35	24.50	24.50	8.31	3.56	0.00	0.00	3.28	0.00	0.00
d_A, Approach Delay [s/veh]	40.99			22.91			0.56			0.68		
Approach LOS	E			C			A			A		
d_I, Intersection Delay [s/veh]	4.04											
Intersection LOS	F											

**Intersection Level Of Service Report  
Intersection 5: Locust Street at US 20**

Control Type:	Two-way stop	Delay (sec / veh):	240.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.103

**Intersection Setup**

Name	Northbound			Southbound			Northwestbound			Southeastbound		
Approach	Northbound			Southbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

**Volumes**

Name	Northbound			Southbound			Northwestbound			Southeastbound		
Base Volume Input [veh/h]	7	2	33	78	3	64	11	542	138	72	733	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.10	2.10	2.10	5.60	5.60	5.60	3.90	3.90	3.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	2	33	78	3	64	11	542	138	72	733	6
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	9	21	1	17	3	144	37	19	195	2
Total Analysis Volume [veh/h]	7	2	35	83	3	68	12	577	147	77	780	6
Pedestrian Volume [ped/h]	0			0			0			3		

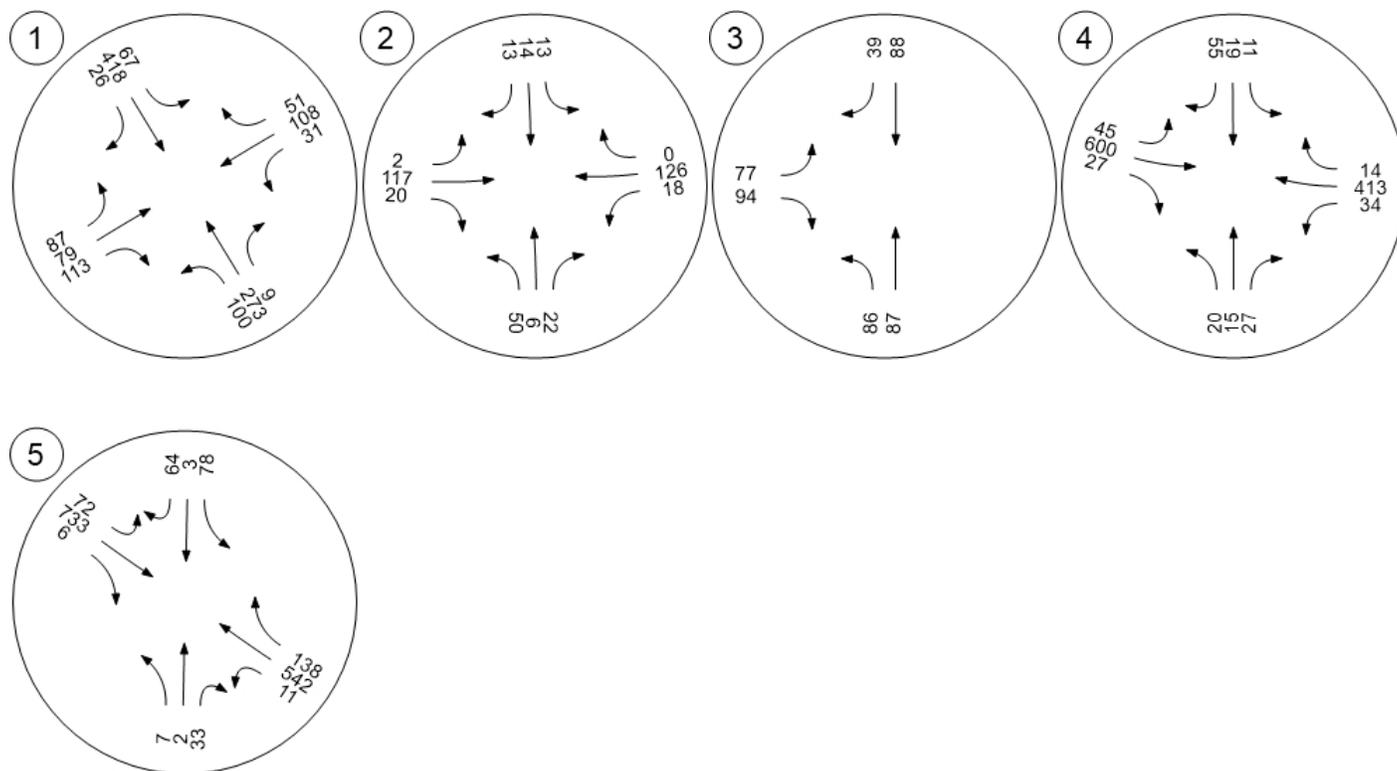
**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.11	0.02	0.09	1.10	0.03	0.13	0.01	0.01	0.00	0.09	0.01	0.00
d_M, Delay for Movement [s/veh]	68.46	52.75	19.33	240.74	227.97	13.10	9.47	0.00	0.00	9.54	0.00	0.00
Movement LOS	F	F	C	F	F	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.83	0.83	0.83	6.34	6.34	0.46	0.04	0.04	0.00	0.29	0.00	0.00
95th-Percentile Queue Length [ft/ln]	20.85	20.85	20.85	158.51	158.51	11.38	1.12	1.12	0.00	7.26	0.00	0.00
d_A, Approach Delay [s/veh]	28.67			139.97			0.15			0.85		
Approach LOS	D			F			A			A		
d_I, Intersection Delay [s/veh]	13.17											
Intersection LOS	F											

Traffic Volume - Base Volume



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Scenario 2 2040 Background Volumes

Report File: Z:\...\Background 2040.pdf

4/30/2020

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	US 20 at W Barclay Drive	Roundabout	HCM 6th Edition	SEB Thru		22.3	C
2	N Pine Street at W Barclay Drive	Two-way stop	HCM 6th Edition	NB Left	0.236	18.0	C
3	N Locust Street at W Barclay Drive	Two-way stop	HCM 6th Edition	SB Thru	0.315	18.1	C
4	Pine Street at US 20	Two-way stop	HCM 6th Edition	NB Left	2.083	1,126.6	F
5	Locust Street at US 20	Roundabout	HCM 6th Edition	SEB Thru		44.6	E

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: US 20 at W Barclay Drive**

Control Type:	Roundabout	Delay (sec / veh):	22.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes		

**Intersection Setup**

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Approach												
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right									
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Base Volume Input [veh/h]	132	120	171	47	164	77	152	331	14	102	507	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	2.20	2.20	1.60	1.60	1.60	6.50	6.50	6.50	7.40	7.40	7.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	15	12	41	4	14	0	61	0	0	0	3	19
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	147	132	212	51	178	77	213	331	14	102	510	58
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	34	54	13	45	20	54	84	4	26	130	15
Total Analysis Volume [veh/h]	150	135	216	52	182	79	217	338	14	104	520	59
Pedestrian Volume [ped/h]	0			0			1			0		

**Intersection Settings**

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	723			744			403			469		
Exiting Flow Rate [veh/h]	479			265			832			594		
Demand Flow Rate [veh/h]	147	132	212	51	178	77	213	331	14	102	510	58
Adjusted Demand Flow Rate [veh/h]	150	135	216	52	182	79	217	338	14	104	520	59

**Lanes**

Overwrite Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Overwrite Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.98			0.98			0.94			0.93		
Entry Flow Rate [veh/h]	513			319			606			734		
Capacity of Entry and Bypass Lanes [veh/h]	661			646			915			856		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	646			636			859			797		
X, volume / capacity	0.78			0.49			0.66			0.86		

**Movement, Approach, & Intersection Results**

Lane LOS	D			B			C			D		
95th-Percentile Queue Length [veh]	7.37			2.73			5.15			10.41		
95th-Percentile Queue Length [ft]	184.32			68.14			128.86			260.30		
Approach Delay [s/veh]	26.01			13.49			15.33			29.40		
Approach LOS	D			B			C			D		
Intersection Delay [s/veh]	22.29											
Intersection LOS	C											

**Intersection Level Of Service Report**  
**Intersection 2: N Pine Street at W Barclay Drive**

Control Type:	Two-way stop	Delay (sec / veh):	18.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.236

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	76	9	33	20	21	20	3	177	30	27	191	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.70	7.00	0.70	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	12	0	0	18	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	76	9	33	20	21	20	3	189	30	27	209	2
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	3	10	6	6	6	1	56	9	8	62	1
Total Analysis Volume [veh/h]	90	11	39	24	25	24	4	225	36	32	249	2
Pedestrian Volume [ped/h]	0			0			0			2		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.24	0.03	0.05	0.06	0.06	0.03	0.00	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	18.01	17.09	13.08	15.79	15.08	10.90	7.73	0.00	0.00	7.81	0.00	0.00
Movement LOS	C	C	B	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.31	1.31	1.31	0.54	0.54	0.54	0.01	0.01	0.01	0.07	0.07	0.07
95th-Percentile Queue Length [ft/ln]	32.74	32.74	32.74	13.46	13.46	13.46	0.23	0.23	0.23	1.87	1.87	1.87
d_A, Approach Delay [s/veh]	16.56			13.94			0.12			0.88		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	4.75											
Intersection LOS	C											

**Intersection Level Of Service Report**  
**Intersection 3: N Locust Street at W Barclay Drive**

Control Type:	Two-way stop	Delay (sec / veh):	18.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.315

**Intersection Setup**

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration	↰		↱		↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

**Volumes**

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	130	132	133	59	117	142
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.70	2.00	2.00	2.00	2.00	0.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	16	0	0	2	1	11
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	146	132	133	61	118	153
Peak Hour Factor	0.9300	1.0000	1.0000	1.0000	1.0000	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	33	33	15	30	41
Total Analysis Volume [veh/h]	157	132	133	61	118	165
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Stop	Free
Flared Lane		No	
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.32	0.07	0.09	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	18.08	13.95	7.93	0.00
Movement LOS	A	A	C	B	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	1.83	1.83	0.29	0.29
95th-Percentile Queue Length [ft/ln]	0.00	0.00	45.71	45.71	7.19	7.19
d_A, Approach Delay [s/veh]	0.00		16.78		3.31	
Approach LOS	A		C		A	
d_I, Intersection Delay [s/veh]	5.47					
Intersection LOS	C					

**Intersection Level Of Service Report  
Intersection 4: Pine Street at US 20**

Control Type:	Two-way stop	Delay (sec / veh):	1,126.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.083

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration	+			+r			r+			r+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	30	23	41	17	29	83	68	827	41	52	569	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	3.50	3.50	3.50	5.50	5.50	5.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	41	0	0	61	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	23	41	17	29	83	68	868	41	52	630	21
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	6	11	5	8	23	19	238	11	14	173	6
Total Analysis Volume [veh/h]	33	25	45	19	32	91	75	954	45	57	692	23
Pedestrian Volume [ped/h]	5			2			2			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	2.08	0.47	0.15	0.86	0.61	0.21	0.09	0.01	0.00	0.08	0.01	0.00
d_M, Delay for Movement [s/veh]	1126.61	967.11	911.20	556.38	462.51	15.40	9.50	0.00	0.00	10.84	0.00	0.00
Movement LOS	F	F	F	F	F	C	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	11.48	11.48	11.48	5.51	5.51	0.78	0.28	0.00	0.00	0.28	0.00	0.00
95th-Percentile Queue Length [ft/ln]	286.90	286.90	286.90	137.77	137.77	19.39	7.01	0.00	0.00	6.91	0.00	0.00
d_A, Approach Delay [s/veh]	993.79			188.54			0.66			0.80		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	62.39											
Intersection LOS	F											

**Intersection Level Of Service Report  
Intersection 5: Locust Street at US 20**

Control Type:  
Analysis Method:  
Analysis Period:

Roundabout  
HCM 6th Edition  
15 minutes

Delay (sec / veh):  
Level Of Service:

44.6  
E

**Intersection Setup**

Name	Northbound			Southbound			Northwestbound			Southeastbound		
Approach												
Lane Configuration	⤴			⤵			⤴			⤵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Northwestbound			Southeastbound		
Base Volume Input [veh/h]	11	3	50	118	5	97	17	708	209	109	958	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.10	2.10	2.10	5.60	5.60	5.60	3.90	3.90	3.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	10	0	0	0	61	14	0	41	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	3	50	128	5	97	17	769	223	109	999	9
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	13	34	1	26	5	205	59	29	266	2
Total Analysis Volume [veh/h]	12	3	53	136	5	103	18	818	237	116	1063	10
Pedestrian Volume [ped/h]	0			0			0			3		

**Intersection Settings**

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	1364			895			136			163		
Exiting Flow Rate [veh/h]	35			374			1296			981		
Demand Flow Rate [veh/h]	11	3	50	128	5	97	17	769	223	109	999	9
Adjusted Demand Flow Rate [veh/h]	12	3	53	136	5	103	18	818	237	116	1063	10

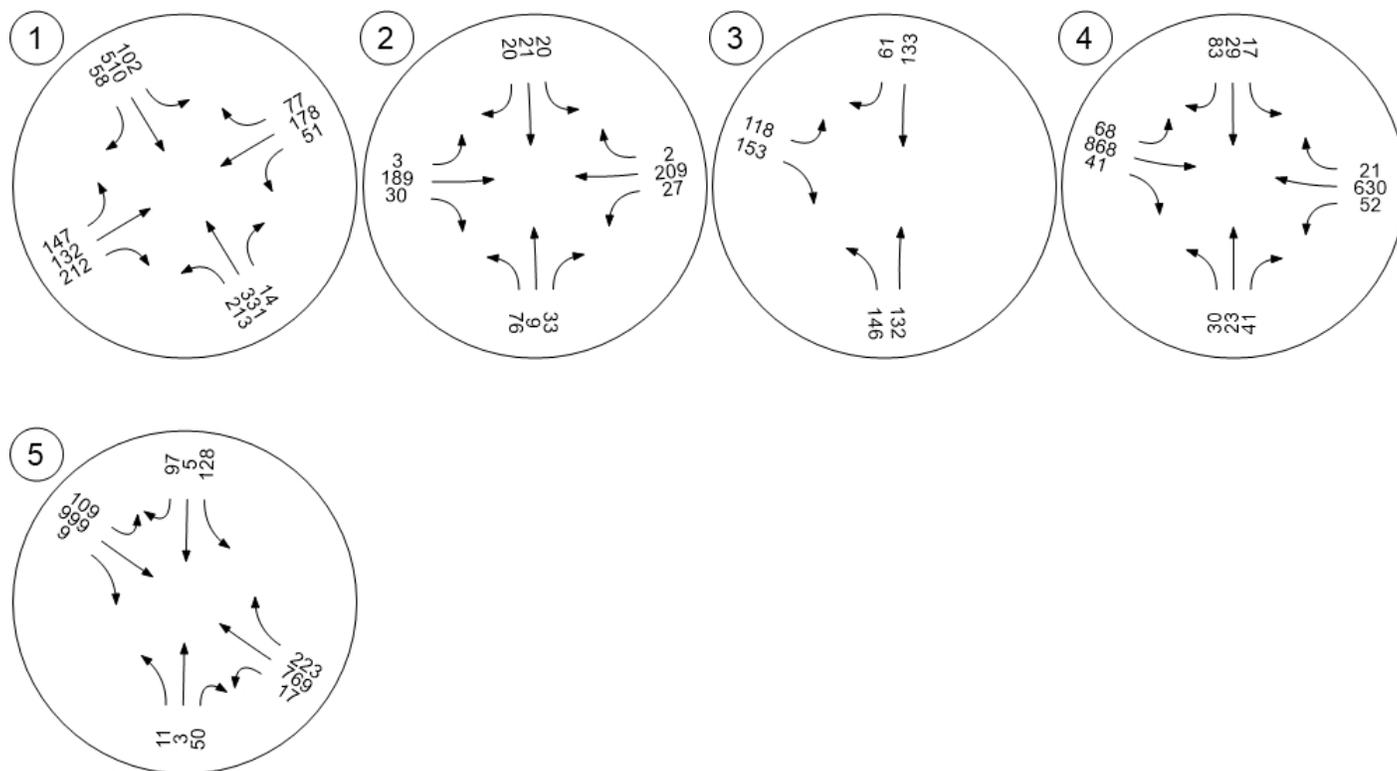
**Lanes**

Overwrite Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Overwrite Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	1.00			0.98			0.95			0.96		
Entry Flow Rate [veh/h]	68			250			1134			1236		
Capacity of Entry and Bypass Lanes [veh/h]	344			554			1202			1169		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	344			543			1139			1125		
X, volume / capacity	0.20			0.45			0.94			1.06		

**Movement, Approach, & Intersection Results**

Lane LOS	B			B			D			F		
95th-Percentile Queue Length [veh]	0.73			2.31			16.40			25.54		
95th-Percentile Queue Length [ft]	18.14			57.72			409.97			638.53		
Approach Delay [s/veh]	14.05			14.19			33.84			62.27		
Approach LOS	B			B			D			F		
Intersection Delay [s/veh]	44.58											
Intersection LOS	E											

Traffic Volume - Future Background Volume



Vistro File: Z:\...\Spencer Industrial Park PM.vistro

Scenario 5 5 2040 Buildout Volumes

Report File: Z:\...\Buildout 2040.pdf

4/30/2020

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	US 20 at W Barclay Drive	Roundabout	HCM 6th Edition	SEB Thru		25.0	D
2	N Pine Street at W Barclay Drive	Two-way stop	HCM 6th Edition	NB Left	0.303	22.3	C
3	N Locust Street at W Barclay Drive	Two-way stop	HCM 6th Edition	SB Thru	0.378	22.3	C
4	Pine Street at US 20	Two-way stop	HCM 6th Edition	NB Left	3.613	2,121.4	F
5	Locust Street at US 20	Roundabout	HCM 6th Edition	SEB Thru		54.8	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: US 20 at W Barclay Drive**

Control Type:	Roundabout	Delay (sec / veh):	25.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes		

**Intersection Setup**

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Approach												
Lane Configuration	⊕			⊕			⊕			⊕		
Turning Movement	Left	Thru	Right									
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Base Volume Input [veh/h]	132	120	171	47	164	77	152	331	14	102	507	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	2.20	2.20	1.60	1.60	1.60	6.50	6.50	0.00	7.40	7.40	7.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	15	12	41	4	14	0	61	0	0	0	3	19
Site-Generated Trips [veh/h]	0	7	0	17	13	13	0	0	4	7	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	147	139	212	68	191	90	213	331	18	109	510	58
Peak Hour Factor	0.9800	0.9800	0.9800	1.0000	0.9800	0.9800	0.9800	0.9800	1.0000	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	35	54	17	49	23	54	84	5	28	130	15
Total Analysis Volume [veh/h]	150	142	216	68	195	92	217	338	18	111	520	59
Pedestrian Volume [ped/h]	0			0			1			0		

**Intersection Settings**

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	747			744			418			498		
Exiting Flow Rate [veh/h]	493			282			848			607		
Demand Flow Rate [veh/h]	147	139	212	68	191	90	213	331	18	109	510	58
Adjusted Demand Flow Rate [veh/h]	150	142	216	68	195	92	217	338	18	111	520	59

**Lanes**

Overwrite Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Overwrite Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.98			0.98			0.94			0.93		
Entry Flow Rate [veh/h]	520			361			609			742		
Capacity of Entry and Bypass Lanes [veh/h]	645			646			902			831		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	631			636			848			773		
X, volume / capacity	0.81			0.56			0.68			0.89		

**Movement, Approach, & Intersection Results**

Lane LOS	D			C			C			D		
95th-Percentile Queue Length [veh]	8.13			3.45			5.40			11.72		
95th-Percentile Queue Length [ft]	203.26			86.36			135.07			292.94		
Approach Delay [s/veh]	29.13			15.38			15.99			34.52		
Approach LOS	D			C			C			D		
Intersection Delay [s/veh]	25.04											
Intersection LOS	D											

**Intersection Level Of Service Report**  
**Intersection 2: N Pine Street at W Barclay Drive**

Control Type:	Two-way stop	Delay (sec / veh):	22.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.303

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach												
Lane Configuration	⊕			⊕			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	76	9	33	20	21	20	3	177	30	27	191	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	12	0	0	18	0
Site-Generated Trips [veh/h]	6	6	0	39	5	0	0	39	5	0	22	22
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	82	15	33	59	26	20	3	228	35	27	231	24
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	4	10	18	8	6	1	68	10	8	69	7
Total Analysis Volume [veh/h]	98	18	39	70	31	24	4	271	42	32	275	29
Pedestrian Volume [ped/h]	0			0			0			2		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.30	0.05	0.05	0.22	0.08	0.03	0.00	0.00	0.00	0.03	0.00	0.00
d_M, Delay for Movement [s/veh]	22.32	20.97	16.01	20.81	19.55	14.47	7.86	0.00	0.00	7.93	0.00	0.00
Movement LOS	C	C	C	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.90	1.90	1.90	1.43	1.43	1.43	0.01	0.01	0.01	0.08	0.08	0.08
95th-Percentile Queue Length [ft/ln]	47.60	47.60	47.60	35.75	35.75	35.75	0.24	0.24	0.24	1.96	1.96	1.96
d_A, Approach Delay [s/veh]	20.58			19.28			0.10			0.76		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	6.31											
Intersection LOS	C											

**Intersection Level Of Service Report**  
**Intersection 3: N Locust Street at W Barclay Drive**

Control Type:	Two-way stop	Delay (sec / veh):	22.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.378

**Intersection Setup**

Name	Northbound		Southbound		Eastbound	
Approach						
Lane Configuration	↰		↱		↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

**Volumes**

Name	Northbound		Southbound		Eastbound	
Base Volume Input [veh/h]	130	132	133	59	117	142
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.70	2.00	2.00	2.00	2.00	0.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	16	0	0	2	1	11
Site-Generated Trips [veh/h]	36	0	0	7	13	65
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	182	132	133	68	131	218
Peak Hour Factor	0.9300	1.0000	1.0000	1.0000	1.0000	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	33	33	17	33	59
Total Analysis Volume [veh/h]	196	132	133	68	131	234
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Stop	Free
Flared Lane		No	
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.38	0.09	0.10	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	22.30	16.70	8.07	0.00
Movement LOS	A	A	C	C	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	2.41	2.41	0.33	0.33
95th-Percentile Queue Length [ft/ln]	0.00	0.00	60.32	60.32	8.37	8.37
d_A, Approach Delay [s/veh]	0.00		20.40		2.90	
Approach LOS	A		C		A	
d_I, Intersection Delay [s/veh]	5.77					
Intersection LOS	C					

**Intersection Level Of Service Report  
Intersection 4: Pine Street at US 20**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 2,121.4  
 Level Of Service: F  
 Volume to Capacity (v/c): 3.613

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	+			+			+			+		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			25.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	30	23	41	17	29	83	68	827	41	52	569	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	3.50	3.50	3.50	5.50	5.50	5.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	41	0	0	61	0
Site-Generated Trips [veh/h]	0	11	0	0	10	0	0	0	10	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	34	41	17	39	83	68	868	51	52	630	21
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	9	11	5	11	23	19	238	14	14	173	6
Total Analysis Volume [veh/h]	33	37	45	19	43	91	75	954	56	57	692	23
Pedestrian Volume [ped/h]	5			2			2			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	3.61	0.70	0.15	1.27	0.84	0.21	0.09	0.01	0.00	0.09	0.01	0.00
d_M, Delay for Movement [s/veh]	2121.44	1795.68	1739.24	919.15	747.74	15.40	9.50	0.00	0.00	10.91	0.00	0.00
Movement LOS	F	F	F	F	F	C	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	14.19	14.19	14.19	7.27	7.27	0.78	0.28	0.00	0.00	0.28	0.00	0.00
95th-Percentile Queue Length [ft/ln]	354.85	354.85	354.85	181.85	181.85	19.39	7.01	0.00	0.00	6.99	0.00	0.00
d_A, Approach Delay [s/veh]	1867.07			333.45			0.66			0.81		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	125.68											
Intersection LOS	F											

**Intersection Level Of Service Report**  
**Intersection 5: Locust Street at US 20**

Control Type:  
 Analysis Method:  
 Analysis Period:

Roundabout  
 HCM 6th Edition  
 15 minutes

Delay (sec / veh):  
 Level Of Service:

54.8  
 F

**Intersection Setup**

Name	Northbound			Southbound			Northwestbound			Southeastbound		
Approach												
Lane Configuration	✚			✚			✚			✚		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Northwestbound			Southeastbound		
Base Volume Input [veh/h]	11	3	50	118	5	97	17	708	209	109	958	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.10	2.10	2.10	5.60	5.60	5.60	3.90	3.90	3.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	10	0	0	0	61	14	0	41	0
Site-Generated Trips [veh/h]	0	0	0	45	0	0	0	0	25	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	3	50	173	5	97	17	769	248	109	999	9
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	13	46	1	26	5	205	66	29	266	2
Total Analysis Volume [veh/h]	12	3	53	184	5	103	18	818	264	116	1063	10
Pedestrian Volume [ped/h]	0			0			0			3		

**Intersection Settings**

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	1413			895			136			212		
Exiting Flow Rate [veh/h]	35			402			1345			981		
Demand Flow Rate [veh/h]	11	3	50	173	5	97	17	769	248	109	999	9
Adjusted Demand Flow Rate [veh/h]	12	3	53	184	5	103	18	818	264	116	1063	10

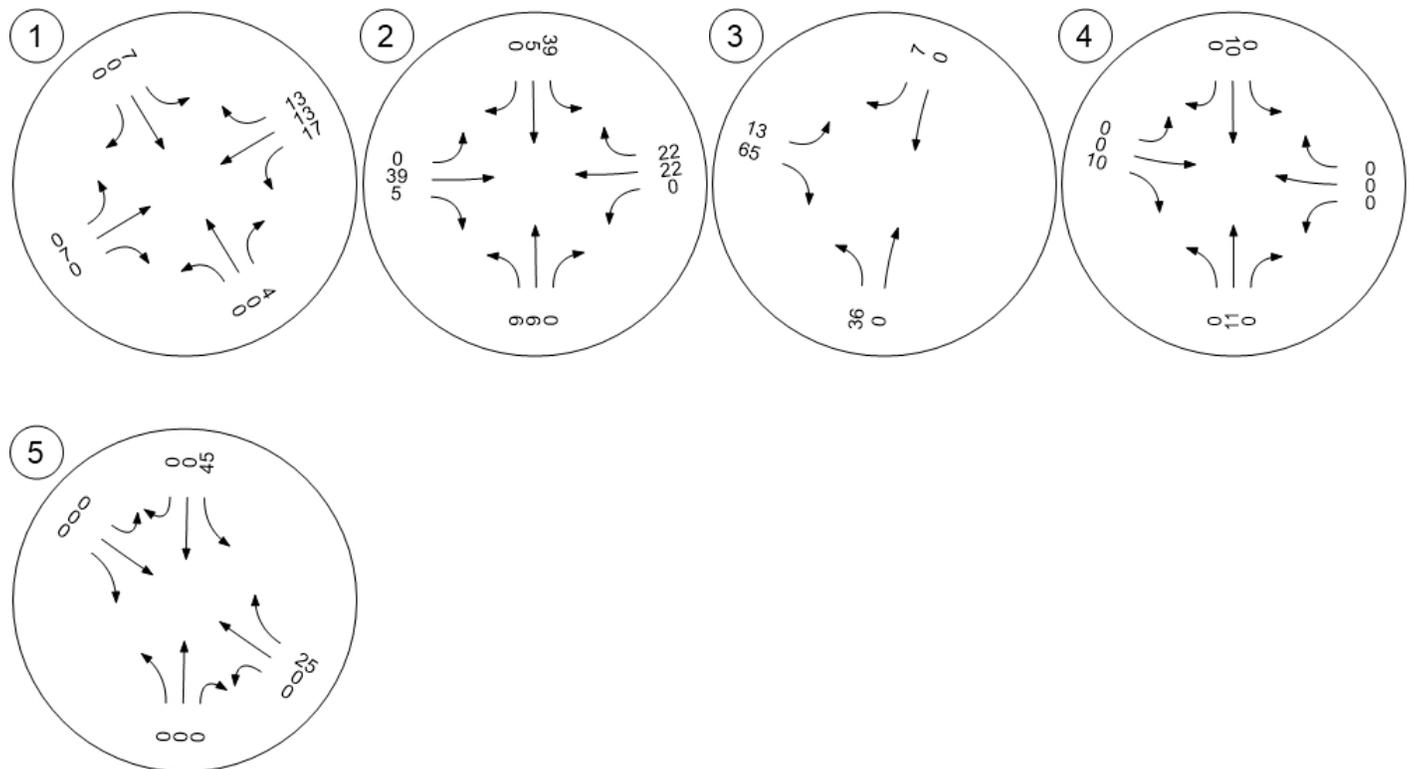
**Lanes**

Overwrite Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Overwrite Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	1.00			0.98			0.95			0.96		
Entry Flow Rate [veh/h]	68			299			1162			1236		
Capacity of Entry and Bypass Lanes [veh/h]	327			554			1202			1112		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	327			543			1139			1070		
X, volume / capacity	0.21			0.54			0.97			1.11		

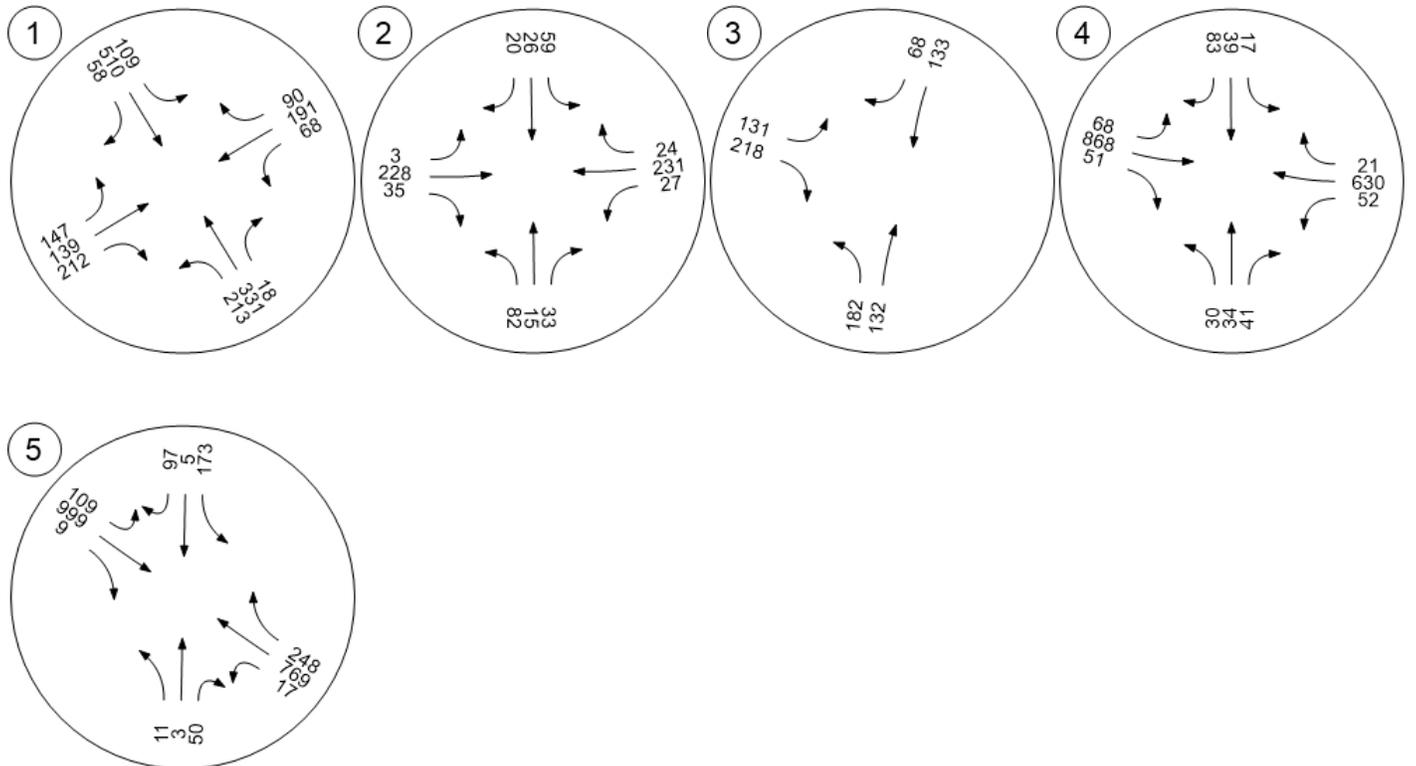
**Movement, Approach, & Intersection Results**

Lane LOS	B			C			F			F		
95th-Percentile Queue Length [veh]	0.77			3.17			18.07			29.87		
95th-Percentile Queue Length [ft]	19.26			79.35			451.70			746.65		
Approach Delay [s/veh]	14.94			16.79			38.31			81.63		
Approach LOS	B			C			F			F		
Intersection Delay [s/veh]	54.78											
Intersection LOS	F											

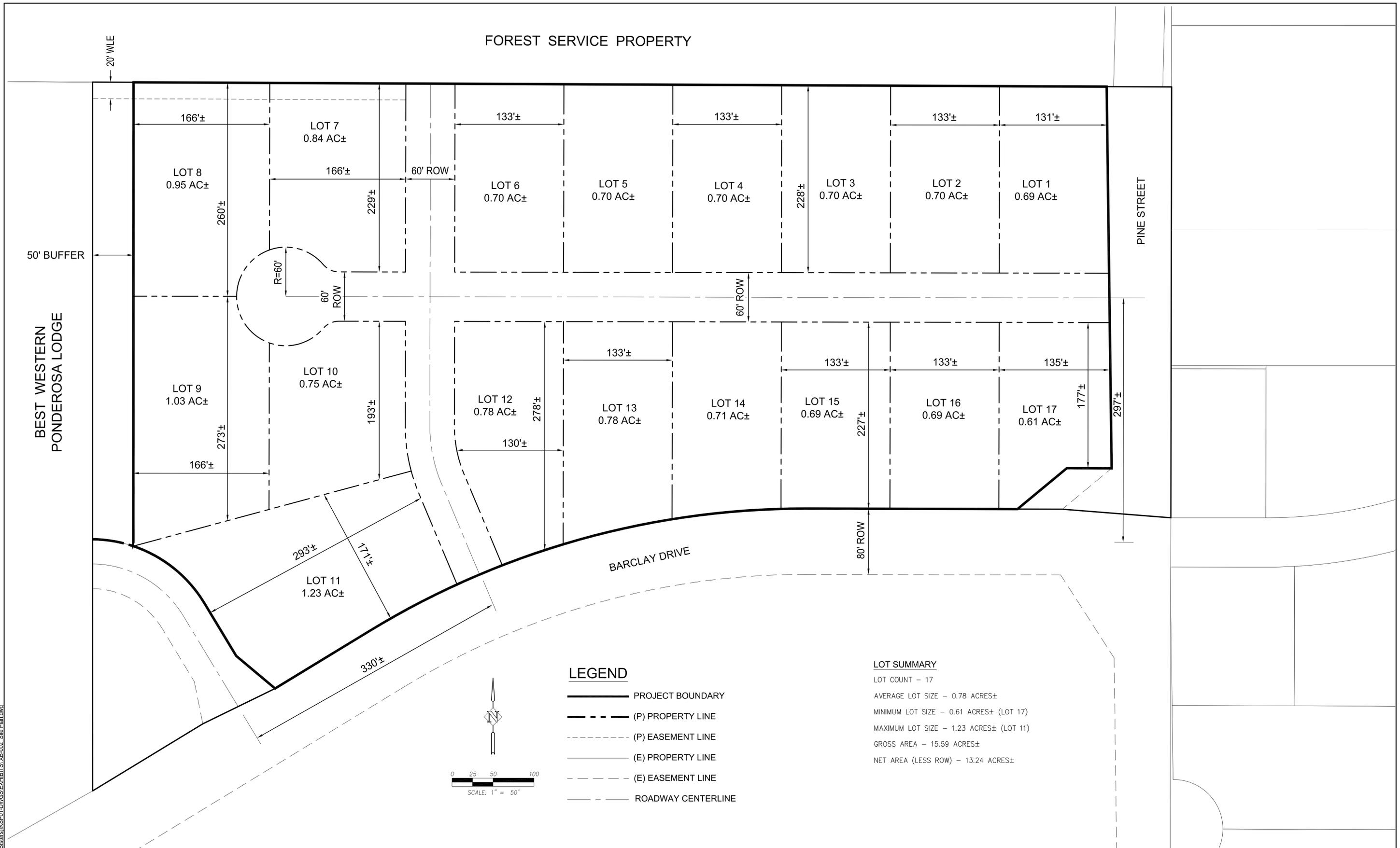
### Traffic Volume - Net New Site Trips



### Traffic Volume - Future Total Volume

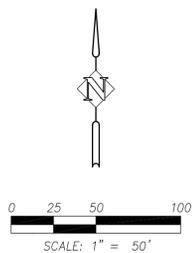


FOREST SERVICE PROPERTY



LEGEND

- PROJECT BOUNDARY
- (P) PROPERTY LINE
- (P) EASEMENT LINE
- (E) PROPERTY LINE
- (E) EASEMENT LINE
- ROADWAY CENTERLINE



LOT SUMMARY

LOT COUNT - 17  
 AVERAGE LOT SIZE - 0.78 ACRES±  
 MINIMUM LOT SIZE - 0.61 ACRES± (LOT 17)  
 MAXIMUM LOT SIZE - 1.23 ACRES± (LOT 11)  
 GROSS AREA - 15.59 ACRES±  
 NET AREA (LESS ROW) - 13.24 ACRES±

P:\KSP (Kevin Spencer)\KSP-01 (Sisters)\KSP01-DWGSEX\HBIT\XB-002\_Site\_Plan.dwg

DATE	NO.	DESCRIPTION
R E V I S I O N S		

DESIGNED:	
DRAWN:	
CHECKED:	
DATE:	FEBRUARY 12, 2020

**HHPR** Harper Houf Peterson Righellis Inc.  
 ENGINEERS • PLANNERS  
 LANDSCAPE ARCHITECTS • SURVEYORS  
 250 NW Franklin Avenue, Suite 404, Bend, OR 97703  
 phone: 541.318.1161 www.hhpr.com fax: 541.318.1141

CONCEPTUAL SITE PLAN  
**USFS PARCEL 3 - BARCLAY DRIVE**  
 SISTERS, OREGON



**EXHIBIT E: PROPOSED COMPREHENSIVE PLAN AMENDMENTS**

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*attached*

Double underline = proposed additions

~~Strikethrough~~ = proposed deletions

## Goal 9: Economic Development

### 9.1 GOAL

***“To provide adequate opportunities for a variety of economic activities vital to the health, welfare, and prosperity of the City’s citizens.”***

### 9.2 BACKGROUND

#### Historic Employment and Recent Trends

Sisters originated as an overnight stop for travelers of early-day wagon roads and for sheepherders in the area. From the 1920's through the early 1950's, the town was also a center for local logging and sawmills.

After the sawmills closed, the town's population decreased until recreational developers came to the area in the late 1960's and started subdividing lands for recreational homes. The area was discovered by a new generation of Oregonians and visitors, and tourism became the new economic base. Tourism has continued to be the main attraction for Sisters, but in recent years there have also been light industrial businesses that have located in town. The City of Sisters is becoming a service center for the growing year-round population.

#### *Local Businesses and Employment by Sector*

The City of Sisters issues business licenses for all businesses located in Sisters and firms or individuals doing business in the City. These licenses include brief descriptions of the types of business activities taking place. Table 9.1 below, describes recent business licenses by type and number, not including transient business licenses.

*Table 9.1: Business Licenses Issued in City of Sisters, 1999-2003*

<b>Years</b>	<b>Number of Business Licenses Issued</b>	<b>Most Frequent General Business Types</b>
1999-2000	290	Retail, Real Estate and
2000-2001	299	Construction Related
2001-2002	364	Businesses, Restaurant
2002-2003	360	

Source: City of Sisters Business Licenses, 1999-2003

As shown, the number of business licenses issued in the City since 1999 has been steadily growing. Year 2002-2003 is the current year and additional licenses are expected to be issued, slightly exceeding 364 business licenses. The column titled “Most Frequent General Business Types” refers to the type of employers, not employees, and is intended to demonstrate the most common types of businesses in Sisters. The spike in the Number of Business Licenses Issued between year 2000-2001 and 2001-2002 is likely due to a

City of Sisters Comprehensive Plan

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surge of construction activities during that time associated with completion of the sewer and adoption of a new Development Code.

Another indicator of local employment is the number of employees in Sisters and the top employers. The *Technical Report, City of Sisters Commercial and Industrial Future Land Needs Analysis*, February 2, 2003 (see Appendix B) describes existing and anticipated employment by sector in Sisters. This report is incorporated herein by reference and is adopted with the adoption of this Plan. Table 9.2 describes the differences between employment by sector in Deschutes County and Sisters. The data for the column “2002 Estimated Employment by Sector in Sisters” was obtained by analyzing business licenses and interviews with local businesses. Business licenses describe the type of business and number of employees. This information was then used to determine the businesses sector, resulting in the number of employees by sector for business located in Sisters for the year 2002.

*Table 9.2: Sector Comparisons between Deschutes County and the City of Sisters*

<b>Industry</b>	<b>Deschutes County (1)</b>	<b>City of Sisters (2)</b>	<b>2002 Estimated Employment by Sector in Sisters (3)</b>
<b>Total Non-Farm Payroll Employment</b>	<b>100%</b>	<b>100%</b>	<b>1,633</b>
Goods Producing (4)	19%	19%	307
Services Producing (4)	81%	81%	1,326
<b>Manufacturing, Total</b>	<b>11%</b>	<b>12%</b>	<b>198</b>
<b>Non-Manufacturing Total</b>	<b>89%</b>	<b>88%</b>	<b>1,435</b>
Construction & Mining	8%	7%	109
Transportation, Communications, Utilities	4%	1%	15
Wholesale and Retail Trade	27%	40%	656
Finance Insurance Real Estate	6%	7%	119
Services	30%	18%	298
Government	14%	15%	238
(subset) Federal	2%	4%	65
(subset) State	1%	1%	22
(subset) Local	11%	9%	151

(1) Source: Oregon Employment Department, Workforce Analysis, November 2002

(2) Source: Based on 2002 Estimated Employment by Sector in Sisters

(3) Source: City of Sisters analysis of number of employees by business type from business licenses in 2002-2003

(4) Goods producing and durable and non-durable goods include all manufacturing sector plus construction and mining portion of the non-manufacturing sector. Service producing represents all non-manufacturing minus construction and mining sectors.

Table 9.2 illustrates the similarities between the sector distribution in Deschutes County and the City of Sisters. The most notable differences between Sisters and Deschutes County is that Sisters has fewer businesses in the Service, Construction and Mining, and Transportation, Communications, Utilities sectors, and more dependence upon the

Wholesale and Retail Trade sector. Wholesale and Retail Trade is the sector that employs the most people in Sisters.

Table 9.3 shows the results of a review of 2002 City of Sisters’ business licenses and interviews with local businesses.

*Table 9.3: Five Largest Employers in Sisters in 2002-2003 (by number of employees)*

<b>Employer</b>	<b>Number of Employees</b>
Sisters School District	140
Multnomah Publishers, Inc.	131
U.S. Forest Service	65
Gallery Restaurant	45
Ray’s Food Place	45

Source: City of Sisters Business Licenses, 2003-2003

*Anticipated Population and Employment Growth*

Since the early 1990’s Central Oregon and the areas around Sisters have experienced rapid population growth. The majority of growth in the Sisters planning area has occurred in rural residential subdivisions beyond the city limits and the Urban Growth Boundary (UGB). Historically, the lack of a municipal sewer system, small lot sizes unable to support on-site sewage systems and lack of mountain view properties discouraged development within the City.

As described in the *Technical Report, City of Sisters Commercial and Industrial Future Land Needs Analysis (LNA)*, February 2, 2003 (see Appendix B), the rate of population growth in the City of Sisters is expected to outpace Bend, Redmond, and the rural areas in Deschutes County. The primary factor driving this growth is the completion of a municipal sewer system (as described in Goal 11). Development of this sewerage system will continue to provide opportunities for population and economic growth in the City. As the City’s population increases, economic growth is also expected.

The LNA used a gravity model to predict economic growth. Such models assume that a city will attract employment relative to a given region based on its relative size. The analysis predicted the City will grow by an additional 1,083 non-farm jobs over the period from 2000 to 2025 in addition to the current 1,636 employees in 2000. This indicates that the City will create and provide for nearly double the number of current jobs in the City.

Assuming the same distribution of jobs between sectors in 2002, of 1,083 new jobs, 880 jobs are expected to be in Service Producing and 203 in Goods Producing sectors. Within the Service Producing category, 40% of the jobs or approximately 435 new jobs are anticipated to be in the Wholesale and Retail Trade sector. After Wholesale and Retail Trade, the Services, Government, and Construction and Mining Sectors are expected to be significant contributors to new job growth.

If the City is successful in diversifying its economic base as discussed later in the Findings portion of this chapter, then the distribution of jobs within non-manufacturing will be more evenly distributed than in 2002. In particular, the percentage of employees in the Wholesale and Retail Trade sector may decrease, and increases are sought in the Construction and Mining, Finance Insurance Real Estate, and Services sectors. The City is also undertaking efforts to maintain and increase employment in the sectors identified in the “*Sisters Strategic Action Plan for Economic Development*”, in particular, light industrial employment opportunities.

In September 2010, the Leland Consulting Group prepared a memorandum identifying potential development that could occur on the 67+ (net) acre Forest Service property – this occurred in conjunction with the development of three ‘Design Options’, [which included a variety of residential, commercial and light industrial areas.](#) ~~referred to as Design Options A, B and C (discussed at length in Chapter 14). Note: also added is “Design Option D”, the Park option, which would use between 5 and 47 acres of the same Forest Service land as a public park. Since then, the Forest Service long range plans were revised and the property north of Barclay was sold to a private developer, increasing the flexibility in design and layout of uses in this area.~~

The Leland memorandum summarized key market and demographic information to produce a Development Option Summary, which highlighted the feasibility of developing the land with varieties of mixed-use development, such as retail / commercial (12 to 15 acres), light industrial (18 to 22 acres), and some housing (10 to 14 acres).

#### Lands for New Employment

Through the Development Code, the City established zoning or land use districts that will accommodate a range of businesses. As discussed in detail below, the pertinent zoning districts for economic development in Sisters include the Commercial and Highway Commercial Sub-Districts, Airport District and Light Industrial District. Additional zoning districts may be adopted during the planning period to fulfill the goals and policies of the Comprehensive Plan.

#### *Commercial Lands*

The Commercial District (C District) is located along Hood, Cascade, and Main Avenues. In addition, Adams Avenue, and land to the immediate west of North Locust Street and south of Barclay Drive is zoned Commercial. The Commercial District establishes locations for the continuation and development of a center for commerce and provides for the shopping, consumer and service requirements for area residents and visitors. Retail and commercial service areas for Sisters residents and visitors are primarily concentrated within Sisters along Cascade/Highway 20, Main and Hood Streets. The community believes that enhancing the pedestrian environment in this District will establish long-term economic vitality for the downtown core. To achieve this end, public works, parks, trails, urban renewal, and roadway projects have all been planned for this area to enhance the pedestrian environment.

The Highway-Commercial Districts (HC Districts) are located at the entrances to Sisters along U.S. Highway 20 and U.S. Highway 20/ Oregon Highway 126. This District is intended to provide areas for commercial uses and services primarily oriented to automobile traffic.

An 1880's Western Architectural Design Theme applies to the Downtown Commercial District (DC District) and Highway Commercial District (HC District). This design theme creates an appealing and distinctive appearance that separates the commercial areas of Sisters from all other commercial areas in Deschutes County.

Land developed as the Conklin Guest House on Camp Polk Road has been annexed into the City Limits. The guest house property is developed as a bed and breakfast Inn. It is used as a site for local events and provides lodging for visitors to Sisters. The Inn is a landmark building at the north entrance to the City on Camp Polk Road. The Inn is located close to the Sisters Eagle Airport and adjacent to the City's light industrial zoning district. In this location, the Inn can provide lodging, restaurant and event services to serve businesses that locate in the light industrial zone, while continuing to serve tourists.

The Conklin Guest House property was included in the City's UGB for tourist commercial uses with the adoption of the 2005 Sisters Urban Area Comprehensive Plan. Initially the property was zoned Urban Area Reserve. Later in 2005, the property was annexed to the City and a commercial zoning district with special use limitations was applied to the property. In 2007, the City adopted the Sun Ranch Tourist Commercial zoning district for the property. It also added 0.8 acres of land that include the Conklin Guest House barn to the district.

The 1880's Western Architectural Design Theme provisions of the Comprehensive Plan and City's zoning ordinance shall not be applied to the Sun Ranch Tourist Commercial zoning district. The design of the Sun Ranch Tourist Commercial zoning district shall be allowed greater flexibility to match the design of the historic Conklin Guest House and existing barn to provide a first-quality lodging experience for guests. As the Sun Ranch Tourist Commercial district is located outside the downtown and highway areas of the community, this variation will not detract from the unique downtown experience offered by the City of Sisters. A 1900s Rural Farm/Ranch House design theme is required for buildings within the Sun Ranch Tourist Commercial district. This theme is consistent with the history of the property and is compatible with and provides a good transition from the 1880s Western Design Theme.

#### *Airport Lands*

At 3168', Sisters Eagle Airport is located one mile north of downtown Sisters and is located next to the North Sisters Business Park. It is categorized by the Oregon Department of Aviation as Category IV (local general aviation airport). Although Sisters Eagle Airport is privately owned, the airport is open to public use. It is also used for wildfire aircraft support. The privately owned airfield has a heliport and a runway that is 60' wide by 3,560' long.

In 2013, the City of Sisters amended the Comprehensive Plan to add an Airport land use designation and also amended the Development Code to add an Airport District. The Sisters Eagle Airport property was annexed into the City of Sisters on March 15, 2014, and designated as Airport in the Comprehensive Plan and rezoned to Airport (A) District. The property owners plan to build an expanded terminal and an array of facilities for

pilots. In addition, the Sisters Eagle Airport is a center for local businesses, and several successful traded-sector companies, including ENERGYneering, have their headquarters at the airport.

### *Light-Industrial Lands*

The Light Industrial District (LI) is located in the northern portion of the UGB, west of Locust Street and east of Pine Street, and north of Adams Street. The District provides for business parks and a mix of industrial and commercial uses. The LI District presents industrial opportunities for non-offensive industrial activities that do not cause noise, light, water, or air pollution.

There are currently four industrial subdivisions in the City; the Sisters Industrial Park containing 28 lots, the Mountain View Industrial Park containing 17 lots, the Sun Ranch, Phase I containing 20 lots and the Three Sisters Business Park containing 8 lots. The four industrial subdivisions encompass approximately 45 acres and two expansion areas. All of these subdivisions are designated Light Industrial by this Comprehensive Plan.

The North Sisters Business Park Sub-district, adopted in 2007, is an innovative mixed-use zoning district that provides additional opportunities for employment. The North Sisters Business Park Sub-district provides for ground floor light industrial uses with the flexibility to build second story loft apartments above industrial operations, and can be applied under the Light Industrial Comprehensive Plan designation. The second story loft units may be utilized as employee or workforce housing or provide additional rental revenues to support the underlying industrial operations.

### 1880's Design Theme for Commercial Areas

The concept of a central architectural and sign theme based on Western and/or Frontier building styles of the 1880's has been initiated in the Commercial Districts of the City. This is presently expressed through several store fronts remodeled in this style and many new commercial developments in the downtown area.

The result of this interest and endeavor has been adoption of a community development objective to "encourage the development of a central architectural and sign theme based on Western and/or Frontier building styles of the 1880's." This particular goal originally was formed in the 1979 Plan and continues today to improve the City's image, visual appearance, a tourist oriented economy. It has also been prompted by the desire to establish city identity, interest and attraction of visitors and tourists in support of a significant community economic activity.

A legislative mandate for this architectural design and construction is in the City's Development Code. Additional encouragement and results may also be fostered through the local Chamber of Commerce by the business community and a continuing program of business community education and support.

The following information and illustrations in Appendix D of this Plan concern the architectural styles, materials, methods of construction, color and miscellaneous features of the 1880's. It is not intended as a precise interpretation of the architectural design and building philosophy in its purest form, but as a methodology of approaching an overall period expression of architectural style.

Principal features of the period's architectural style revolve around the renaissance or rebirth of the elements of classical architectural orders, expressed in period building materials and methods of construction, with the presentation of an impressive rectangular false store front. In relation to Western and/or Frontier towns, with their explosive boom and usual economic "bust", this was principally carried out in light wood frame and bearing wall masonry (brick) construction. Light wood frame construction predominates construction in the majority of Western towns in this category; however there are substantial exceptions as exemplified by Jacksonville, Oregon, Virginia City, Nevada and Granite City, Montana.

The following sections are keyed to subsequent illustrations to exemplify methodology of use of materials and construction techniques.

#### *Materials*

Structure: Light wood framing, post and beam and masonry bearing walls are typical structural systems. Light wood framing may be achieved through current construction practices utilizing Ballon Framing and/or Western or Platform Framing with light wood framing details, up to two and three stories in height. Here attention will have to be given to building code requirements for fire resistive construction and building separation. Masonry bearing wall construction, particularly I brick, provides an alternative with inherent fire protective benefits.

Roof: Roof systems may be supported by a standard rafter system or pre-fabricated light wood trusses. Typical roof coverings may be realized with shingles or shakes at a minimum slope of four inches in one foot. Alternative coverings are metal with standing or batten/ribbed seams or asphaltic shingles.

Exterior Finishes: Typical materials are varieties of horizontal wood drop siding, vertical board and batten (rough sawn or surfaced four sides) and cedar shingles, with the later particularly applicable to ornamental patterns on residential structures and brick masonry. Modern composite materials such as T1-11, vial siding, and the like are not appropriate exterior finishes.

Windows: Wood sash windows are typical, to include double hung, casement, horizontal sliding and fixed sash. Availability of currently manufactured stock in styles keeping with the period is limited as to capturing the period window style. This is particularly true for large expanses of glass in commercial store fronts and will undoubtedly require special fabrication.

Doors: Combination glass and wood panel doors are typical and are available in certain standard types in single and divided glass lights. To approach the variety of period door styles will require modification of standard door types, particularly in arrangement of glass lights or necessitate special manufacture.

Ornamentation and Trim: The principal features of period ornamentation are concerned with the revival of elements of classical architectural orders. This primarily concerns the entablature or the upper section of wall or story that is usually supported on columns or pilasters and consists of the architrave, the lowest division of the entablature resting immediately on the capital or top of the column and the molding around a door or other rectangular wall opening; frieze or the part of the entablature between the architrave and cornice (top), the richly ornamented band; and the cornice or the molding and projecting horizontal member that crowns the architectural composition. In addition, this revival was manifest in the use of wood columns supporting the porch or covered entrance along the front of a building, reminiscent of the classical portico or colonnaded building entrance. This architectural embellishment also embraced the use of balustrade or “fence” between columns and at the periphery of second story porches.

Exterior Surface Finishes: Depending upon the intended longevity of a particular structure and the quality of exterior finish materials, period structures present variety within the basic construction practices of the era.

Rough sawn or milled board and batten surfaces were unfinished to oiled and/or stained to protect the surface materials. This is practical with the use of Cedar or Redwood which both contain natural oils that protect the wood. As a practical matter for extended protection of any board and batten surface, the use of a sealer or oil base or solid color stain is warranted. The same is true of vertical surfaces finished with Cedar shingles.

Horizontal wood drop siding was normally finished with paint; however in many instances, no finish applied. Here a sealer or stain would be appropriate, in lieu of a painted surface.

In consideration of providing boardwalks in lieu of concrete sidewalks, only pressure treated wood members should be used.

Color: Rough sawn or milled board and batten, particularly Cedar and Redwood, may be retained in a natural finish which ultimately weathers to silver-gray in color.

During the period, there was a lack of high gloss finishes; therefore color applications were generally flat in nature. To duplicate this character, flat or low gloss products currently on the market should be utilized.

Applied surface colors were predominantly flat white for most buildings, particularly the exposed surfaces of porches or covered walkways and ornamentation attached to brick masonry buildings. Large area surface colors other than white were primarily flat earthy ochres, yellows, browns and reds. These colors are generally contrasted with white trim

at the cornice, vertical corner trim of the building, windows and doors, porch and balustrade.

Modern interpretation of color application has tended toward a broader color selection in keeping with the white-dark contrast, by adding deep blues, blue-greens and red-oranges.

Color availability and selection for stains is readily obtained from product manufacturers. One example of such product used extensively in the Northwest is Olympic stain, particularly the solid color stains. These stains offer a fairly broad range of color selection and provide a flat, deep colored finish in keeping with the period.

Latex based paints also produce a flat finish color and low-gloss oil base enamels offer additional applications for colored finishes. Color selection samples are readily available from local paint suppliers.

The City Council has adopted an approved color pallet recommended by the Deschutes Landmarks Commission to represent typical 1880's colors. This makes color selection and matching easy for applicants.

#### *Methods of Construction*

General: Adherence to presently accepted methods of construction and compliance with applicable building codes and development ordinances is recommended as the minimum standards. Fire and life safety are of particular concern.

As the majority of new construction and existing building renovation is adjacent to public walkways, attention to good construction safety practices is necessary. This is particularly true in the more congested commercial areas.

Standard False Front Commercial Structure: The following graphic illustrations keyed to this sub-section illustrate standard approaches to the construction of this element.

#### *Miscellaneous*

See the graphic illustrations in Appendix D for various details for:

- Construction Details
- Ornamentation
- Fences
- Gates

Signs: Signing was generally handled by painting the sign directly on the façade of the building, either directly on the finish material or on a sign board which was subsequently affixed to the building. Ornamentation is achieved at the edge of the sign board by its particular shape and the application of edge molding or individually cut raised letters utilized for relief and contrast.

Other signing methods include projecting double faced boards affixed high on the façade of the building and structurally supported by wires.

Free hanging sign boards attached under covered porches were also utilized.

Lettering was generally ornamental and/or shaded and painted in contrasting colors on flat white surfaces. Examples of lettering are provided in the following graphic illustrations keyed to this sub-section. Individual cut-out letters applied to the sign surface and routed lettering provides additional acceptable techniques for signing.

The City's sign code in the Development Code requires adherence to these standards and regulate all signs in the City Limits.

### **9.3 FINDINGS**

#### Anticipated Demand for Economic Lands and Inventory of Economic Lands

In the greater Sisters area, most of the industrial and commercial activity takes place within the City limits. Land is needed for these activities and an adequate supply of economic lands is needed for expansion of the City's economic base. The *Technical Report, City of Sisters Commercial and Industrial Future Land Needs Analysis* (LNA) was completed to compare the supply and demand of industrial and commercial land until the year 2025 (See Appendix B).

##### *Commercial Land*

The LNA identified that there are approximately 37 net buildable acres of vacant C and C-HC designated lands inside the Sisters UGB. The term "net" refers to the amount of land after subtracting approximately 20% for roads and other infrastructure. Adding approximately 12 net buildable acres of re-developable and 40 net buildable acres of developable acreage of partially developed lands, a total of 89 net buildable acres of buildable C and C-HC lands are inside the Sisters UGB. Since the projected future demand is 28 net buildable acres, there is a surplus of commercial land of approximately 61 acres. Even without considering the re-development of partially developed lands, there is sufficient vacant and re-developable land in the existing UGB to accommodate demand for commercial lands within the next 20 years.

As part of the LNA needs, the City has determined that it needs to include five acres of tourist commercial land in the UGB. This property is needed by the City to better serve the needs of tourists and local business in the City's light industrial district adjacent to the airport. The Conklin Guest House was included in the UGB in 2005 to encourage the retention and expansion of this important business as a part of the Sisters Community to meet the needs of nearby existing and future businesses. The Sun Ranch Tourist Commercial zoning district has been written and applied to this property. The new zoning district assures conformance with the goals, policies, and findings of the Comprehensive Plan by limiting uses to lodging, restaurants, and other uses that serve the Industrial Park businesses and tourists alike.

##### *Airport Land*

Annexing the Sisters Eagle Airport into City limits and rezoning it to Airport (A) District allows the continued vitality of the Airport as a permitted use. As a permitted use, the Airport and associated businesses will be able to develop and provide living wage jobs to members of the community. In addition to on-site development, the Airport provides access for businesses within the community who may benefit from air service.

#### *Industrial Land*

Sisters has experienced a significant population growth of the past twenty years. Employment levels have also reached a new high with strategic economic development efforts. The job number increases are in industries other than tourism, indicating a more diverse economy.

By early 2020, the amount of developable employment land inside the Sisters UGB has significantly decreased. All of the light industrial parcels in Sisters are being utilized (nearly 100% occupancy for the entire zone), with only 9 lots (6.75 acres) listed as vacant (still utilized, but not developed). Development within the North Sisters Business Park zone has increased significantly and the occupancy rate is 100%.

~~There are approximately 44 net buildable acres of vacant LI designated lands inside the Sisters UGB. Adding 3 net buildable acres of re-developable and 17 acres of developable acreage of partially developed lands, a total of 64 acres of buildable light industrial (LI) lands are available inside the Sisters UGB. The 2005 Sisters Urban Area Comprehensive Plan added approximately 3.07 net buildable acres of industrial land to the UGB (Carpenter property). This land was not included in Table 9.4 in the 2005 Comprehensive Plan Update. In 2007, the City removed 4.9548 net buildable acres of land (approximately 11.684 gross acres) located in the Sun Ranch Mixed Use Community from the industrial land supply of the City. Also in 2007, the City re-zoned a 7.62 net buildable acre (12.58 gross acres) parcel from Light Industrial to Residential and Multi-Family Sub-district for residential purposes. In 2014, more than half of the Three Sisters Business Park (approximately 20 acres) was rezoned from light industrial to residential. Justification for this change was the lull in lot sales and construction activity during and the years following the recession. Therefore, the City's existing vacant land and surplus of light industrial land has decreased significantly. by a total of 9.5 net buildable acres. The LNA projects a demand for 34 net buildable acres of industrial land inside the Sisters UGB until the year 2025. A surplus of approximately 24.5 acres of net buildable industrial land is predicted based on anticipated supply and demand of undeveloped industrial lands until the year 2025. There is a sufficient supply of vacant acreage alone to satisfy anticipated demand, without considering re-developable and partially developed lots. Table 9.4 illustrates that with re-developable and existing vacant land, there is still a surplus of 20.5 net buildable acres of industrial land with the two rezones from 2007.~~

~~Table 9.4: Summary of Commercial and Industrial Future Land Needs until Year 2025 (net acres)~~

City of Sisters Comprehensive Plan

<b>Land-Designation</b>	<b>Existing Vacant Land</b>	<b>Re-developable and Partially-Developed</b>	<b>Total Available Land</b>	<b>Projected Land-Demand</b>	<b>Surplus</b>
<del>Commercial</del>	<del>37</del>	<del>52</del>	<del>89</del>	<del>28</del>	<del>61</del>
<del>Industrial</del>	<del>34.59</del>	<del>20</del>	<del>54.59</del>	<del>34</del>	<del>20.59</del>

~~Source: Technical Report, City of Sisters Commercial and Industrial Future Land Needs-Analysis, February 2, 2002, as amended by files CP06-01/02 and Z06-01, and files C06-04 and Z06-02.~~

~~In addition, there is a 17.54 acre parcel of land zoned UAR intended for future urban use. That is in addition to the acreages indicated in Table 9.4.~~

~~Lastly, there is a 4.34 acre tract of land north of Barclay Drive and west of the Conklin Guest House intended for development with adjacent light industrial zoned land. This property was annexed into the City Limits in 2007.~~

Public Infrastructure and Economic Development

As addressed in Goal 11, Public Facilities, the City developed a public sewerage system within the City, which was completed in 2001. The construction of this system will enabled the City to meet the demands for new commercial and industrial development. Adoption of System Development Charges for water and sewer systems provides a mechanism to ensure that systems can be expanded to accommodate increased demands over time.

Goal 3 of the City’s Transportation System Plan (adopted January, 2010) calls for promoting the development of the City, Region, and State economies through the efficient movement of people, goods, and services and through the distribution of information. This goal is supported by a policy that states “Ensure a safe and efficient freight system that facilitates the movement of goods to, from, and through the City, Region, and State while minimizing conflicts with other travel modes.” Efficient truck movement through Sisters plays a vital role in maintaining and developing Central Oregon’s economic base as Highway 20 is a key freight corridor for the region. As identified within the City’s TSP, high levels of truck traffic likely affect highway performance. Therefore, as part of the TSP update, Barclay Drive and Camp Polk Road/Locust Street from Highway 20 to Barclay Drive are upgraded from collectors to arterials. These arterials are also identified in the TSP as proposed truck routes with the completion of the Alternate Route. The Alternate Route will provide relief to Highway 20 and consists of 3-lane arterial streets on Barclay Drive and Locust Street, adequate traffic control devices (either traffic signals or multilane roundabouts), at either end of the route where it intersects with the state highway, a roundabout at the Barclay Drive/Locust Street intersection, and, possibly, intelligent transportation system (ITS) technology that detects congestion on the highway and directs traffic onto the alternate route. These improvements will provide for the economical movement of raw materials, finished products and services while enhancing public safety and the pedestrian-friendly quality of the City’s downtown core.

The airport, Sisters Eagle Airfield, does have an impact on the development of industrial uses, as the Runway Protection Zone overlays a portion of a few lots in the industrial area. The Runway Protection Zone precludes uses including structures and water features. However, the airfield also creates opportunities by enabling corporate aircraft to use the facility as well as encouraging aviation-related businesses. An Airport Overlay District has been adopted in conformance with the Land Conservation and Development Commission Transportation

Planning Rule. The Sisters Eagle Airport was annexed into the City of Sisters on March 15, 2014.

*Enterprise Zone.*

The City of Sisters has partnered with the City of Redmond and Deschutes County to expand the ‘Greater Redmond Enterprise Zone’ to include portions of the City of Sisters. The City is currently looking to amend the zone boundary to include the Sisters Eagle Airfield within this zone, which is expected to occur following annexation of the land. The Enterprise Zone offers benefits to qualifying business, and is administered by Economic Development of Central Oregon (Bend office). Qualifying businesses receive tax incentives on the portions of their facilities that are upgraded to provide additional employees, and

Downtown Sisters Urban Renewal Plan

The City recognizes that tourism will continue to be important to the economic development of the City of Sisters. *The Downtown Sisters Urban Renewal Plan*, adopted in July of 2003 (Urban Renewal Plan), is intended to promote the development of downtown as the commercial and cultural center of the Sisters community. The Urban Renewal Plan is incorporated herein, by reference by this Plan.

The Urban Renewal Plan's goals are stated below.

1. Strengthen Downtown Sisters' Role as the Heart of the Community
2. Improve Vehicular and Pedestrian Circulation Through and Within the Downtown to Accommodate Through Traffic and Downtown Patrons
3. Promote a Mix of Commercial and Residential Uses Oriented to Pedestrians
4. Enhance the Pedestrian Environment On Streets and In Public Parks, a Town Square and Public Gathering Places
5. Promote High-Quality Design and Development Compatible with the Sisters Western Frontier Architectural Theme
6. Encourage Intensive Development of Downtown Properties
7. Promote Employment Uses to Generate Year-Round Jobs

These goals are met by forming an Urban Renewal District overseen by the Sisters Development Commission. Within the boundaries of the Urban Renewal District, tax increment financing, grants, loans, developer contributions, and donations will generate funds to use for improvement projects. The Sisters Development Commission, which is the urban renewal agency of the City, will implement the Urban Renewal Plan. The implementation will involve public improvements; assistance to property owners/lessees for rehabilitation, redevelopment or development; and the creation of civic and community facilities. Overall, the improvements are intended to enhance the vitality of the downtown area by improving streetscapes, reinforcing the existing design theme, and creating community amenities.

Business Recruitment and Outreach Activities

The Sisters Area Chamber of Commerce is a non-profit corporation founded in 1974 to "unify and coordinate the efforts of businesses and residents in promoting the civic, industrial, commercial, agricultural, environmental and general welfare of the City of Sisters, Oregon and its economic area."

The Sisters Chamber promotes economic development in the City as well as the outlying area. The Chamber assists visitors, answers inquiries, and promotes business relocations to the Sisters area. It also sponsors community events throughout the year that encourage people to visit and support local businesses.

The Sisters Chamber of Commerce with the assistance of the Community Action Team of Sisters (CATS) sponsored the *Sisters Strategic Action Plan for Economic Development*, 2002. This plan identifies overall goals for local businesses and the community as well as specific sector strategies for retail, agribusiness, light industrial/manufacturing, entrepreneurial/professional services, and tourism. Overall, these strategies focus on maintaining and promoting the uniqueness of Sisters' natural, clean, and friendly environment as the City's economic base diversifies and grows. The plan seeks to reinforce the existing strengths of the local economy (tourism/retail, traditional agricultural economy, light industrial) by improving the City's infrastructure (pedestrian environment, roadway function) and promoting and collaborating business-related activities.

The *Sisters Strategic Action Plan for Economic Development* also focuses economic development efforts on targeted industries:

- Light Industry/Manufacturing
- Entrepreneurial/Small Office Home Office/Professional Services
- Tourism
- Retail
- Culture and the Arts
- Real Estate Development
- Agribusiness

Efforts to recruit and relocate businesses will be concentrated on these industries. To this end, a business relocation brochure was created by the Sisters Chambers and CATS. This effort involved many businesses, City Council members, and City staff. The purpose of this document is to encourage targeted industries to relocate to Sisters. These industries are expected to provide the types of economic opportunities appropriate for, and a benefit to, the local economy, while also being compatible with the environment and character of the City. This relocation guide describes the Sisters area, lifestyle, location and climate, community, a calendar of events, the school district, housing, local businesses, and other local resources.

The City of Sisters should focus on attracting the types of industries that will choose to locate in the City. Traditional industrial uses may not find the City attractive for their needs due to the relative isolation. Focusing on ideas such as creating and attracting better jobs and boosting incomes is a better approach than focusing on attracting more jobs. Providing a better place for business versus a cheaper place for business is also pertinent.

Companies the City hopes will be attracted to the area will tend to be smaller companies with educated workers and relatively high pay scales. The demographics of the Sisters area (affluent, well educated) will also draw companies to the area. Innovative regulations geared towards attracting the desired industries, mixed use zoning, etc. will provide a competitive advantage to help attract businesses that will contribute to Sisters' long term economic health.

Although the City hopes to attract smaller companies and industry to the area, the City acknowledges that rising land values, increasing rents, and the shortage of affordable workforce housing will continue to impact the City's ability to recruit and attract new businesses to Sisters. In recognition of these factors, as further outlined in the findings in *Chapter 10, Housing*, the North Sisters Business Park Sub-district allows the development of second story residential units above industrial operations. The additional flexibility created by this zoning district provides numerous advantages to industrial operators and will assist the City in its efforts to recruit and attract new business opportunities. The second story residential units can be utilized by industrial land owners who want/need to reside above operating industrial facilities. The units can also be utilized to provide employee housing, either as a compensation incentive or as an additional source of revenue for the industrial operator. If the units are not utilized by the industrial operator, they can serve as low-cost rental units that provide additional rental income to help offset the cost of industrial operations. By allowing limited housing with industrial uses, these low cost housing units will provide the type of workforce housing that is needed to support existing commercial and industrial operations within the City limits.

Two light-industrial subdivisions in the northern portion of the city (Sun Ranch and Three Sisters Business Parks) are unique and must be developed sensibly to achieve economic prosperity while respecting their surrounding uses. These two subdivisions are appropriate for live-work mixed use development for a number of reasons. First, both subdivisions are vacant so new policies guiding development will create a consistent and well functioning built environment. To the east of both parcels is the Sisters Eagle Airport, providing convenient small engine aircraft service. Adjacent to the north of both parcels are existing low-density rural residential uses, creating potential conflicts with intensive industrial development. To the south of both parcels lie existing light-industrial subdivisions which are ripe for more intensive development and redevelopment. The Sun Ranch Business Park is unique as it borders a commercial area to the southeast and is a gateway to downtown Sisters from the rural areas to the north. Three Sisters Business park is also unique as it is adjacent to UAR-zoned lands to the west that may be subject to future redevelopment.

The Sun Ranch and Three Sisters industrial parks are in transition areas between typically conflicting uses (residential and light industrial). The transition is also from increasingly rural areas to the north and more intensive development to the south. The development of these parcels should reflect the unique role these business parks play in adding value to the community while also protecting existing property values in the surrounding areas.

The unique location and site characteristics of the Sun Ranch and Three Sisters business parks require the city to create specific policies and development codes for these properties accomplishing the following goals:

1. Decrease opportunities for highly intensive polluting and hazardous industrial uses to protect the natural beauty of the Sisters area, city, and neighboring residents

2. Encourage economic growth in the city by making the primary uses in the business parks a combination of light manufacturing and professional services
3. Allow secondary and accessory uses such as retail and dwelling units to foster a more lively and unique development and provide an incentive for new businesses to locate in Sisters
4. Create design standards that favor the economic uses while creating attractive, healthy, and stable living environments
5. Protect the long-term economic uses of the land and prevent a reversion to intensive residential uses

#### **9.4 POLICIES**

1. The City shall guide growth in a manner that will result in a balance between economic and environmental interests.

##### **Tasks -**

- a. The City shall maintain and enhance the appearance and function of the Commercial Districts by providing a safe and aesthetically pleasing pedestrian environment, mixed use development, and requiring adherence to the Sisters Western Frontier Architectural Design for all types of development and signage. The Sisters Western Frontier Architectural Design Theme does not apply to the Sun Ranch Tourist Commercial District. In its place a more historically accurate 1900s Rural Farm/Ranch House design standard applies. The City shall establish standards for this design theme in the Development Code.
- b. Auto Oriented developments such as restaurants with drive-up windows are not appropriate in the downtown area or Commercial District. Auto oriented uses shall only be permitted in the Highway Commercial District, Light Industrial District, and North Sisters Business Park District, and shall be limited and managed based on their impacts.
- c. The City shall assure development contiguous to commercial and residential zones is designed and built in a manner that is consistent and integrates with the character and quality of those zones.
- d. The City's Development Code should continue to allow mixed-use development within the Commercial Districts, and in transitional light-industrial areas such as the Sun Ranch and Three Sisters Business Parks (as previously noted in the findings), and small commercial uses and home occupation mixed with residential uses.
- e. Commercial and Industrial uses shall minimize their impacts on residential areas by being subject to additional development standards, i.e. buffers, setbacks, landscaping, sign regulation and building height restrictions.
- f. The City has adopted the Sun Ranch Tourist Commercial District to apply to the Conklin Guest House property. This property is intended to provide

commercial uses that will serve the needs of the nearby light industrial uses and visitors to the area. Drive through facilities are not appropriate for this zoning district.

- g. Development standards shall be added to the City's Development Code for unique light-industrial parks in transition areas. Standards shall be developed to accomplish the goals outlined in the Business Recruitment and Outreach Activities findings of this chapter.
2. The City shall support the tourist industry and special events that have a positive year-round economic impact on the community.
3. The City shall continue to partner with the Community Action Team of Sisters, the Chamber of Commerce, Economic Development for Central Oregon, and other economic development agencies, to improve local and regional economic development efforts, attract businesses, and enhance and diversify the City's economic base. The City will participate with these agencies in periodic updating of the *Sisters Strategic Action Plan for Economic Development*.
4. The City should support efforts to attract businesses providing family-wage employment opportunities.
5. The City should work with area educational institutions to maintain high standards of educational opportunity.
6. The City shall ensure an adequate supply of land for the needs of commercial, mixed-use and light industrial purposes.



## Goal 14: Urbanization

### 14.1 GOALS

"To provide for an orderly and efficient transition from rural to urban land use."

### 14.2 BACKGROUND

#### Definitions

*Urban Lands:* Lands inside the City of Sisters Urban Growth Boundary (UGB) for which sewer and water services are available and capable of supporting planned levels of development, including associated open space and unbuildable land.

*Urbanizable Lands:* Land inside the City of Sisters UGB that is designated for urban development for which sewer and water services capable of supporting planned development are not available.

*Urban Services:* Key facilities to support urban types and levels of development and to include at least the following: City water and sewer services, storm drainage facilities, and transportation infrastructure.

The City of Sisters' City Limits coincide with the City's adopted Urban Growth Boundary (UGB). The current (2007) city limits contains approximately 1176 gross acres. Table 14.1 below shows the approximate gross acres of lands in the Sisters UGB by land use district. The data is approximate, includes public roadways, and is based on engineering estimates and public records available to the City.

**Table 14.1: Gross Acreage of Areas in Urban Growth Boundary by Land Use District**

<b>Land Use District</b>	<b>Approx. Gross Acre</b>
Public Facility District (PF District)	
<i>School District Properties</i>	144.30
<i>Forest Service Property</i>	42.58
<i>Middle and Elementary School Properties</i>	19.00
<i>Wastewater Treatment Facility and Fire Training Facility</i>	62.80
<b>PF District Total</b>	<b>268.68</b>
Open Space District (OS District)	
<i>Forest Service Property</i>	7.56
<i>City and State Parks including the unplatted McKenzie Meadow Park</i>	44.80
<b>OS District Total</b>	<b>52.36</b>
<b>Flood Plain District (FP District) Total</b> (not including area in City and State Parks the OS District)	<b>24.00</b>
Commercial Districts (C District)	

<i>Downtown Commercial District (DC) &amp; Tourist Commercial</i>	134.41
<i>Highway Commercial District (HC)</i>	66.00
<b>C and HC Districts Total</b>	<b>200.41</b>
<b>Light Industrial District (LI District) Total</b>	<b>101.08</b>
Residential (R District)	
<i>Residential District (R District)</i>	288.00
<i>Residential Multi-Family District (R-MFD District)</i>	188.90
<b>R Districts Total</b>	<b>476.90</b>
Urban Area Reserve District (UAR District)	
<i>UAR (Residential 2.5-acre Minimum)</i>	30.00
<i>UAR (Business Park 5-acre Minimum) (Formerly owned by the U.S. Forest Service)</i>	17.54
<i>Fire Training Facility</i>	4.00
<b>UAR Districts Total</b>	<b>51.54</b>
<b>Airport District Total</b>	<b>34.3</b>
<b>Total Area in Urban Growth Boundary</b>	<b>1,210.54</b>

Source: City of Sisters GIS based on Deschutes County GIS tax lots, and as amended by files CP06-01/02, Z06-01 and CP 08-02. Recalculated on 6/28/11 following the survey of the Forest Service property in 2008, and the annexation of the McKenzie Meadow Village and Fire Training Properties in 2010 - 2011.

The Conklin Guest House property was included in the UGB in 2005 with a commercial zoning designation. In 2007, the Sun Ranch Tourist Commercial zoning district was adopted and applied to the property and an additional area of 0.8 acres was added to the district. The Sun Ranch Tourist Commercial District allows uses that serve tourists and the Light Industrial areas to the west.

### **14.3 FINDINGS**

#### Population Forecast

The population used in the 2005 Comprehensive Plan update was for year 2004, which was estimated at 1,490 persons (Portland State University, PRC July 1, 2004 estimates). Year 2010 census numbers showed a total population of 2038 persons. These statistics are for the Sisters City limits and Urban Growth Boundary, which are coincident. The City of Sisters (hereafter referred to as Sisters or City) population is forecast to remain small compared to the other jurisdictions, but will experience consistent growth over the long-term. Sisters uses the population forecast numbers for long-range planning purposes, including the residential buildable lands supply and demand analysis. Refer to Appendix A for City of Sisters 2004 coordinated population forecast.

#### Summary of Population Forecast

Table 14.2 is a summary of the City's 20-year population forecast. The expected population growth rate between 2000 and 2005 is 12.54% per year. This rate is expected to decrease during the 20-year planning period to above 3 percent per year. The year 2025 population is expected to be 3,747 people.

14.2 Population Forecast Summary

Year	City of Sisters Population <sup>2</sup>	5-year Average Annual Growth Rate (previous to current year)
2000	975 <sup>1</sup>	NA
2005	1,768	12.64%
2010	2,306	5.46%
2015	2,694	3.16%
2020	3,166	3.28%
2025	3,747	3.43%

<sup>1</sup> Source: PRC July 1, Official Population Estimate for City of Sisters.

<sup>2</sup> Source: Population Estimates by City of Sisters.

The City of Sisters’ methodology for determining population is based on the current estimates of the City’s population (from PRC) plus estimates of population growth based on the number of new residential building permits that will be issued in the city between 2004 and 2025. The housing unit method approximates population for the city based on the number of occupied housing units in the city multiplied by the city’s average household size. Based on the number of building permits issued each year, and the number of people per household (considering vacancy rate and local demographics) it is possible to forecast how many people will be “added” to the City in the future. For years beyond 2004, the number of building permits for residential units was estimated based on past and recent building trends, then population was estimated from the growth in housing represented by residential building permit issuance.

This technique is one of the most feasible, accurate, and cost-effective among the major methods of population estimation available for small geographies such as Sisters. Using the number of building permits coupled with other demographic information to estimate population is commonly used to estimate populations for small geographic areas. Different versions of the housing unit model are used by the US Census Bureau to estimate sub-County populations and by a wide variety of cities, counties, states and special districts. The official yearly estimates of the City’s population determined by Portland State University’s Center for Population Research and Census are based on a housing unit method.

14.3 Housing Units and Building Permit Issuance, 1990-2000

Period	Number of Total Housing Units In City of Sisters	Average Annual Growth Rate of Building Permit Issuance
1990-2000 <sup>1</sup>	354 to 482 housing units	3.13%

<sup>1</sup> Source: 1990 and 2000 U.S. Census, Summary File 1 (SF-1) 100-Percent Data  
Between 1990 and 2000, the number of housing units increased 3.13 percent/year as shown in Table 14.3. Note in Table 14.4, using the exact same source of data (U.S.

Census data), the rate of population growth was 3.51 percent per year. These two rates of average annual growth are very similar. This information demonstrates why it is appropriate to use the number of new dwelling units to predict population, in combination with other important data.

*14.4 Population Growth, 1990-2000*

<b>Period</b>	<b>Population by Year, City of Sisters</b>	<b>Average Annual Growth Rates of Population</b>
1990-2000 <sup>1</sup>	679 to 959 people	3.51%

<sup>1</sup> Source: 1990 and 2000 U.S. Census, Summary File 1 (SF-1) 100-Percent Data

The factual information presented in tables 14.3 and 14.4 supports the City’s assumption that using residential building permits to approximate the growth of housing units and to predict population is appropriate when used with other information such as the number of people per dwelling unit. The rates of growth of the City’s housing units and population mirror each other over a decade between 1990 and 2000 as well as during a short period such as 2001-2003. Increases in housing unit construction are mirrored by the increases in the official population estimates by PRC. Multiple sources of public data verify these conclusions.

Table 14.5 below, shows how many building permits for residential units after subtracting demolitions were issued by year in the City between 1990 and 2003. This demonstrates the slow rate of building in the early 1990’s, the acceleration in anticipation of construction of the municipal sewer in 1996, the dramatic and sustained increases in issuance of building permits as the sewer became operational, and the continued rate of building permit issuance since the sewer’s completion.

*Table 14.5 Housing Unit Growth Rates, 1990-2003*

<b>Period</b>	<b>Number of Total Housing Units</b>	<b>Average Annual Growth Rate of Housing Construction</b>
1990-2000 <sup>1</sup>	354 to 482 housing units	3.13%
2001-2003 <sup>2</sup>	482 to 725 housing units	14.57%

<sup>1</sup> Source: 1990 and 2000 U.S. Censuses, Summary File 1 (SF-1) 100-Percent Data

<sup>2</sup> Source: City of Sisters Building Permits for Residential Units, after subtracting demolitions.

In years 1990 through 2000, no municipal sewer was available and residential development was limited to single-family development on large (1/2 acre) lots. The relatively low average annual population growth rate of 3.68 percent per year between 1990 and 2000 reflects this when compared to the rate of population growth after the municipal sewer installation in 2001. In years 2001 to 2003 the average annual rate of population growth in the City was 13.62 percent per year, nearly four times the rate during the 1990s. In addition, the City’s development codes were dramatically updated in 2001, facilitating infill development and smaller lot sizes. Thus, the conditions (new sewer and code) present in 2004 and beyond are significantly different than in the 1990’s.

The population forecast assumes that the high rate of growth seen after the installation of the municipal sewer will slowly decrease and long-term growth for the remainder of the planning period will be at rates slightly higher than population and housing growth rates during the 1990s. The yearly population forecast, which is part of the Deschutes County Coordinated Population Forecast 2000-2025, is presented in Table 14.6. For a detailed discussion of the population forecast and methodology, please refer to Appendix 1.

*Table 14.6: Population Forecast for City of Sisters, 2003-2025*

Forecast Year	Forecasted Rate of Building Permit Growth <sup>1</sup>	Forecasted Residential Housing Units <sup>2</sup>	Forecasted New Residential Building Permits Issued/Yr. <sup>3</sup>	Persons per Dwelling Unit <sup>4</sup>	Population Forecast <sup>5</sup>
2003	NA	725	104	NA	1,430
2004	11.10%	805	80	1.99	1,590
2005	11.10%	895	89	1.99	1,768
2006	8.90%	975	80	1.99	1,927
2007	5.40%	1,027	53	1.99	2,031
2008	4.30%	1,071	44	1.99	2,119
2009	4.30%	1,117	46	1.99	2,211
2010	4.30%	1,165	48	1.99	2,306
2011	3.13%	1,202	36	1.99	2,379
2012	3.13%	1,240	38	2.00	2,454
2013	3.13%	1,278	39	2.00	2,532
2014	3.13%	1,318	40	2.00	2,612
2015	3.13%	1,360	41	2.00	2,694
2016	3.13%	1,402	43	2.00	2,780
2017	3.13%	1,446	44	2.10	2,872
2018	3.13%	1,491	45	2.10	2,967
2019	3.13%	1,538	47	2.10	3,065
2020	3.13%	1,586	48	2.10	3,166
2021	3.13%	1,636	50	2.20	3,275
2022	3.13%	1,687	51	2.20	3,388
2023	3.13%	1,740	53	2.20	3,504
2024	3.13%	1,794	54	2.20	3,624
2025	3.13%	1,850	56	2.20	3,747

<sup>1</sup> Source: Rates between 2004 through 2010 based on weighted average of growth rates before and after the construction of the municipal sewer. Rates of Building Permit Growth between 2011 and 2025 based on rate of housing unit growth between 1990-2000 as determined by the U.S. Census.

<sup>2</sup> Source: "Forecasted Residential Housing Units" based on "Forecasted Rate of Building Permit Growth" applied to base of 725 Residential Housing Units in 2003, and grown by the applicable rate per year.

<sup>3</sup> Source: Current year minus previous years "Forecasted Residential Housing Units", for example in 2004, 805 Forecasted Residential Units in 2004 minus 725 Forecasted Housing Units in 2003 equals 80.

<sup>4</sup> Source: Persons per Dwelling Unit of 1.99 is from the 2000 U. S. Census, SF-1.

This statistic accounts for vacancy rates and second homes. The statistic increases over time as estimated here by the City of Sisters Planning Department based on the assumption that the City will approach the State of Oregon statistic of 2.4 Persons Per Dwelling Unit as determined by the 2000 U.S. Census, SF-1. In other words, the City of Sisters will become more like the state in terms of persons per household in the future.

<sup>5</sup> Source: Calculated by adding the total of (Total Res. Permits/Yr. in Sisters UGB x Persons Per Dwelling Unit) to previous year's Population Forecast.

### *Infrastructure*

The City has community facilities plans for water, wastewater, parks and transportation. A voter mandated Charter amendment that Systems Development Charges be paid as development permits are issued ensures there will be adequate capacity in those systems to accommodate growth. As more building permits are issued, the amount of SDCs collected increases directly. If additional land is needed to accommodate anticipated housing, industrial, or commercial growth, the City will comply with State of Oregon requirements to provide the necessary land base. Water, sewer, and transportation

facility plans will be updated to reflect anticipated population growth, necessary infrastructure will be planned, and SDCs updated and required to fund needed improvements.

The Sisters School District has three schools, all of which are rated as excellent. Sisters High School has one of the highest average SAT scores for graduating seniors, which attracts families to the district. Sisters schools offer full educational experiences including arts and music. The District uses a place-based environmental education model called ‘IEE’, which teaches and promotes education by locale, and good stewardship of natural resources. The School District has recently created many public and private partnerships which help us to maintain adequate funding in challenging budgetary times

Sisters school capacities and current enrollments are as follows\*\*;

<u>School:</u>	<u>Capacity:</u>	<u>Current Enrollment*:</u>	<u>Percent:</u>
Sisters Elementary School	525	310	59%
Sisters Middle School	459	390	85%
Sisters High School	750	504	67%

\*school year 2011-2012...

\*\*source: Jim Golden, Sisters School District Superintendent, via email on 12-16-2011.

### *Future Land Needs*

#### *Public Facility and Landscape Management Districts (PF and LM Districts)*

Additional lands for Public Facilities are not anticipated within the planning period with the possible exception of land needed for a public works shop and additional surface dispersal of treated effluent and the training facility for the Sisters / Camp Sherman Fire District.

The Sisters School District completed its new school campus including a new high school, fields, and recreation facilities for the Sisters Organization for Athletics and Recreation on the 98-acre parcel. The site is not fully utilized and could accommodate additional development.

#### *The United States Forest Service (USFS) Properties.*

The USFS owns several properties in Sisters, including a 42.58 acre property designated and zoned Public Facilities, which is commonly referred to as the ‘South Barclay Parcel’; a 7.56 acre property designated and zoned Open Space that is commonly referred to as the ‘East Portal Triangle’, and, until recently, a 17.54 acre parcel that is designated and zoned Urban Area Reserve and is commonly referred to as the ‘North Barclay’ property. The properties are generally located along the east side of Highway 20 west of Pine Street.

It is anticipated that the USFS will seek to sell most of these **three** parcels in order to fund a new headquarters building in Sisters. In 2008, the USFS attempted to sell the land but received no bids. Feedback received by the USFS and the City was that there were too many uncertainties associated with future zone changes and the likely application of the Transportation Planning Rule (TPR). This, in combination with a suddenly volatile economy, appeared to be the reason that the property did not sell in 2008. In 2019, the Forest Service made the decision to stay at the current location and sold the 17+-acre parcel north of Barclay for private development.

In 2010, the City, ODOT, DLCD and the USFS coordinated efforts, and through a \$74,900 Transportation and Growth Management grant, agreed to produce two design options (Options A and B) that would establish density thresholds and land use types without triggering the TPR. A third design option (Option C) was also developed at the request of the City of Sisters. A fourth option, Option D which is referred to herein as the ‘Park Option’, was developed by the Technical Advisory Committee who provided input on the Park Master Plan update. ODOT Region 4 reviewed the methodology used for each of these design options, and found the methodology and street placements to be acceptable. ~~These options, and their associated development densities, are as follows;~~

However, the Forest Service long range plans changed, resulting in the 2019 sale of the property north of Barclay and the consolidation of Forest Service operations on a portion of the property south of Barclay. This departure from previous planning allows other configurations and land uses to be considered, both north and south of Barclay.

*Option A*

~~Retail / Commercial: 7 ac. (gross) 80,000 s.f. (maximum)  
Highway Commercial: 5 ac. (gross) 60,000 s.f. (maximum)~~

~~Residential: 10 ac. (gross) 70 dwelling units (max.)~~  
~~Light Industrial: 20 ac. (gross)~~

Park: 6.3 ac. (gross; the 'East Portal Triangle')  
 Add'l Park: min. 5 ac. (gross; can be required open space)

USFS Property — Design Option A



*Design Option B*

Retail / Commercial: 7 ac. (gross) 80,000 s.f. (maximum)  
 Resort Commercial: 10 ac. (gross) up to 12,000 s.f. + 20 vacation units  
 Residential: 10 ac. (gross) up to 160 dwelling units (max.)  
 Light Industrial: 15 ac. (gross)

Park: \_\_\_\_\_ 6.3 ac. (gross; the 'East Portal Triangle')  
 Add'l Park: \_\_\_\_\_ min. 5 ac. (gross; can be required open space)

USFS Property — Design Option B



*Design Option C*

Retail / Commercial: \_\_\_\_\_ 6 ac. (gross) — 50,000 s.f. (maximum)  
 Resort Commercial: \_\_\_\_\_ 9 ac. (gross) — up to 60,000 s.f. + 25 vacation units  
 Residential: \_\_\_\_\_ 10 ac. (gross) — up to 85 dwelling units (max.)  
 Light Industrial: \_\_\_\_\_ 12 ac. (gross)

Park: \_\_\_\_\_ 6.3 ac. (gross; the 'East Portal Triangle')  
Add'l Park: \_\_\_\_\_ min. 5 ac. (gross; can be required open space)

USFS Property: Design Option C



The location of these parcels, and in particular the South Barclay Parcel is strategic to the city's downtown as a gateway into Sisters from the west side. The City anticipates that some or most of the land will be developed for urban uses related to its downtown planning theme under mixed use principals, as well as for light industrial uses. There is a possibility that some or most of this land could be

purchased through public and/or private funding for use as a park; this possibility is addressed further in Goal 5 of this document.

In the event that this land is purchased with the intent of developing the land with either commercial, residential or light industrial uses, then it is the policy of the City of Sisters that any comprehensive plan and/or zoning amendment that affects the future development of the properties must meet specific criteria in order for the City to be able to support a potential plan amendment for the property. These criteria are as follows:

1. The amendment shall be based on a 20-year land need analysis for both employment and housing needs, including for affordable housing. The analysis shall include an updated buildable lands inventory for employment and housing needs as part of the 20-year land need analysis. The analysis shall be consistent with statewide planning Goal 9 (Economic Development) and Goal 10 (Housing).
2. The amendment shall demonstrate consistency and integration with the city's ~~2008-09~~ 2018 update of its Transportation System Plan, as well as the state's Transportation Planning Rule as found in OAR 660-012.
3. The amendment shall demonstrate that it has maximized urban efficiency consistent with city and state planning requirements; and quality in urban design; ~~and complies with the city's Western Theme design standards.~~
4. The amendment shall include a development plan for the South Barclay Parcel which integrates proposed land uses, transportation and building layout and design in a manner that meets the overall community needs. The development plan shall provide detailed commitments to design context, energy efficiency and public and private financing of public improvements.
5. The amendment shall demonstrate consistency and integration with the 2011 City of Sisters Parks Master Plan which recommends between 5 and 47 acres to be dedicated for a future community or regional park.

The 2011 City of Sisters Parks Master Plan identifies service area needs within the City. To serve the needs of a diverse population, it is important that a parks system contain parks of different types and sizes distributed throughout the community. It is also important that residents have convenient access to a developed public park within their neighborhood (defined as a ¼ mile or less walking distance). Map 3-2 of the 2011 City of Sisters Parks Master Plan illustrates park service areas. Service areas of 1-mile for community parks, ½ mile for neighborhood parks, and ¼ mile for mini parks are used as a measurement to analyze how well Sisters residents are served by their parks system. Although a number of parks exist throughout Sisters, the service area analysis in the 2011 Parks Master Plan indicates that sections of the City are currently underserved or not served at all by developed parks.

The 2011 City of Sisters Parks Master Plan identifies that the central core of Sisters is well serviced by parks, with Barclay Park, Creekside Park, and Cliff Clemens Park all contributing in this area. The north-central portion of Sisters (north of Black Butte Avenue) is entirely serviced by Cliff Clemens Park and the south-central portion of Sisters (south of St. Helens Avenue) is entirely serviced by Creekside Park. Although these parks are geographically located in appropriate locations to serve these areas, both parks currently contain minimal amenities and do not provide the full range of features typically found in a neighborhood park. Outside of the central core, three general areas of Sisters are underserved by park facilities:

- Northeast – east of Cowboy Street and north of Whychus Creek;
- South – south of St. Helens Avenue and north of the southern City limits; and
- West – west of Pine Street and east of Sisters High School.

The service area analysis also indicates that the southwest portion of Sisters, south of Highway 242 and west of Pine Street, is underserved. However, this area benefits from private facilities in the Pine Meadow subdivision. The underserved areas described above consist predominately of single-family residential properties or undeveloped properties zoned for residential use. The service area analysis supports land acquisition and parkland development in the northeast, south, and west portions of Sisters, with the stated goal of establishing park facilities that serve residents and residential areas within ¼ mile. By promoting parks that are within walking distance, and within underserved areas, the City of Sisters can better serve its residents.

In addition, Sisters does not have an adopted Level of Service (LOS) standard. The basic function of the LOS is to ensure quality of service delivery and equity. It is a needs-driven, facility based, and land measured formula; expressed as the ratio of developed parkland per 1,000 residents. The City's current LOS is 3.47 acres of parkland per 1,000 residents. This is based on the estimated 2010 population of 1,935 residents. Compared to other communities of similar size, Sisters' LOS is slightly lower than average. As Sister's population increases, it will be necessary to develop additional parkland in order to maintain or increase the current LOS. In order to better serve the residents of Sisters, the 2011 Parks Master Plan recommends adopting a LOS standard of 5.0 acres per 1,000 residents.

The City of Sisters anticipates needing new land for wastewater treatment facilities above their current holdings. The City currently owns 160 acres designated for use as a wastewater treatment facility. The City will require additional land, possibly as much as 80 acres adjacent to the current site, for future treatment capacity. As additional land for facilities is required, land will be annexed into the City and UGB consistent with State and local UGB expansion policies, requirements, and laws.

A UGB expansion of 13.8 acres of Public Facility land for the wastewater treatment facility occurred in 2005 during the Comprehensive Plan update. This expansion is for the area adjacent to the shop at the wastewater treatment facility and may be used for equipment storage and a public works headquarters. This expansion is discussed in

greater detail in the UGB Findings Document, incorporated herein by reference and available from the Planning Department.

A UGB expansion of 4 acres of future Public Facility land for the Sisters – Camp Sherman Fire District occurred in 2009. This expansion affected land located immediately east of S. Locust Street leading to the city’s sewage percolation ponds. This expansion is discussed in greater detail in the UGB Findings Document (2008), incorporated herein by reference and available from the Planning Department.

*Flood Plain Lands (FP District)*

The FP District and 100-year flood plain are not expected to change in the planning period. If improved maps of the 100-year flood plain are made available by FEMA or local survey efforts, the City will make the appropriate changes in the boundaries of this district.

*Residential Lands (R and R-MFD Districts)*

As found in the 2010 Sisters Housing Plan, given anticipated population growth, the existing supply of residential land by district, number of platted and planned units in subdivisions, and current density ranges, a surplus of ‘R’ zoned residential land to meet the 20-year demand is predicted in the planning period. This surplus was evidenced after supplies of vacant residential land were developed, as existing platted subdivisions were developed, and as infill occurred, which increased the average density in the ‘R’ District to nearly 9 units per acre between 2005 and 2009. As a consequence, there is not a demand for additional ‘R’ zoned land through the planning period. However, there are insufficient R-MFD lands to meet anticipated needs during the planning period, as described in Chapter 10 of the Comprehensive Plan. As a consequence of Sisters’ tourist and service-based economy, and economic forecasts which indicate slow job growth into the future, there is a need for additional multi-family units, units targeted specifically at workforce and lower-income populations. Additionally, there is a need for housing for special needs and elderly populations, due to Sisters’ higher-than-average median age. In 2005, the City included a UGB expansion of 30 acres and designated it as ‘R’ land, in order meet the demand for ‘R’ zoned land that was anticipated at the time. In 2010, the City reevaluated this demand, and found this land was better-suited as R-MFD, in order to meet the demand for multi-family, low-income and workforce housing, and housing targeted specifically at senior populations.

*Commercial and Light Industrial Lands (DC, HC, LI Districts)*

Given anticipated population growth, the existing supply of economic lands by district and anticipated employment by sector there are approximately 37 net buildable acres of vacant DC and HC designated lands inside the Sisters UGB. Adding approximately 12 net buildable acres of re-developable and 40 net buildable acres of developable acreage of partially developed lands, a total of 89 net buildable acres of buildable DC and HC lands are inside the Sisters UGB. Since the projected future demand is 28 net buildable acres, there is a surplus of commercial land of approximately 61 acres. Even without considering the re-development of partially developed lands, there is sufficient vacant and re-developable land in the existing UGB to accommodate demand for commercial

lands within the next 20 years. For more information see Appendix B, *Technical Report, City of Sisters Commercial and Industrial Land Needs Analysis*.

By early 2020, the amount of available LI-designated lands inside the Sisters UGB has significantly decreased. All of the light industrial parcels in Sisters (50.69 acres/89 lots) are being utilized (nearly 100% occupancy for the entire zone), with only 9 lots (6.75 acres) listed as vacant (still utilized, but not developed). Development within the North Sisters Business Park zone has increased significantly and the occupancy rate is 100%. Current vacancy rates regionally are also lower than historic rates. Based on recent summaries by Economic Development for Central Oregon (EDCO), “Sisters has not had enough available light industrial inventory to take advantage of opportunities.” EDCO further reports that the majority of light industrial lot needs in the area are currently less than one acre, but some flexibility in sizing is desired to accommodate an opportunity for a larger project.

~~“There are approximately 35.68 net buildable acres of vacant LI designated lands inside the Sisters UGB. Adding 3 net buildable acres of re-developable and 17 acres of developable acreage of partially developed lands, a total of 55.68 acres of buildable light industrial (LI) lands are available inside the Sisters UGB. There is a projected demand for 34 net buildable acres of industrial land inside the Sisters UGB by the year 2025. A surplus of 21.68 acres of net buildable industrial land is predicted based on anticipated supply and demand of industrial lands until the year 2025. There is a sufficient supply of vacant acreage alone to satisfy anticipated demand, without considering re-developable and partially developed lots. For more information see Appendix B.”~~

#### *Airport (A District)*

In 2012, the citizens of the Sisters voted to annex the Sisters Eagle Airport, 34.3 acres, by popular vote during the November 2012 general election, by approximately 85%. The Sisters Eagle Airport was then annexed into the City of Sisters on March 15, 2014.

Annexing the Sisters Eagle Airport and rezoning it to Airport District (A) provides an orderly and efficient transition from rural to urban land use. Annexing the Sisters Eagle Airport is an efficient accommodation of land needs because it will allow the community to use an existing resource that has been developed historically adjacent to the City and is approved by the Oregon Department of Aviation (ODA).

There are no other available locations to develop an airport within the UGB. It is more efficient to use an already developed airport rather than develop a redundant airport to meet the community’s needs.

#### *Urban Area Reserve (UAR District)*

The City has adopted and mapped the Urban Area Reserve (UAR) Sub-District which contains a minimum lot size of 2.5 acres to preserve land for future development at urban densities. There are a total of 51.54 acres of UAR inside the current UGB. Of this, 30 acres are intended as a holding zone for future residential development re-zoning to residential uses. As part of the UGB Site Evaluation process, the UAR properties were examined for use as residential properties since the UAR is a holding zone for residential uses. City staff

estimates that 8.8 gross acres of R-MFSD can be obtained from the re-zoning and re-development of these properties. 30 acres of UAR-zoned land was removed from the inventory in 2010 when McKenzie Meadow Village annexed into the city limits and was subsequently re-zoned from UAR 10 to R-MFD, PF and OS.

The Needs Assessment and Site Selection findings are found separately from this Comprehensive Plan in the 2008 burden of proof statement incorporated herein by reference, and available from the Planning Department.

23 acres of UAR inside the City Limits/UGB are owned by the U.S. Forest Service and are intended as a holding zone for the future development of a business park [or a light industrial area](#). While this parcel is zoned UAR, a holding zone for residential development, it is intended as a holding zone for light industrial/business park uses. If this parcel is rezoned it would be for light industrial/business park uses or for a relocated Forest Service Ranger Station. [In 2019, the Forest Service sold the property north of Barclay to a private developer, obviating the possibility of the use of the property for a relocated Forest Service Ranger Station.](#)

The remaining 13.8 acres of UAR land are owned by the City (described earlier herein) as possible future use for equipment storage and a Public Works warehouse / maintenance building.

### Urban Growth Management

Any proposal to annex new areas to the City must demonstrate that sufficient public facilities (including water, sewerage and transportation) are available or will be installed in conjunction with any land development. In Sisters, the annexation must also be approved by a majority of voters in an election. New policies included in the section below also guide urban growth consistent with State of Oregon laws.

State of Oregon laws require sufficient supplies of buildable lands inside the UGB to accommodate anticipated demand, provide choices in the marketplace, and livability. Some factors influencing the need for land include population growth, required development densities, economic development goals, land needs of public institutions, and market forces. Some specific ways to accommodate the 20-year need for residential land include expanding the UGB, re-zoning UAR lands to urban zoning designations, increasing residential densities, and converting non-residential lands to residential use.

### UGB Expansion

The City of Sisters completed a modest Urban Growth Boundary expansion during the 2005 Comprehensive Plan update process to implement its amended Sisters Urban Area Comprehensive Plan policies and tasks. This expansion and its compliance with applicable state and local requirements is presented in greater detail in a UGB Expansion Findings document, incorporated herein by reference. The Urban Growth Boundary (UGB) expansion occurred for number of purposes, including:

1. accommodating anticipated 20-year demand for residential uses such as single-family housing
2. adding additional land for Public Facility uses, specifically a new City Public Works Department headquarters building (office, maintenance, and storage facility) adjacent to the existing City of Sisters wastewater treatment facility,
3. bringing a small existing developed urban use on an Exclusive Farm Use parcel adjacent and outside the City of Sisters (City) UGB inside the UGB,
4. bringing a small Exclusive Farm Use parcel entirely surrounded by the City UGB into the UGB.

The 2005 Plan update brought a total of approximately 53 acres of land into the City of

Sisters Urban Growth Boundary (UGB). 8.9 acres is intended for commercial and light industrial uses – reflecting an existing commercial use and a parcel surrounded by the

city. The 2005 Plan update also brought approximately 13.8 acres of land into the City of Sisters UGB and rezoning the property from F1 to Public Facility as a site for a new Public Works Department headquarters adjacent to the existing wastewater treatment facility.

The need for additional residential land use is not until 2010-2020. Since the need is later in the 20-year planning period the land is proposed to be added to the UGB as Urban Area Reserve-10 acre minimum, outside the City Limits. As land is needed it would be annexed by the land owners, rezoned, and then developed for the urban use. Until then, uses would be limited outside the City Limits and would be subject to the development standards of Title 21 of the Deschutes County Code. When rezoned inside the City Limits, the site would be designated as Residential, or other zoning district based on documented need at the time of rezoning and redesignation.

In 2011, a four-acre portion of land was brought into the UGB and subsequently into the City limits for purposes of providing a training facility for the Sisters – Camp Sherman Fire District. The Needs Analysis and all accompanying Site Alternative Study documentation are found in a separate burden of proof document referenced herein and available at the Planning Department.

#### Determining Need and Comprehensive Plan Designation

##### *Residential Uses (lands zoned UAR-10 with Plan designation Residential)*

The Residential Buildable Land Supply and Demand Analysis (see Appendix C) predicted the amount of residential land needed until year 2025 based on anticipated population growth, historic and anticipated building trends, housing needs by income group, existing zoning, and the current supply of buildable residential land. This report estimated a need for additional land to be added to the Sisters UGB to meet anticipated demand. Specifically, 25 gross acres of land zoned for residential (predominately single-family) development (Residential-R District) were needed to accommodate 20-year demand. To meet the need for residential land, a single parcel of 30 acres (McKenzie Meadows parcel) was included in the UGB as a result of the Comprehensive Plan, and has since annexed into the city limits. Because the density in the single-family ‘R’ District increased so substantially between the period of 2005 and 2010, when the McKenzie Meadows parcel was annexed to the City, there was no longer a demand for ‘R’ zoned land, but a demand for multifamily, workforce and low-income housing, and housing targeted at the senior population. Eventual urban development of this parcel will be in the form of a Master Plan, so any area subject to restrictions can be used to fulfill open space and access requirements.

##### *Public Facility Uses (Land zoned Public Facility (PF) with PF Plan designation)*

The City’s old Public Works Department facility had been located at 175 W. Washington Avenue, and has since ~~has~~ been sold to the Sisters Camp Sherman Rural Fire Department. A new facility for the Public Works headquarters has been constructed adjacent to the sewage treatment plant percolation ponds. Uses at the new headquarters include a centralized office and repair shop, storage for garbage trucks, tractors, back hoes, street sweepers, solid waste

dumpsters, and rooms and structures holding equipment and supplies such as sand, gravel, pilings, pipes, and other associated uses.

The Sisters – Camp Sherman Fire District entered into an Agreement with the City of Sisters. The purpose of this Agreement is for the Fire District to allow the City to use a property owned by the Fire District for a new recycle center, which has subsequently been constructed. The City then became obligated to provide 4 acres of land for a Fire Training Facility, which occurred in year 2010. This Comprehensive Plan amendment followed.

The site has been fully evaluated for soil suitability, and comparable sites have been evaluated as is required by Oregon Administrative Rules. The Deschutes County Hearings Officer had made a formal recommendation to approve the 4 acre UGB expansion request, and the Board of County Commissioners voted unanimously to allow Sisters to amend its UGB by vote that occurred in April 2009. The support documentation referenced herein is found at the Planning Department, City Hall, 520 E. Cascade Avenue, Sisters.

*Commercial and Industrial Uses (Lands zoned UAR –10 with Plan designations Commercial and Light Industrial)*

In 2000, City voters approved the annexation of a 4.6-acre parcel of Exclusive Farm Use land adjacent to the northern portion of the Sisters UGB. The site is developed as the Conklin Guest House and has a bed and breakfast, small water feature, a barn, landscaping, and other improvements. This parcel is irrevocably converted to urban uses and so no loss of farm land would occur.

The proposal is to include the parcel in the UGB with a zoning designation of Urban Area Reserve UAR-10 (10-acre minimum, hereafter referred to as UAR-10) and a Plan designation of Commercial. This would preserve the use at current levels until a time when it applies for a zone change and annexation. Adding the site to the UGB would also enable the owner to intensify the development consistent with the Airport Height, Commercial District, and other land use guidelines in place in the Sisters Development Code. This parcel of land is also surrounded by the Sisters UGB to the north, west, and south, creating a gap in the urban area that will result in less efficient extension of utilities to the parcels inside the current UGB to the north.

With the Conklin Guest House parcel included in the UGB, the parcel adjacent to the west would be an Exclusive Farm Use Parcel that would be entirely surrounded by Urban Lands. This parcel has no water rights, is only 4.3 acres, and is currently a vacant dry parcel.

The proposal is to include the parcel in the Sisters UGB zoned UAR-10 with a Plan designation of Light Industrial. This preserves the use at current levels or would allow the development of a single-family house, or other low intensity developments until the site successfully annexes and rezones consistent with City Development Codes. After rezoned, the use could be intensified consistent with the Airport Height, and Light Industrial guidelines in place in the Sisters Development Code.

### Overview of Site Selection Process

After the need for additional land was determined and new Plan policies developed, the 2005 and 2009 UGB expansion was determined through a methodology implementing State of Oregon statute and rule as well as the City's Plan policies. As mentioned previously, the site selection process for the 4 acre expansion occurred through a separate set of documents which are available at the Sisters Planning Department, and are referenced as file no. CP 08-2 / ZC 08-1.

A site evaluation strategy was developed to determine the best sites to be included in the UGB to meet the need for additional residential land. Generally, all properties surrounding the current coincident UGB and city limits that were determined to have significant developable lands were rated according to 17 criteria that implemented State of Oregon statutes and rules and local policies. All parcels were evaluated as either Good (3 points), Fair (2 points), or Poor (1 point) in each criterion and the total points were added to a total score and weighted total score. The best parcels (ones with the highest point totals) were considered to meet anticipated needs. Refer to the UGB Site Evaluation Matrix and Maps (Appendix 5) of the Findings for UGB Expansion document for the resulting evaluation matrix.

This matrix is referred to many times in the Findings document. The methodology resulting in parcels selected for inclusion in the UGB is as follows:

1. Parcels adjacent to the UGB determined to have developable lands were identified and are shown in the Productivity Spreadsheet
2. Only developable parcels that were not in public ownership were selected to be evaluated further
3. Criteria were developed to implement the "seven factors" of Goal 14 as well as Plan policies and ORS 197.298 prioritization criteria
4. Parcels were evaluated based on the criteria and each received a score according to the parcels characteristics
5. Scores were 3 points for a "Good" evaluation, 2 points for a "Fair" evaluation, and 1 point for a "Poor" evaluation
6. Scores were added together to arrive at the overall score for the parcel (see Appendix 2 column named "Overall Score" in the UGB Expansion Findings document)
7. Scores for criteria under the column headings "ORS 197.298 Priority of Lands for UGB" and "Factor 3" were doubled and added to the rest of the criteria to arrive at the "Overall Weighted Score" column. The purpose of this was to evaluate how a parcel's score might change compared to the non-weighted "Overall Score". This demonstrates possible differences in the overall scores when placing more importance on two factors.
8. "Overall Rank" and "Weighted Rank" were calculated based on the parcels scores on "Overall Score" and "Overall Weighted Scores", respectively. This shows the ordinal rank of parcel according to these scores and a snapshot of a best to worst evaluation for all parcels evaluated.

9. A parcel had to score “Fair” on average in both the “Overall Rank” and “Weighted Rank” to be considered further. Those parcels that scored “Fair” on average in both categories were scored with a “Yes” in this column.
10. The top ranked sites in the “Overall Rank” and “Weighted Rank” category were considered for addition to the Sisters UGB.

The 30 acre parcel that was considered to best meet the needs of the City and ranked highly in the UGB Site Evaluation Matrix is the McKenzie Meadows parcel. The City decided that it best met the need because it is virtually surrounded by urban uses where the other highly ranked parcels weren't. In addition, it was sited closer to the majority of schools in the City. Lastly, it has more potential to be developed for needed residential uses within the planning period.

#### Location and Designation of New Lands Brought Into UGB

The locations of the properties selected for inclusion in the Sisters UGB are shown in figures 14 -1, 14-2, 14-3, and 14-4. Each figure shows different information. *Figure 14-1: City of Sisters Proposed Additions to the UGB*, shows parcels that were added to the City's UGB in 2005. *Figure 14-2: City of Sisters Zoning Map*, shows the zoning of lands within the UGB following adoption of the 2005 Comprehensive Plan update. *Figure 14-3: City of Sisters: Comprehensive Plan Map* shows the Comprehensive Plan designation for lands within the UGB, including the 4 acre portion of land to be used by the Sisters – Camp Sherman Fire District which is under consideration at this time. *Figure 14-4* is the survey map of the 4 acre portion of land mentioned herein. Land uses shall be consistent with the Comprehensive Plan map. As parcels are added to the City limits, the Urban Area Reserve designation would be changed to match the Comprehensive Plan Map.



## **EXHIBIT F: PUBLIC NOTICE & COMMENTS**

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**Public Notice & Comments:** Notice of the proposed Comprehensive Plan Map, Comprehensive Plan Text, & Zoning Map Amendment, was posted in accordance with SDC 4.1.500.B. Staff has not received any public comments as of July 9, 2020 related to file numbers CP 20-02/ZM 20-01.

Public comments that are received after the completion of this staff report will be part of the public record and added to the project file.



520 E. Cascade Ave.  
P.O. Box 39  
Sisters, OR 97759

Public Works Department

## CITY OF SISTERS

(541) 323-5212  
Fax: (541) 549-0561  
[www.sisters.or.us](http://www.sisters.or.us)

TO: Paul Bertagna, Director of Public Works  
FROM: Erik Huffman, City Engineer  
DATE: June 15, 2020  
SUBJECT: CP 20-02, ZC 20-01 Engineering Review

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### 800 West Barclay Drive. Parcel 2 of Partition Plat

#### Streets Review:

*Separate review document to be submitted to address transportation impacts.*

#### Water Review:

##### W Barclay Drive

###### Existing Conditions

No water main exists in Barclay Drive along the property.

###### Proposed Improvements

Preliminary plans show connections to existing 2" water service with backflow device and 4" fire line.

###### Additional Requirements:

None

##### N Pine St

###### Existing Conditions

A 12" water main exists in N Pine St.

###### Proposed Improvements

No improvements proposed.

###### Additional Requirements:

None

##### Water Main Extension in WCFP

Existing Conditions

No water main exists across the subject property. A 12” water main is shown in the WCFP.

Proposed Improvements

The requirement for a 12” water main connection is acknowledged in the submitted Re-Zone Impact Summary memo.

Additional Requirements:

Development on the parcel shall include extension of a 12” water main extending from the existing water main at the northeast corner of the Ponderosa Lodge to the existing water main in North Pine Street, per the City Water Capital Facilities Plan. Reimbursement for cost of construction of this water main upsize from 8” to 12” may be submitted to the City if the developer is able to provide evidence that development on the property does not require 12” water main to provide adequate domestic and fire flows.

**Water Mitigation**

Existing Conditions

No water demand is allocated for the property as UAR land.

Proposed Improvements

The developer has proposed a water mitigation fee for the anticipated EDU increase on the property. The water mitigation fee is based on typical City calculations for water mitigation. The calculated water right acreage is 3.88 acres at \$6,800 per acre, a calculated total of \$26,384.

Additional Requirements:

Water mitigation fees for 3.88 acres of water rights shall be required at building permit. Cost per acre is \$6,800. Total water mitigation cost is \$26,384, which may be provided proportionally as building permits are obtained.

**Sewer Review:**

**Barclay Drive**

Existing Conditions

No sewer main exists in Barclay Drive

Proposed Improvements

No sewer improvements proposed.

Additional Requirements

None

**N Pine St**

Existing Conditions

An 8” sewer main exists in N Pine St.

Proposed Improvements

No improvements proposed.

Additional Requirements

None

## **Pump Station #1 WWCFP Improvements**

### Existing Conditions

The subject property has no allocated sewer use. Upgrades to Pump Station #1 are included in the WWCFP.

### Proposed Improvements

The Re-Zone Impact analysis indicates the project will generate 37.4 EDUs, or 10 gpm.

### Additional Requirements

An impact fee is required at a rate of \$1,372 toward Pump Station #1 upgrades.

## **Barclay Sewer Main and Locust Interceptor**

### Existing Conditions

The subject property has no allocated sewer use. Barclay Sewer Main is nearing capacity and Locust Interceptor is included in the WWCFP to alleviate flows in the collection system.

### Proposed Improvements

The Re-Zone Impact analysis indicates the project will generate 37.4 EDUs, or 10 gpm.

### Additional Requirements

An impact fee is required \$19,546 toward Locust Interceptor Improvements.

Developer shall provide and install telemetry equipment at Pump Station #3 and Pump Station #4 to eliminate simultaneous pumping.

## **Pump Station #4**

### Existing Conditions

The subject property has no allocated sewer use. Pump Station #4 has limited wet well capacity.

### Proposed Improvements

The Re-Zone Impact analysis indicates the project will generate 37.4 EDUs, or 10 gpm. The memo provided by the applicant indicates that the adjacent development on the south side of Barclay will drain at 27gpm above the amount anticipated by the master plan.

### Additional Requirements

The project shall be required to contribute 10/37 times the cost of the wet well expansion and emergency backup generator. The anticipated cost of the improvements are \$100,000 based on cost analysis of similar improvements. An impact fee of \$27,027 is required toward Pump Station #4 wet well capacity improvements and an emergency backup generator.



## **EXHIBIT G: AGENCY REVIEW COMMENTS**

---

Notices were sent to City Departments and other affected agencies for comment. The following Department and Agency comments were received:

**PUBLIC WORKS (PAUL BERTAGNA)/ENGINEERING (ERIK HUFFMAN & JOE BESSMAN):**

*See attached.*

**ODOT**

*See attached.*

**SISTERS/CAMP SHERMAN FIRE DISTRICT (DOUG GREEN):**

*No comments.*

**CENTRAL OREGON ELECTRIC COOPERATIVE (PARNELI PERKINS):**

*CEC has no concerns.*

**HIGH COUNTRY DISPOSAL (ABIE BURKUS):**

*No Comments.*

**From:** [MOREHOUSE Donald](#)  
**To:** [Joe Bessman](#)  
**Cc:** [Nicole Mardell](#); [BARRETT Mark S](#); [AMITON David](#); [Garrett Chrostek \(Chrostek@bljlawyers.com\)](#)  
([Chrostek@bljlawyers.com](#)); [Paul Bertagna](#); [WELLS Miranda](#)  
**Subject:** RE: Sisters Industrial Subdivision Mitigation Approach  
**Date:** Monday, June 15, 2020 10:35:23 AM  
**Attachments:** [image001.png](#)  
[image002.png](#)

---

Hi Joe,

ODOT agrees with this approach. Thanks,

Don Morehouse  
Senior Transportation Planner  
ODOT Region 4  
Desk: (541) 388-6046  
Personal Cell: (805) 458-3320  
Work Cell: (541) 233-6558  
[Donald.Morehouse@odot.state.or.us](mailto:Donald.Morehouse@odot.state.or.us)

*\*\*I will be working from home for the week of June 15-June 19:*

- *Monday - Thursday (7:30AM-5:00PM)*
- *Friday - (7:30AM-11:30AM)*

---

**From:** Garrett Chrostek <[Chrostek@bljlawyers.com](mailto:Chrostek@bljlawyers.com)>  
**Sent:** Friday, June 12, 2020 2:47 PM  
**To:** Paul Bertagna <[pbertagna@ci.sisters.or.us](mailto:pbertagna@ci.sisters.or.us)>; Joe Bessman <[Joe@transightconsulting.com](mailto:Joe@transightconsulting.com)>; WELLS Miranda <[Miranda.WELLS@odot.state.or.us](mailto:Miranda.WELLS@odot.state.or.us)>; MOREHOUSE Donald <[Donald.MOREHOUSE@odot.state.or.us](mailto:Donald.MOREHOUSE@odot.state.or.us)>  
**Cc:** Nicole Mardell <[nmardell@ci.sisters.or.us](mailto:nmardell@ci.sisters.or.us)>  
**Subject:** RE: Sisters Industrial Subdivision Mitigation Approach

Same here, good work Joe. Clearly lays out the methodology and I believe better addresses the requirements of the TPR.

Thanks,

**Garrett Chrostek** *Attorney & Shareholder*  
E [chrostek@bljlawyers.com](mailto:chrostek@bljlawyers.com) P 541-382-4331 | F 541-389-3386 | 591 SW Mill View Way, Bend, OR 97702 | [www.bljlawyers.com](http://www.bljlawyers.com)



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---

**From:** Paul Bertagna <[pbertagna@ci.sisters.or.us](mailto:pbertagna@ci.sisters.or.us)>  
**Sent:** Friday, June 12, 2020 11:45 AM  
**To:** Joe Bessman <[Joe@transightconsulting.com](mailto:Joe@transightconsulting.com)>; WELLS Miranda <[Miranda.WELLS@odot.state.or.us](mailto:Miranda.WELLS@odot.state.or.us)>; MOREHOUSE Donald <[Donald.MOREHOUSE@odot.state.or.us](mailto:Donald.MOREHOUSE@odot.state.or.us)>  
**Cc:** Nicole Mardell <[nmardell@ci.sisters.or.us](mailto:nmardell@ci.sisters.or.us)>; Garrett Chrostek <[Chrostek@bljlawyers.com](mailto:Chrostek@bljlawyers.com)>  
**Subject:** RE: Sisters Industrial Subdivision Mitigation Approach

This looks good to me,

Thanks a lot Joe-

**Paul Bertagna**

Public Works Director  
City of Sisters | Public Works Dept.  
PO Box 39 | 520 E. Cascade Ave., Sisters, OR 97759  
Direct: 541-323-5212 | City Hall: 541-549-6022  
[pbertagna@ci.sisters.or.us](mailto:pbertagna@ci.sisters.or.us) | [www.ci.sisters.or.us](http://www.ci.sisters.or.us)



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---

**From:** Joe Bessman <[Joe@transightconsulting.com](mailto:Joe@transightconsulting.com)>  
**Sent:** Friday, June 12, 2020 10:43 AM  
**To:** WELLS Miranda <[Miranda.WELLS@odot.state.or.us](mailto:Miranda.WELLS@odot.state.or.us)>; MOREHOUSE Donald <[Donald.MOREHOUSE@odot.state.or.us](mailto:Donald.MOREHOUSE@odot.state.or.us)>  
**Cc:** Paul Bertagna <[pbertagna@ci.sisters.or.us](mailto:pbertagna@ci.sisters.or.us)>; Nicole Mardell <[nmardell@ci.sisters.or.us](mailto:nmardell@ci.sisters.or.us)>; Garrett Chrostek <[Chrostek@bljlawyers.com](mailto:Chrostek@bljlawyers.com)>  
**Subject:** Sisters Industrial Subdivision Mitigation Approach

Good morning Miranda and Don,  
Please see the enclosed mitigation proposal for the Sisters Industrial Subdivision (Spencer Rezone) and supporting documentation for your review and comment. Let me know your thoughts on this approach – I've copied Garrett as well as he wanted to see more specific projects which I believe this now addresses.

Take care,  
Joe

Joe Bessman, PE  
Principal, Owner

Transight Consulting, LLC  
Bend, Oregon  
office: (458) 202-5565  
cell: (503) 997-4473  
email: [joe@transightconsulting.com](mailto:joe@transightconsulting.com)  
web: <https://transightconsulting.net/>



Date:	June 12, 2020
To:	Erik Huffman, PE, BECON
Cc:	Paul Bertagna, City of Sisters
	Miranda Wells, PE, and Don Morehouse, PE, ODOT
From:	Joe Bessman, PE
Project Reference No.:	1237
Project Name:	Sisters Industrial Subdivision (Spencer Rezone)
Subject:	Recommended Mitigation Proposal

The purpose of this memorandum is to provide a proposed mitigation for the significant impact created by the Spencer Light Industrial Rezone in Sisters, Oregon. This memorandum is based on data provided by Lancaster Engineering, dated May 6, 2020 that shows a significant impact at the following intersections:

- US 20/Barclay Drive
- US 20/Pine Street
- US 20/Locust Street

The traffic report shows that these three intersections will exceed ODOT mobility standards in the year 2040 even with the new single-lane roundabout at the US 20/Locust Street intersection regardless of the proposed rezone. The additional trips from the rezone create an incremental degradation in intersection performance, and the solution remains improvements to the Alternate Route as identified within the City's adopted Transportation System Plan.

Within the traffic study the proposed mitigation is to pay a pro-rata cost toward the single-lane roundabout at the US 20/Locust Street intersection. However, this project is already included within City plans and has an established funding mechanism within the City's System Development Charge methodology, and is assumed within the applicant's traffic study. Even with this improvement in place the traffic study shows that there is a significant impact associated with the rezone. Accordingly, this mitigation, while generally supported by the City and ODOT, would not meet the mitigation criteria within subsection (2) of the Plan and Land Use Regulation Amendments section of the Transportation Planning Rule.

As summarized by the applicant's traffic report, the solution to the capacity needs within this area is to more fully implement the identified *Alternate Route*. The diversion of traffic from the highway onto the Barclay – Locust corridor will provide the necessary mitigation to avoid a significant impact at these cited highway intersections. City and ODOT staff agree with these overall findings, and offer the following revisions to the applicant's proposed mitigation:

A pro-rata payment shall be provided toward improvements along US 20 and the parallel Alternate Route to support east-west mobility needs along the US 20 corridor. Improvements to either facility is considered adequate mitigation for the finding of a significant impact based on OAR 660-12-0060(2)(e):

*(e) Providing improvements that would benefit modes other than the significantly affected mode, improvements to facilities other than the significantly affected facility, or improvements at other locations, if:*

*(A) The provider of the significantly affected facility provides a written statement that the system-wide benefits are sufficient to balance the significant effect, even though the improvements would not result in consistency for all performance standards;*

*(B) The providers of facilities being improved at other locations provide written statements of approval; and*

*(C) The local jurisdictions where facilities are being improved provide written statements of approval.*

The specific improvements that were identified by the City and ODOT include the following:

- Variable Message Signs for eastbound and westbound US 20 traffic (Est. \$400,000 with overhead mount, cabinet, and wireless communication system).
- Alternate Route Wayfinding Signage (Est. \$10,000 with fabrication/installation)
- Completion of single-lane US 20/Locust roundabout (Assumed funded, \$0)
- Completion of Barclay/Locust roundabout (50% costs from SDC, 50% unfunded - \$1,250,000)

Total Unfunded Projects: \$1,660,000

Estimated Pro-Rata Impact to US 20:  $89 / 1,498^1$  Through Trips = 5.94%

**Total Contribution: \$98,604**

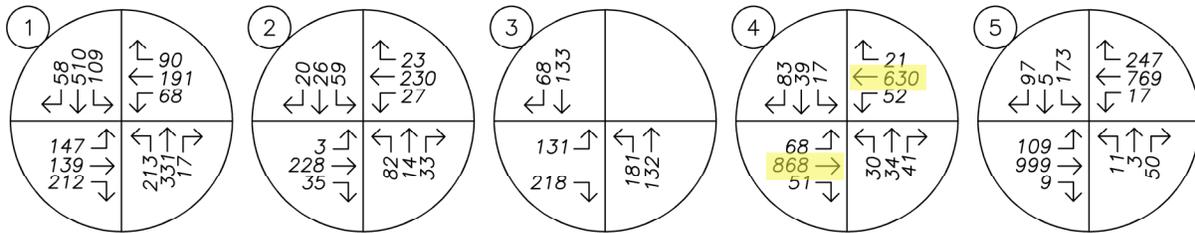
With payment of this pro-rata contribution toward needed transportation infrastructure (and payment of Transportation SDC fees at time of site plan application) the impact of the rezone is adequately balanced with the benefit provided to the City and State system, which is the combination of US 20 and the Alternate Route. These fees should be earmarked for improvements to projects that benefit either the US 20 corridor or the alternate route.

Please let me know if you have any questions on this methodology memorandum at (503) 997-4473 or via email at [joe@transightconsulting.com](mailto:joe@transightconsulting.com).

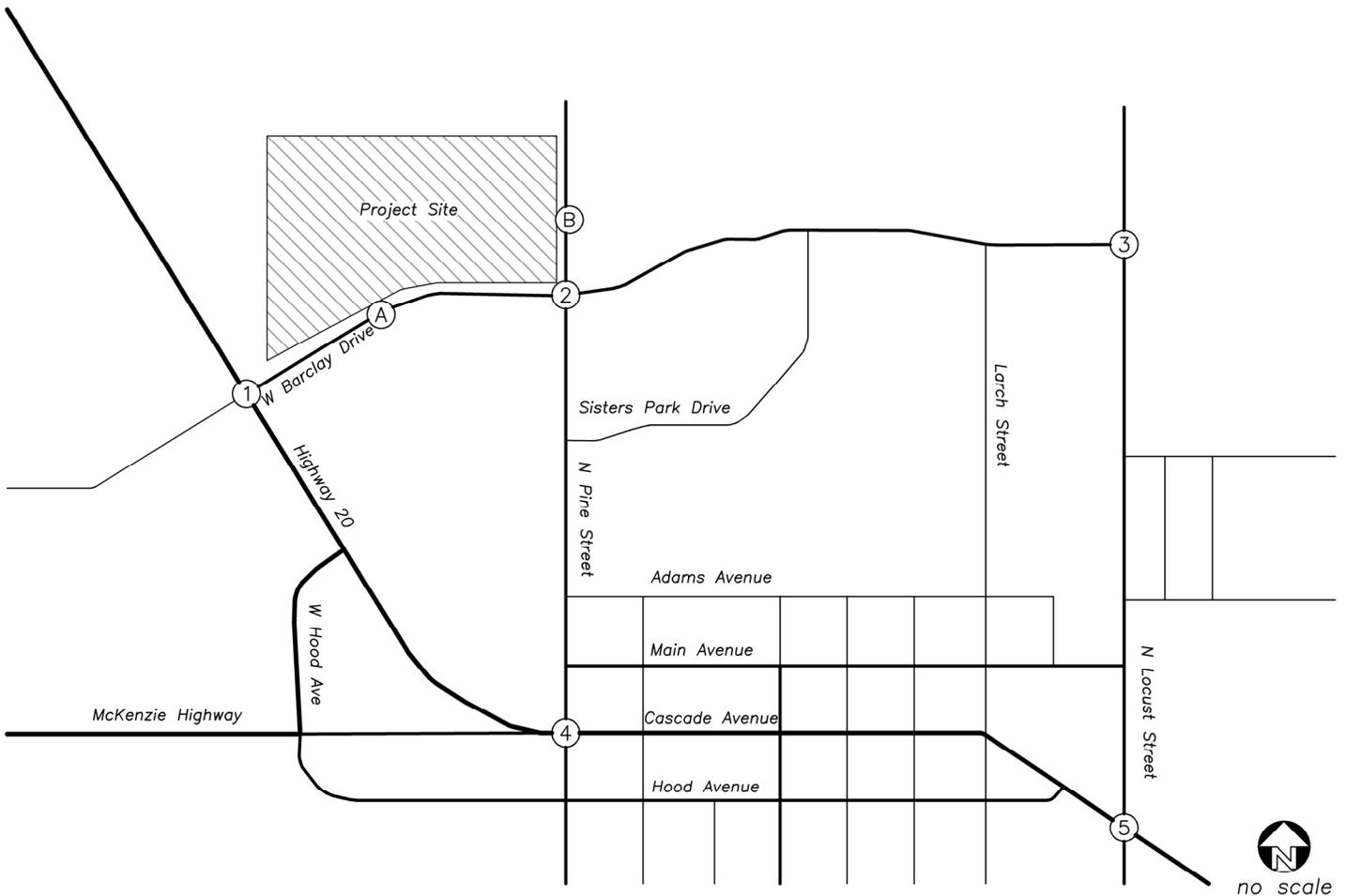
Attachments: Pro-Rata Worksheets

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<sup>1</sup> Based on projected 2040 highway through trips at US 20/Pine Street as identified within Figure 6 of the TIA (868 eastbound, 630 westbound)



NOTE: Site Accesses shown as (A) and (B)

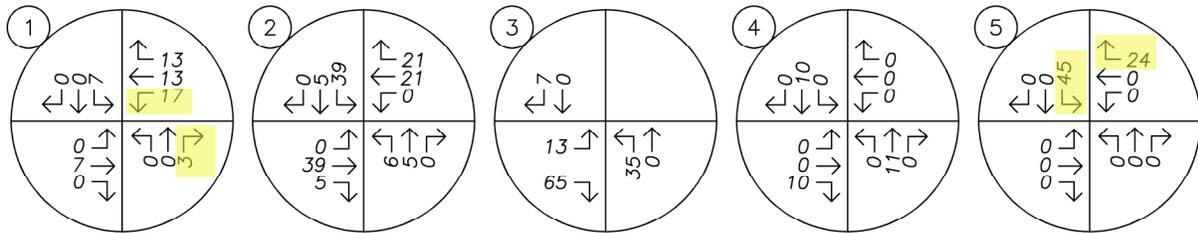


no scale

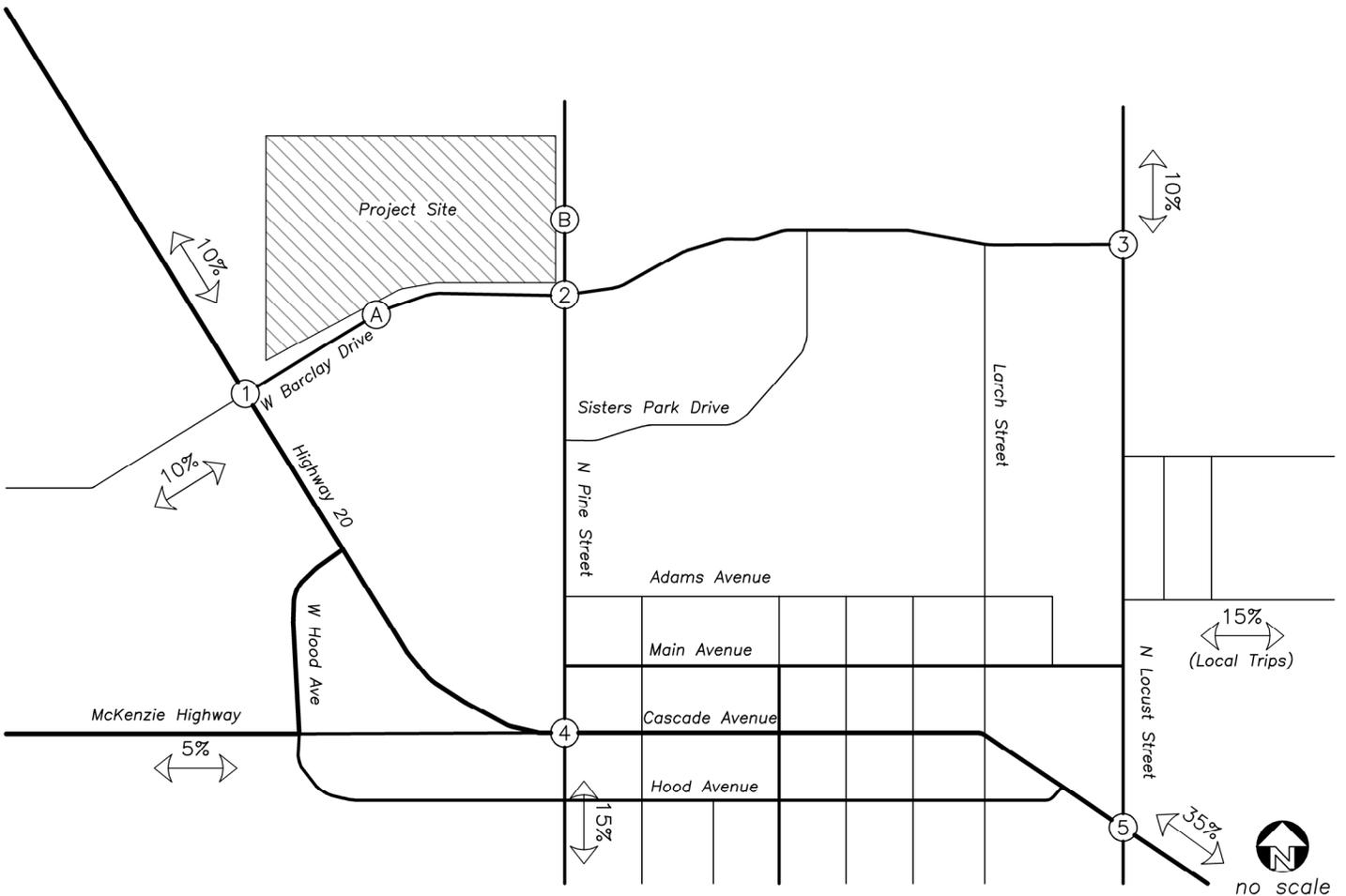
**LEGEND**

XX% PERCENT OF PRIMARY TRIPS

TRIP GENERATION			
	IN	OUT	TOTAL
PM	70	131	201



NOTE: Site Accesses shown as (A) and (B)





# Oregon

Kate Brown, Governor

Oregon Department of Transportation  
Region 4 Headquarters  
63055 N. Highway 97  
Bend, OR 97703  
(541) 388-6180  
FAX (541) 388-6231

DATE: 5/29/20

NICOLE MARDELL, PRINCIPAL PLANNER  
CITY OF SISTERS COMMUNITY DEVELOPMENT  
520 EAST CASCADE  
PO BOX 39  
SISTERS, OR 97759

<b>Project Name:</b> Sisters Industrial Subdivision	<b>Applicant:</b> Three Sisters Holdings, LLC
<b>Jurisdiction:</b> City of Sisters	<b>Jurisdiction Case #:</b> CP 20-02, ZC 20-01
<b>Site Address:</b> No address assigned.	<b>Legal Description:</b> 151005D000 <b>Tax Lot(s):</b> 100
<b>State Highway:</b> US 20	<b>Milepost:</b> Roughly 99.9

## ODOT Response

Thank you for sending agency notice of a request for approval of a Comprehensive Plan Text and Map amendment to alter the designation of the property from Urban Area Reserve (UAR) to Light Industrial (LI). The applicant is also seeking approval of a Zoning Map amendment to alter the zoning of the property from UAR to LI. ODOT agrees that the following statement from the Sisters Industrial Subdivision Traffic Impact Study (dated May 6, 2020) will satisfy the Transportation Planning Rule (660-012-0060 Plan and Land Use Regulation Amendments):

*Three study intersections are either currently operating or projected to operate with v/c ratios in excess of the maximum allowable ODOT performance standards:*

- *US Highway 20 at W Barclay Drive: Per the City's Transportation System Plan (TSP), placing additional emphasis on Barclay Drive as an alternate route, particularly for trucks, will help distribute demand. This emphasis would serve to balance volumes at the roundabout, improving operation and extending the capacity of the intersection.*
- *N Pine Street at US Highway 20: During peak hours when delays are long, drivers will self-select how they enter US Highway 20 to avoid excessive delays. Local traffic may choose a number of other routes to avoid US Highway 20 and utilize the local street system. For this reason, no mitigation is recommended.*
- *N Locust Street at US Highway 20: The applicant proposes mitigation in the form of a proportional share payment for improvements at the intersection of N Locust Street at US Highway 20. The identified proportional share payment of \$98,469 will be due as a lump sum prior to site development.*

- *The mitigation described above offsets the potential impacts from the project and avoids further degradation of key infrastructure in Sisters. Accordingly, the Transportation Planning Rule is satisfied.*

ODOT will develop a Cooperative Improvement Agreement (CIA) with the City of Sisters and Three Sisters Holdings, LLC to be signed by all parties specifying the mitigation as described above.

You may contact me at 541-388-6046 if you have any further questions or require additional information on our response to this proposal.

Thank you,

*Don Morehouse*

**Don Morehouse**

Senior Transportation Planner, Development Review

**Please send any further project related correspondence to:**

ODOT Region 4 Planning  
 Development Review  
 63055 N. Highway 97, Bldg M  
 Bend, OR 97703

[Donald.Morehouse@odot.state.or.us](mailto:Donald.Morehouse@odot.state.or.us)

Development Review Planner: Don Morehouse	541.388.6046
Region 4 Traffic Manager: Mark Barrett	541.388.6120
District Contact: Aaron Smith	541.388.6054

**From:** [Perkins, Parneli](#)  
**To:** [Nicole Mardell](#)  
**Subject:** RE: Request for Agency Comments - CP 20-02, ZC 20-01  
**Date:** Tuesday, March 17, 2020 3:46:26 PM  
**Attachments:** [image001.png](#)

---

Nicole,  
CEC has no concerns.  
Thank you

**Parneli Perkins • Central Electric Cooperative, Inc. • Lands Specialist**  
Office: 541.312.7747 | Fax: 541.923.3549 | [pperkins@cec.coop](mailto:pperkins@cec.coop)  
2098 NW 6<sup>th</sup> St., PO Box 846, Redmond OR 97756 [www.cec.coop](http://www.cec.coop)

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---

**From:** Nicole Mardell <[nmardell@ci.sisters.or.us](mailto:nmardell@ci.sisters.or.us)>  
**Sent:** Monday, March 16, 2020 8:32 AM  
**To:** Paul Bertagna <[pbertagna@ci.sisters.or.us](mailto:pbertagna@ci.sisters.or.us)>; Erik Huffman <[ehuffman@beconeng.com](mailto:ehuffman@beconeng.com)>; Joe Bessman <[Joe@transightconsulting.com](mailto:Joe@transightconsulting.com)>; Perkins, Parneli <[pperkins@cec.coop](mailto:pperkins@cec.coop)>; Doug Green <[dgreen@sistersfire.com](mailto:dgreen@sistersfire.com)>; Burkus, Albert <[ABurkus@republicservices.com](mailto:ABurkus@republicservices.com)>; [ian.reid2@usda.gov](mailto:ian.reid2@usda.gov);  
Peter Gutowsky <[Peter.Gutowsky@deschutes.org](mailto:Peter.Gutowsky@deschutes.org)>  
**Cc:** Patrick Davenport <[pdavenport@ci.sisters.or.us](mailto:pdavenport@ci.sisters.or.us)>; Cory Misley <[cmisley@ci.sisters.or.us](mailto:cmisley@ci.sisters.or.us)>  
**Subject:** Request for Agency Comments - CP 20-02, ZC 20-01

**WARNING: This email is not from a CEC email address.**  
**Please do not click links or open attachments unless you requested them and know the content is safe.**

Good morning,

We have received an application for a Comprehensive Plan/Map Amendment and Zone Change. The attached pdfs include the burden of proof and exhibits of the proposed map changes, as submitted by the applicant. Additional information – including water, sewer, and transportation analysis, can be found through Accela. Please send your comments and recommended conditions of approval to me ([nmardell@ci.sisters.or.us](mailto:nmardell@ci.sisters.or.us)) by **Friday, April 12, 2020.**

Accela File No: 793-20-0000012-PLNG.

File #s: CP 20-02, ZC 20-01

Applicant/

Owner: Kevin Spencer, Three Sisters Holdings LLC

Site Location: No Address Assigned

**Tax Map and Lot:** [151005D000100](#)

Request: The applicant is requesting approval of a Comprehensive Plan Text and Map amendment to alter the designation of the property from Urban Area Reserve

**From:** [Doug Green](#)  
**To:** [Nicole Mardell](#)  
**Subject:** RE: Request for Agency Comments - CP 20-02, ZC 20-01  
**Date:** Wednesday, March 25, 2020 8:37:48 AM  
**Attachments:** [image001.png](#)

---

No additional comments from the Fire.

Doug Green  
Fire Safety Manager  
Sister-Camp Sherman Fire District  
541-549-0771 Office  
[dgreen@sistersfire.com](mailto:dgreen@sistersfire.com)

---

**From:** Nicole Mardell <[nmardell@ci.sisters.or.us](mailto:nmardell@ci.sisters.or.us)>  
**Sent:** Monday, March 16, 2020 8:32 AM  
**To:** Paul Bertagna <[pbertagna@ci.sisters.or.us](mailto:pbertagna@ci.sisters.or.us)>; Erik Huffman <[ehuffman@beconeng.com](mailto:ehuffman@beconeng.com)>; Joe Bessman <[Joe@transightconsulting.com](mailto:Joe@transightconsulting.com)>; Perkins, Parneli <[pperkins@cec.coop](mailto:pperkins@cec.coop)>; Doug Green <[dgreen@sistersfire.com](mailto:dgreen@sistersfire.com)>; Burkus, Albert <[ABurkus@republicservices.com](mailto:ABurkus@republicservices.com)>; [ian.reid2@usda.gov](mailto:ian.reid2@usda.gov); Peter Gutowsky <[Peter.Gutowsky@deschutes.org](mailto:Peter.Gutowsky@deschutes.org)>  
**Cc:** Patrick Davenport <[pdavenport@ci.sisters.or.us](mailto:pdavenport@ci.sisters.or.us)>; Cory Misley <[cmisley@ci.sisters.or.us](mailto:cmisley@ci.sisters.or.us)>  
**Subject:** Request for Agency Comments - CP 20-02, ZC 20-01

Good morning,

We have received an application for a Comprehensive Plan/Map Amendment and Zone Change. The attached pdfs include the burden of proof and exhibits of the proposed map changes, as submitted by the applicant. Additional information – including water, sewer, and transportation analysis, can be found through Accela. Please send your comments and recommended conditions of approval to me ([nmardell@ci.sisters.or.us](mailto:nmardell@ci.sisters.or.us)) by **Friday, April 12, 2020**.

Accela File No: 793-20-0000012-PLNG.

File #s: CP 20-02, ZC 20-01  
Applicant/  
Owner: Kevin Spencer, Three Sisters Holdings LLC  
Site Location: No Address Assigned  
**Tax Map and Lot:** [151005D000100](#)

Request: The applicant is requesting approval of a Comprehensive Plan Text and Map amendment to alter the designation of the property from Urban Area Reserve (UAR) to Light Industrial (LI). The applicant is also seeking approval of a Zoning Map amendment to alter the zoning of the property from UAR to LI.

Applicable Criteria: Sisters Comprehensive Plan, Oregon State Planning Goals, Sisters Development Code (SDC):

## **EXHIBIT H: STAFF RECOMMENDED CONDITIONS OF APPROVAL**

---

### **Staff Recommended *DRAFT* Conditions of Approval for CP 20-02/ZM 20-01**

Based on the submitted plans and foregoing findings, Staff recommends that the Planning Commission recommend that the City Council approve the land use applications in files CP 20-02/ZM 20-01 subject to the following conditions of approval. **All conditions shall be met prior to master plan application,** unless otherwise stated within each condition of approval. All payment amounts are in 2020 dollars. Amounts will be adjusted for inflation on January 1 of each calendar year proportionate to the yearly change in the Consumer Price Index for All Urban Consumers for the West Region, as published by the U.S. Bureau of Labor Statistics or similar inflation index.

#### **Planning**

1. Prior to dividing the property, the applicant shall submit a master plan application.
2. Applicant will record a conditions of approval agreement in form satisfactory to City to place future owners on record notice of the conditions of this approval.

#### **Public Works & Engineering**

##### **Transportation**

3. A pro-rata payment of \$98,604 shall be provided toward improvements along US 20 and the parallel Alternate Route to support east-west mobility needs along the US 20 corridor. Half of the payment shall be due at the time of Master Plan application. The remaining half of the payment shall be due at the time the 100<sup>th</sup> trip is surpassed on the property.
4. Development of the subject property cannot exceed 201 PM peak hour trips without additional transportation analysis and, if applicable, additional mitigation.
5. Transportation System Development Charges still apply to this property and will be assessed at the time of site plan application and/or building permit.

##### **Water**

6. Applicant shall construct a 12" water main extending from the existing water main at the northeast corner of the Ponderosa Lodge to the existing water main in North Pine Street, per the City Water Capital Facilities Plan.
7. The applicant must pay \$26,384 to mitigate impacts to water supply based on 3.88 acres of water rights needed to serve the subject property at \$6,800 per acre. The payment shall be due at the time of building permit at the rate of \$705.45/EDU.
8. Development on the property cannot exceed 37.4 equivalent dwelling units (EDUs) of water demand without additional water analysis and, if applicable, additional mitigation.

##### **Sewer**

9. Prior to final plat approval of any phase, applicant will contribute \$1,372 toward Pump Station #1 upgrades.
10. Prior to final plat approval of any phase, applicant will contribute \$19,546 toward Locust Interceptor Improvements.
11. Prior to final plat approval of any phase, developer shall install telemetry equipment at Pump Station #2 and Pump Station #4 to eliminate simultaneous pumping or pay a fee in lieu in an amount determined by the City Engineer.
12. Prior to final plat approval of any phase, applicant will contribute \$27,027 towards Pump Station #2 wet well capacity improvements and an emergency backup generator.
13. Development on the property cannot exceed 37.4 equivalent dwelling units (EDUs) of sewer demand without additional sewer analysis and, if applicable, additional mitigation.

-----*End of Conditions*-----