LAKE CHELAN AIRPORT BOARD AND
PORT OF CHELAN COUNTY JOINT MEETING
September 10, 2015

1. Call to Order

2. Agenda Changes

3. Minutes
   A. Approve Minutes of the August 27, 2015 Airport Board Meeting (Gallucci) - To Be Distributed

4. Consent Agenda
   A. September 10, 2015 Claim & Payroll Warrants (Reviewed by McCardle)

5. Action Items
   A. Preliminary Evaluation of Water Service to the Chelan Municipal Airport Report (Schmidt) 2015A-02A

6. Airport Manager Comments

7. Adjournment

AGENDA BILL NO. 2015A-02A

BUSINESS OF THE LAKE CHELAN AIRPORT BOARD
CHELAN, WASHINGTON

SUBJECT:	CERB Feasibility Study of Water Service to the Airport
FOR AGENDA OF:	September 10, 2015
ORIGINATOR:	Paul Schmidt Airport Board Manager
APPROVED: City Administrator	Paul Schmidt by PG
Reviewed by Attorney:	Yes

EXHIBITS
1. Preliminary Evaluation Report
2. Letter to Senator Murray

EXPENDITURE REQUIRED:	AMOUNT BUDGETED:	APPROPRIATION REQUIRED:	FINANCE DIRECTOR:

AUTHORITY: RCW 35A.11.020 Powers vested in legislative bodies of noncharter and charter code cities. "...The legislative body of each code city shall have power to organize and regulate its internal affairs within the provisions of this title...".

********** SUMMARY STATEMENT/ISSUES **********

RH2 has completed the preliminary draft of the CERB (Community Economic Revitalization Board) planning study that reviewed the economic feasibility of providing City water service to the Lake Chelan Municipal Airport. In recognition of our joint meeting with the Chelan County Port District, we have arranged for RH2 to provide a presentation of the preliminary report.

In addition, we have attached a letter the Mayor recently sent to Senator Patty Murray concerning our need to extend water service to the Airport. The Mayor's letter spells out how the Airport has become more of a regional asset now because of its use as a helicopter base of operations for firefighting.

******

[ ] Public Hearing [ ] Legislative Matter [X] Other: Report

Suggested Motion:
No action required, report only.

City of Chelan

Preliminary Evaluation of

Water Service to the Chelan Municipal Airport

Report

August 2015

RH2 Engineering, Inc.

and

Polar Star Consulting

Background

As the owner of the Chelan Municipal Airport (Airport), the City of Chelan (City) is interested in extending water service to the Airport to provide fire flow to the existing Airport facilities, and for future economic development. Additional development at the Airport is currently limited due to inadequate fire protection, primarily due to the lack of water for firefighting. Extension of the City's water system to the Airport would provide water to meet this need and also provide a secondary benefit by providing domestic water for future expansion at the Airport.

In January 2015, the City obtained a Community Economic Revitalization Board (CERB) grant with matching funds from the City, the Airport, and the Port of Chelan County to provide a preliminary evaluation of this project. In March 2015, the City selected the team of RH2 Engineering, Inc., (RH2) and Polar Star Consulting to provide engineering and economic services relating to the preliminary evaluation of extending the City water system to the Airport.

This Report (Report) is divided into two components consisting of: 1) an economic evaluation prepared by Polar Star Consulting, and 2) an engineering evaluation prepared by RH2. These two separate documents comprise the Report and fulfills the conditions of the CERB grant requirements for this evaluation.

Presented below are the executive summaries for the two Reports.

Executive Summary – Economic Evaluation

Prepared by Polar Star Consulting

This market analysis addressed the potential economic growth associated with the extension of the City's municipal water system for the purposes of providing water for firefighting and economic development at the Airport.

Thirty-one individuals were interviewed for this project and an overwhelming number agreed that water to the Airport would allow long-denied building permits to be issued and satisfy both pent-up demand and future development. Further, those interviewed recognized the potential to foster additional development in the area surrounding the Airport with domestic water service, and particularly the potential for new opportunities for economic development within the adjacent County Rural Industrial zoned properties.

Using the Washington State Department of Transportation (WSDOT) Economic Calculator and its methodology along several key assumptions relating to the general economic conditions and development buildout, the Projected Economic Metrics estimates positive potential opportunities as a result of extending water to the Airport. During the initial 5-year period, extending water to the Airport results in 29 new Airport business direct jobs, and eight new Airport business indirect jobs, plus an additional 18 direct jobs and 10 indirect jobs associated with the one-time waterline construction activity for an estimated economic impact of almost $7 million of additional spending above and beyond the cost of the watermain project. Using the same methodology and applying it to rural industrial zoned acreage, the initial 5-year projected economic outlook is over $7 million. The 20-year projected economic outlook for both airport and rural industrial is significant: an estimated 465 direct jobs and 117 indirect jobs, for a total of 582 jobs, and an impact of over $40 million.

This economic estimate is based on the several key assumptions, including:

- Airport-related business would see 7-percent growth per year beyond the first 5-year period after extension of the City's water system to the Airport. In addition, full buildout of the adjoining rural industrial lands would occur within a 30-year period. This assumption is dependent on continued significant general economic growth within the Lake Chelan Valley and of Airport-related businesses.
- Costs for transportation, sewer, and electrical systems upgrades that may be required for full buildout are not specifically included in the cost analysis.

A market strategy was developed, which includes the following goals:

- Improve Airport infrastructure including securing funding for this project.
- Raise awareness of Airport and link to Chelan Valley economic development.
- Track and document Airport metrics.

The Airport and its surrounding area hold many attractions for the City of Chelan:

- Easily developable land with few constraints.
- Property for new businesses consistent with rural industrial zoning adjacent to the Airport.
- Expansion for existing Airport businesses.
- An Airport system that facilitates and enables multiple services.

Domestic water service is the key in facilitating the projected economic development.

Executive Summary – Engineering Evaluation

Prepared by RH2

Three alternatives for providing fire flow to the Airport were evaluated. The alternatives and estimated costs are as follows:

- Alternative 1: Provide fire flow from the City water system via a new 16-inch mainline to the Airport. Estimated cost: $4.0M.
- Alternative 2: Use a smaller-diameter transmission pipe from the City to a new reservoir near the Airport. Install new distribution pipe from the reservoir to the Airport. Estimated cost: $5.6M.
- Alternative 3: Utilize a new stand-alone water system near the Airport, including well source and pump station; reservoir and transmission/distribution mainlines between the Airport and the new reservoir. Estimated cost: $4.6M.

A life-cycle cost analysis would clearly show that Alternative 1 is the lowest lifetime cost alternative, therefore Alternative 1 is the preferred alternative.

Study Commissioned By:

RH2 Engineering, Inc.

Study Prepared By:

Polar Star Consulting

POLAR STAR CONSULTING

Contents

TABLE OF FIGURES

INTRODUCTION

At present, the City of Chelan Fire District has put a moratorium on any and all building permits at the Airport until the issue of lack of adequate fire flow is resolved. Without the ability to allow further development at the Airport, future economic opportunities are blocked at the Airport itself, and potentially at nearby rural industrial lands as well. As such, the City deems extending domestic water to the Airport as a critical first step to both maintain a level of safety and to provide opportunities for economic growth.

This study focused on the potential economic development impacts of providing water to the Airport. Projected Economic Metrics, developed from the study and indicating jobs, wages and outputs, indicate this critical first step may create significant economic development opportunities. Building the infrastructure – firstly with domestic water – will concentrate and leverage development not only for the Airport and its properties, but also for the Rural Industrial lands near the Airport.

Airports make important economic contributions besides impacts associated with jobs, wages, and output.

> "Aviation infrastructure will be a critical element to rural economic development efforts…[and] identifies a critical economic value of smaller facilities, namely access to life-saving medical air transport and other critical services such as fire-fighting that protect life and property in smaller rural areas…One of the real strengths of [rural airports is that it] helps connect communities, spread economic opportunity, and provide essential public and commercial services" [Source: WSDOT Aviation Economic Impact Study, 2012, p. vi].

The Port and the City – co-owners of the Airport – recognize the need for adequate fire flow and greater economic growth; they contributed matching funds for this study to determine the economic benefits.

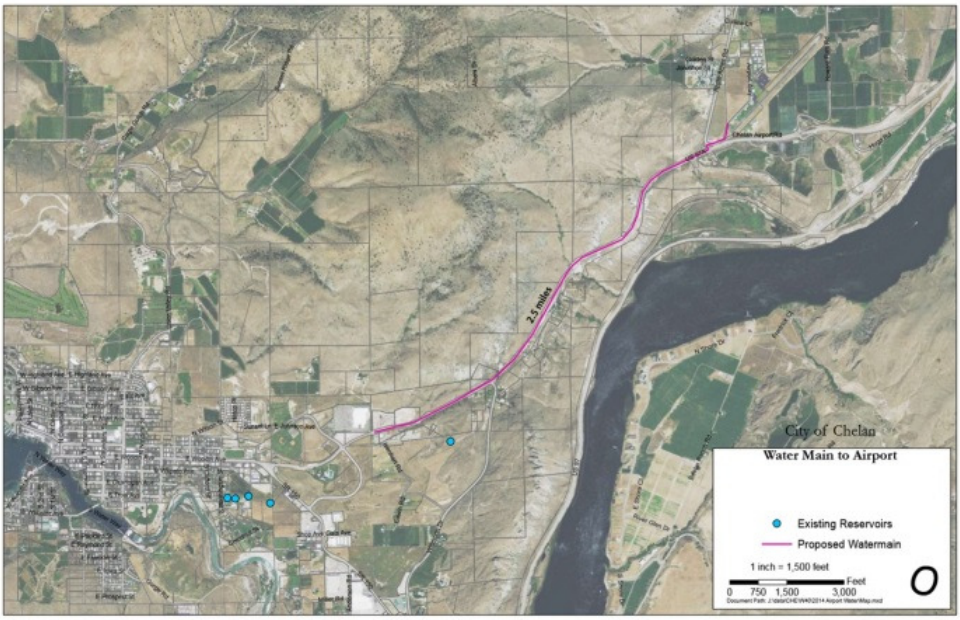


Figure 1 – Water Main to Airport

NEED FOR THE PROJECT

The City is interested in extending water service to the Airport to provide fire flow for economic development. The City operates the Airport in partnership with the Port of Chelan County. The partners are in the process of implementing certain airport improvements utilizing FAA grant money. The improvements include provisions for serving additional hangar and industrial lands from the airfield, once building permits can be issued. A general indication of the improvements anticipated are shown in the Airport Layout Plan provided in Appendix E. There is currently a pent-up demand for hangar space at the Airport. There is currently no fire flow available at the airport that would allow any new hangar construction or any other industrial development. The City needs to extend water service in order to provide fire flow to enable this development. Because of the distance from the City (approximately 2.5 miles), and the probability of rock along a pipeline route, alternative options for providing water service are also investigated, and are included in a separate report.

This economic feasibility study is needed to estimate the potential for economic development in this area. A Community Economic Revitalization Board (CERB) grant, along with partner matching dollars, fund this feasibility study.

SCOPE OF WORK

Objective: Work with the Port, the City Chamber of Commerce, the Washington State Employment Security Department, and other local agencies to meet the CERB Planning Study minimum requirements.

1. Perform a product market analysis linked to economic development.
2. Develop a market strategy containing action elements linked to timelines.
3. Work with local stakeholders to identify targeted industries.
4. Identify the group responsible for implementing the marketing strategy. Provide a description of the group's capacity to complete the responsibility.
5. Assess the site's appropriateness for development with support from RH2.
6. Provide a location analysis of other adequately served vacant industrial land in Chelan County. Mapping will be provided by RH2.
7. Support RH2 in assessing available methods to secure funding for the public facilities improvements within a given time frame.
8. Provide an analysis of how the project will assist local economic diversification efforts.
9. Indicate the specific issues that will be addressed.
10. List one or more economic outcomes that the City expects from the proposed CERB project.
11. Describe the specific, quantifiable measures of the outcome(s) that will indicate success. Describe in measurable terms what the City expects to be able to show as progress toward the outcome for each year before the whole outcome has been achieved.
12. Describe what data the City will collect to determine whether the outcome is being achieved.
13. Describe the data collection procedure, including when data will be collected, from whom and by whom.
14. Provide the estimated median hourly wage of the jobs created when development occurs.
15. Assuming the project is determined to be feasible, provide the following information within the final report:
    - ✓ Total estimated jobs created in full-time equivalent (FTEs).
    - ✓ Describe benefits offered to employees.
    - ✓ Describe the median hourly wage of the new jobs in relation to the median hourly County wage.
    - ✓ The County three (3) -year unemployment rate in relation to the state rate.

- ✓ County population change in the last five (5) years.
- ✓ The estimated jobs created represent what percentage of the County's labor force.
- ✓ The estimated jobs created represent what percentage of the County's unemployed workers.
- ✓ Estimated new annual state and local revenue generated by the private business

INTERVIEW LIST

Interviews were a foundational piece of this economic feasibility study, gathering the airport perspectives (owners/stakeholders, airport businesses, and visitors), the industry perspectives (selected industries/markets), and user perspectives (benefits derived from access to and use of aviation services in the area). Those interviewed included:

NAME	REPRESENTING, TITLE
Paul Schmidt	City of Chelan, Administrator
Craig Gilroy	City of Chelan, Planning Director
Jeff Slater	Chelan Airport, Operations Manager
Trent Moyers Craig Larson Mike Mackey	Port of Chelan County, Pangborn Airport Director Port of Chelan County, Business Development Director Port of Chelan County, Commissioner
Jeff Bouschor	Forest Service, Chelan District
Mike Steele	Chelan Chamber of Commerce, Executive Director
Jeff Smith Mike Coleman	Chelan County PUD, Managing Director of District Services Chelan County PUD, Managing Director Fiber and Telecom
Timothy Lemon	Chelan Fire District #7, Chief
Bob Goedde	City of Chelan, Mayor
Will Mutter, Owner	Lake Aero, Owner
Todd Higley	Sky Dive Chelan, Owner
Kameron Blevins	North Wing, Inc., Owner
Reggie Collins	Chelan Fruit, President, CEO
Kevin Abel	Lake Chelan Community Hospital, Administrator
Dale England	Lake Chelan Helicopters, Owner
Jeannie & Ed Haskell	Apple Acres area, Vineyard Grower
Marion Peebles	Chelan Fruit, Chair, Board of Directors, and Chelan Fresh, Board of Directors
Ryan McDonald	North Wind Helicopters, Owner
Ken Orford	Air Metal Fabricators, Inc. , Owner
Bill Worth, Ken Miller, John Ferrell, Darci Wert, Will Mutter, Jeff Slater	Bill Worth, Ken Miller, John Ferrell = Pilots Will Mutter = Lake Aero Jeff Slater = Airport Op. Manager Darci Wert = Onsite Maintenance & Security
Erin McCardle	Wine/Tourism Marketer; Chelan City Council Member
Bob Christopher	Winery Industry Expert
Bob Jankelson	Tsillan Cellars, Owner
Bill Ayer	Pilot wanting to build hangar

ECONOMIC UPDATE AND SOCIO-DEMOGRAPHICS – CHELAN COUNTY

The top five industries by employment in 2013 were Agriculture/Forestry/Fishing, Health Services, Local Government, Retail Trade, and Accommodation and Food Services. Top five industries by wages in 2013 were Health Services, Local Government, Agriculture/Forestry/Fishing, Retail Trade and Manufacturing. These top five industries had total covered wages of $1.38 billion, average annual employment of 39,623, and an average annual wage of $34,851.

The local unemployment rate fell from 7.2% in 2013 to 6.1% in 2014. The Civilian Labor Force (CLF) rose from 60,260 in 2013 to 61,120 in 2014, a 1.4% increase. Non-farm employment averaged 41,700 in 2014; up 1,300 jobs since 2013, a 3.1% increase. Roughly 74% of total non-farm growth in 2014 occurred in three industries: construction, health services, and leisure and hospitality.

By 2014, the local economy regained all nonfarm jobs lost since 2008. Other economic information, as requested by CERB study:

- ✓ Total estimated jobs created in FTEs:
  - Estimate 23 FTE.

- ✓ Benefits offered to employees.
  - Estimate 20 of 23 FTE will be contract personnel, with no benefit package.
  - Estimate 3 of 23 FTE City employees with City of Chelan benefit package.

- ✓ The median hourly wage of the new jobs in relation to the median hourly County wage.
  - The median hourly wage of Aircraft Mechanics and Service Technicians in Washington State is $32.59.
  - The median hourly wage of Scenic and Sightseeing activities in Washington State is $32.50.
  - (Source: BLM Occupational Employment and Wages, May 2014, http://www.bls.gov/oes/current/oes493011.htm)
  - Chelan County averaged 39,623 jobs in 2013 covered by unemployment insurance with a total payroll of approximately $1.38 billion and an average annual wage of $34,851. In 2012, the median hourly wage (unadjusted for inflation) in Chelan County was $14.87.

- ✓ The County 3-year unemployment rate in relation to the state rate
  - Source: Wenatchee Metropolitan Statistical Area (MSA) (Chelan and Douglas Counties) Labor Area Summary, February 2015
  - Labor force data show that Washington State's average annual not seasonally adjusted unemployment rate decreased eight-tenths of a percentage point between 2013 and 2014, from 7.0% to 6.2%. Between February 2014 and February 2015 the rate declined four-tenths of a point, from 7.2% to 6.8%.
  - Using the most relevant and latest information for unemployment rates in Chelan County, the Wenatchee MSA reports the annual average unemployment rate fell from 7.2% to 6.6% between 2013 and 2014, a six-tenths percentage point drop. The rate also decreased six-tenths of a percentage point this February to 8.4% from 9.0% reading in February 2014 as the number of unemployed residents contracted and the labor force expanded.
  - The Wenatchee MSA's unemployment rate decreased six-tenths of a percentage point between February 2014 and February 2015.

- ✓ County population change in the last five (5) years.
  - Chelan County population, percent change - April 1, 2010 (estimates base) to July 1, 2014, (V2014) increased by 3.3% (Source: US Census Bureau)

- ✓ Estimated jobs created represent what percentage of the County's labor force.
  - In 2013, the Quarterly Census of Economy and Wages (QCEW) data showed that Chelan County's labor market provided 39,623 jobs.
  - Estimate 29 new Airport Business Direct Jobs, plus 18 one-time construction jobs, equals 47 jobs, represent 0.12% of County's labor force.

- ✓ Estimated jobs created represent what percentage of the County's unemployed workers.
  - The average annual rate for 2014 of 6.1 percent was one and one-tenth points less than the 7.2 percent reading for calendar year 2013
  - The number of unemployed fell by 100 (from 4,960 to 4,860 between February 2014 and February 2015). Hence the Wenatchee MSA's monthly unemployment rate decreased from 9.0% to 8.4%
  - The 47 jobs represent 0.96% of the County's 4,860 unemployed.

- ✓ Estimated new annual state and local revenue generated by the private business
  - An Update to the 2000 Study WSDOT and the FAA which typically conducts economic impact studies every five years. The previous study, done in 2000, found statewide aviation created:
    - 171,312 jobs
    - $4.1 billion in wages
    - $18.6 billion in total economic output
  - Chelan Airport Revenue – 2011 to 2014

	2014	2013	2012	2011
Hangar Rents	$ 39,739.08	$ 39,143.81	$ 43,254.32	$ 38,174.39
Fuel Sales	$156,022.48	$158,823.94	$139,492.89	$153,049.29
Tie Downs	$ 1,667.00	$ 867.00	$ 839.00	$ 639.00

  - The 2011 to 2014 rental rates have remained about the same because all existing hangar sites are rented. There was a revenue reduction from 2012 and 2013 due to the fire district imposing a moratorium on building until the water issue was resolved. The City allowed owners a one-time opportunity to terminate their lease until the situation was remedied.

[See also **Appendix A – Economic Update and Socio-Demographics – Chelan County**]

AIRPORT OVERVIEW

As classified by the Washington State Department of Transportation (WSDOT) Aviation Division, the Chelan Municipal Airport is a Community Service Airport, having a threshold criteria of 20 or more based aircraft and a paved runway. Community Service Airports serve small to medium-sized communities and are busy enough to warrant aviation support services such as fuel sales. These airports are primarily used by piston-driven general aviation aircraft.

Figure 2 – Aerial Map S10-09

Aerial Map – Chelan Airport -- Source: WSDOT Aviation Division

The Chelan Municipal Airport is located in Chelan County, approximately 2.5 miles northeast of Chelan and next to the Highway 97A corridor. The Airport has 66 based aircraft, including 3 multi-engine, 53 single-engine, 2 rotor-based helicopters and 8 ultralights. The Airport's runway is 3,503 feet long, 60 feet wide, has an asphalt surface and is equipped with pilot controlled medium intensity runway lights. The Airport is capable of handling a wider range of aircraft types, including single and twin engine props, biplane, 8 to12 passenger turbo props, and small turbo jets. The City operates the Airport in partnership with the Port.

The Airport currently has 46 hangars, 32 tie-downs, 6 ultralight pads, and several helipads. Their fuel capacity includes both 8,000 gallons 100 LL (low lead) and 5,000 gallons Jet A.

Current Aviation Activities and Events at the Airport

- ✓ Skydiving/Parachute Drops
- ✓ Flying Club – Aeronauts Association
- ✓ Annual Fly-In Event (June 6, 2015 – 15th Annual Event)
- ✓ "Wings and Wheels" Fly-In/Cruizin Chelan (partnering with Cruizin Chelan event); Visitors to this event will see a number of classic, experimental and general aviation flying machines. Bi-plane and helicopter rides are available as well as sky dives.
- ✓ Fly-in Campers
- ✓ Potluck
- ✓ Annual Sky Dive Festival (1st Weekend in October – 3rd Annual Event); 2014 had 224 participants; expecting 350 in 2015
- ✓ Large turbine aircraft, helicopters, bi-planes at the Airport
- ✓ Catered food, live music
- ✓ Climbing wall for kids
- ✓ Partnering with Tsillan Cellars, One Wines, Lake Chelan Brewery
- ✓ Partnering with the Chelan Valley Mahogany and Merlot Festival

Transient Aviation Activities

- ✓ Air Ambulance/Medical transport
- ✓ Light sport aircraft flights, and aerial applications
- ✓ Charter service

Services Available
- ✓ Pilot planning facility
- ✓ Aircraft rental
- ✓ Charter service
- ✓ Flight training
- ✓ Full service aircraft repair facility
- ✓ Major airframe repair and restoration
- ✓ Air metal fabrication
- ✓ Agricultural and aerial applications (spraying, fertilizing, seeding, longline lifts)
- ✓ Skydiving/Parachute Drops/High speed paragliding ("speed flying")
- ✓ Certified sky dive coach courses
- ✓ Certified sky dive tandem courses

Facilities and Services
- ✓ Aircraft Rescue and Fire Fighting – helibase and command center
- ✓ Chelan Fire & Rescue Facility

Public Utilities
- ✓ Wireless Internet
- ✓ Electric Power
- ✓ Telephone
- ✓ Water

Facilities Available
- ✓ Public Telephone
- ✓ Public Restroom

Existing Zoning

The Airport is within the Urban Growth Boundary of the City of Chelan, and is zoned AP – Chelan Municipal Airport District in accordance with the City of Chelan Code. Adjacent lands not owned by the City and Port are not within the existing urban growth area. The full text of the requirements for this zone are included in **Appendix F – Zoning Map**. The Code states that "the primary purposes of the Chelan Municipal Airport District are:

1. To assure that the property comprising the Chelan Municipal Airport will continue to be used in a manner that is compatible with a general aviation airport and aircraft operations.

2. To establish a framework within which both commercial and recreational aviation and aviation-related activities can prosper."

Zoning surrounding the airport includes Chelan county zones RI (rural industrial, 57 acres), RR5, RR2.5 (rural residential, 5 and 2.5 acres), AC (commercial agriculture), and RV (rural village).

City-funded Airport Improvements and Capital Improvement Plan (CIP)

The City and the Port are investing in Airport infrastructure improvements, executing certain airport improvements utilizing federal grant money. The improvements improve safety and also include provisions for serving additional hanger and industrial lands from the airfield. These are substantial investments in the Airport; domestic water brought to the Airport will leverage the investments and allow pent-up and new economic activity to take place.

City-funded improvements include:

- ✓ Replace underground storage tanks with above-ground tanks, and new pumping apparatus
- ✓ Security cameras
- ✓ New computer system to access and download City Hall reports
- ✓ System to track Airport cycles (take-offs, landings)
- ✓ Improved signage

A FAA/WSDOT Capital Improvement Project (CIP) for the Airport is underway with a timeline of 2014 to 2021, including:

- ✓ Land acquisition, Phase 1 – 2015
- ✓ Runway safety improvements Phase 2 – intersection, highway approach, road relocation – 2016-2017
- ✓ Runway safety improvements Phase 3 – Demo existing road, buildings, trees -- 2018
- ✓ Runway safety improvements Phase 4 – Shift/extend parallel taxiway, rehabilitate remaining runway – 2019-2020
- ✓ Install airfield perimeter fencing – 2021
- ✓ Construct hangar taxi lanes – 2021

Airport Vision

The City's vision for the Airport is to maintain it as a Community Service Airport, to make continuous improvements as appropriate, and to develop Airport lands with light industrial-zoned properties and businesses. The City continues to provide good customer service to maintain the presence of current Airport businesses, and is committed to bringing domestic water to the Airport and surrounding community for economic development.

The Port recognizes the economic potential of Lake Chelan Valley with its lake, wineries, golf courses, and nearby Stehekin, and also recognizes that the Airport may be able to capitalize on the benefits from the valley's tourism business. As part of the Port's Associate Development Organization (ADO) designation, the Port wrote a letter of support to CERB for studying the feasibility of providing domestic water to the Airport, attached in **Appendix C – Letter of Support from Port of Chelan County.**

Airport Market Assessment

APPROACH TO AIRPORT MARKET ASSESSMENT

In 2012, WSDOT implemented an Aviation Economic Impact Study to: measure the economic impacts of each public-use airport in Washington; assess the economic value that airports create for communities; and show airports and the state aviation system contribute to the state's economy and economic competitiveness.

Using the same approach as the 2012 WSDOT Aviation Economic Impact Study, this airport study provides three different perspectives to create a more comprehensive picture of the Airport's economic value and contribution to the Lake Chelan Valley and Chelan County: the airport, industry, and user perspectives.

- ➢ Airport-level Economic Impacts (jobs, wages, spending) – (1) businesses at the airport, and (2) spending by visitors passing through the airport
- ➢ Industry-level Economic Impacts – The role of aviation in the broader economy and the relationship between aviation and selected Chelan Valley industries

- User-level Economic Value – The value individuals derive from their use of aviation facilities and services (for example, firefighting aviation capabilities).

AIRPORT-LEVEL ECONOMIC IMPACTS

This piece of the analysis identifies the traditional economic impacts: jobs, wages, output, and spending. These include activities that can be directly associated with the Airport, namely businesses operating at the airport and visitors traveling through the airport. From these direct impacts, multiplier effects are also evaluated, as wages and other income are re-spent in the local economy.

To provide a comprehensive picture of airport economic value, the Projected Economic Metrics includes both the Airport-Level Economic Impacts, as well as the Industry-Level Economic Impacts.

AIRPORT BUSINESSES

The following are existing airport businesses, and their perceived potential for future growth. Included are excerpts from interviews.

Lake Aero, Inc.

Lake Aero LLC Aircraft Maintenance, a Fixed Based Operation, is located in Hangar 30 at the Airport. In addition to owner Will Mutter, Lake Aero has two full-time employees, along with a pilot on contract. The business provides a full service aircraft repair facility serving light single and twin engine private aviation and commercial aviation aircraft customers. Services include:

Aircraft Annual Inspections
Seaplane Maintenance
Major Air Frame Repair
Aircraft Sheet Metal Repair
Aircraft Paint
Upholstery - in-house and custom work
Aircraft Sales
Aircraft Salvage Recovery
Authorized dealer for MICRO VG's
Composite Specialists
Composite Fabrication & Repair
Carbon Fiber Repair

Figure 3 – Lake Aero

Lake Aero has been in business since 1984, and is frequently the first contact for pilots who inquire about private hangar space and business opportunities. The business acknowledges a pent-up demand…"we'd have at least ten more hangars filled if we had water…we have zero growth [now]…water is #1." Mutter states there are "a lot" of small aircraft that fly into the Airport for business such as the fruit industry, large general contractors, and chartered flights throughout the summer ("an average of six/week").

Mutter is the lead in organizing the annual Lake Chelan Fly-In, "Wings and Wheels"; June 6, 2015, will be its 15th annual event, with participants coming from several states, and while here also enjoying the amenities of the Valley.

Sky Dive Chelan

Owner Todd Higley operates his business in Hangar 201, and uses 5 to 6 independent contractors who are pilots and tandem instructors during the 8-month season, March through October. In addition to sky dive experiences for both beginners and the experienced, they also provide certified coach courses and certified tandem courses. Skydive partners with Tsillan Cellars to offer a "VIP Winery Skydive", the only tandem winery skydive in the nation. After a chauffeured ride from Tsillan Cellars to Skydive Chelan, customers train and board their aircraft for scenic flight to altitude, freefall over Lake Chelan and then are welcomed back to earth with a bottle of wine as they land in the vineyards of Tsillan Cellars.

Figure 4 – Sky Dive Chelan

Higley's vision is to have a larger aircraft to increase the number of jumpers (and revenue), in addition to adding several more contractors for the 8 to 9 month season. However, a larger aircraft is not presently possible – he needs to build a larger hangar for the plane – and building permits cannot be issued because of

the fire flow problem. Higley also envisions a small café at his hangar site, once domestic water to the Airport is a reality. "Water means expansion," he states.

Sky Dive also sponsors an Annual Skydive Festival the first weekend in October: last year, 224 participants showed up; they expect 350 in 2015, for their 3rd annual event. The event brings in larger turbine aircraft, helicopters, biplanes, and offers catered food, live music, and a climbing wall for kids. Many participants stay for 2 to 3 days and enjoy the amenities of the Lake Chelan Valley. The event also partners with the Chelan Valley Mahogany and Merlot Festival.

North Wind Helicopters

Figure 5 – North Wind Helicopters

Ryan McDonald operates North Wind Helicopters – "Farmers Flying for Farmers". He is located in Hangar 203 at the Airport. Due to lack of space at the Airport, he also stores equipment and aircraft in Entiat, Washington (he also has a business in Basin City, Washington). He would like to purchase and use a larger aircraft but cannot do that presently, since he can't obtain a building permit for a larger hangar.

North Wind Helicopters is a year-round business, including an 8-month flying/spraying season, March through October. In the winter, he does helicopter maintenance; all of it accomplished at the Airport. McDonald envisions opening a helicopter full-service center, once domestic water comes to the airport and he can expand his business. His current services include:

- ✓ Aerial spray and application
- ✓ Aerial surveying
- ✓ Aerial transport
- ✓ Long line lifts
- ✓ Pollunization
- ✓ Seeding
- ✓ Orchard hovering, drying, frost control

Air Metal Fabricators, Inc.

Figure 6 – Air Metal Fabricators

Ken Orford operates Air Metal Fabricators, Inc. (A.M.F.), in Hangar 205 at the Airport, specializing in repairs, rebuilds, modifications and the refurbishing of aircraft structures and components (from the simplest repairs to the most extensive refurbishment). Along with structural repairs, A.M.F. also has the capabilities to fabricate the simplest parts to the most complicated assemblies such as wing jibs and Twin commander belly skins. He also has a shop in Pateros, Washington. Orford says A.M.F. uses water to wash his aircraft throughout fabrications, and sees a domestic water supply to the airport as a definite plus.

The picture below is of a 1943 Lockheed Lodestar, a 2-year full restoration project which A.F.M. is just beginning.

Figure 7 – Air Metal Fabricators

North Wing, Inc.

North Wing designs and manufactures quality weight shift control Light Sport Aircraft, FAR 103 Legal ultralight trikes, wings for trikes, hang gliders, and a wide range of accessories for ultralight trikes and hang gliders. Their manufacturing business is located at the Apple Blossom complex; however, they occupy Airport Hangars 210, 211, and 212, and regularly test their ultralights at the Airport one to two times per week throughout the summer.

Figure 8 – North Wing, Inc.

AIRPORT HANGAR OWNERS/PILOTS

Several pilots who own hangars at the Airport were interviewed. All of them stated they enjoyed the small rural aspects of the Airport. They acknowledged that hangar space was at a premium. They noted that pilots arrive from other areas, such as Arizona, on a regular basis to do flight tours for customers throughout the summer, or to spray orchards.

INDUSTRY-LEVEL ECONOMIC IMPACTS – OPPORTUNITY MARKETS, TARGETED INDUSTRIES

While the airport-level analysis focuses on activity that can be directly attributable to Airport, the industry-level analysis explores how the presence and location of the Airport can affect the location and distribution of economic activity in the Lake Chelan Valley and Chelan County. A selected number of opportunity markets, and targeted industries are examined.

AGRICULTURE

According to 2013 the Washington State Employment Security Division (ESD) data, agriculture in Chelan County was one of the top five industries, contributing 23.5% of jobs, and 14.8% of wages. Agriculture was the top job provider in Chelan County (9,327 jobs). Together with forestry and fishing, the sector accounted for $204 billion of total covered wages for Chelan County in 2013.

The “biggest gainer” in job changes between 2004 and 2012 was wholesale trade. In Chelan County most wholesale trade jobs are with nondurable goods wholesalers (i.e., fresh fruit packing houses). There are also local businesses engaged in the wholesale trade of durable goods (i.e., construction supplies, auto parts, office supplies, etc.). But in Chelan County, non-durable goods wholesalers are “king.” Workers in these firms sort, pack, store, and/or ship fresh fruits.

In 2004 the local wholesale trade industry provided 3.6 percent of total covered employment in Chelan County. By 2013 this industry accounted for 6.2 percent of all covered employment countywide, a clear uptrend.

Aerial Applications

Aviation facilities are used for aerial application of treatments and fertilizer to agricultural crops. The Airport has both on-site businesses and transient businesses that deliver aerial application services to Lake Chelan Valley agricultural growers, as well as Douglas and Okanogan County growers.

One example is the aerial treatments of cherries. Helicopters hover above cherry crops to dry the moisture that has accumulated and prevent cracking from occurring. In doing so, fuel is purchased from the Airport, helicopter pilots and businesses are employed, and the cherries get to market looking attractive to consumers.

Chelan Fruit and Chelan Fresh Marketing

Source: www.chelanfruit.com, www.chelanfresh.com

Chelan Fruit is a 300-member, grower-owned cooperative based in North Central Washington. Its roots are in three former regional cooperatives: Trout, Inc., Blue Chelan, Inc., and MAGI, Inc.

Chelan Fruit is now the largest cooperative in the world – and is continuing to grow. Chelan Fruit is based in the City of Chelan and has plants in the cities of Chelan, Orondo, Pateros, Brewster, and Okanogan.

In 2004, Chelan Fruit Cooperative partnered with Alta Fresh Marketing, which included Gebbers Farms, Apple House, MAGI and Obert Fruit to establish Chelan Fresh Marketing. The sales and marketing organization serves Chelan Fruit growers with a strong link to an increasingly competitive domestic and world-wide export market. Chelan Fresh has grown to become one of Washington State's largest marketers of fresh fruit with an estimated annual sale of 12 million boxes of apples, 1.3 million boxes of pears, 3.3 million boxes of cherries.

As both Chelan Fruit and Chelan Fresh continue to grow, their current space will no longer serve their needs. Industrial-zoned areas on and/or adjacent to the Airport may offer an affordable opportunity when they expand their operations.

WINERY, VINEYARDS

"Wineries are playing an increasing role in both agriculture and in tourism. The history of wine grapes along the banks of Washington's Lake Chelan goes back to the 1880s, but that all but disappeared until the late 1990s, when a soft apple market had orchardists thinking about a new direction."
http://www.bellinghamherald.com/2015/02/05/4113632_northwest-wines-lake-chelan-continues.html?rh=1
Today, the Lake Chelan wine industry is changing the economics of the community it surrounds. The wine industry, along with expert marketing and branding by the Lake Chelan Chamber of Commerce, has stretched the tourism season from 10 weeks to over 8 months.

Land surrounding the Airport may offer affordable space to provide a shared winery production facility. A similar operation can be found at the Walla Walla Airport space, housing a "shared production facility." The sharing offsets the production costs of small new winery businesses until they can gain a foothold, raise their revenues, and purchase their own land. It would also provide space for wineries expanding their operations.

Partnerships between wineries and Airport businesses increase both visibility and revenues for both:

- Tsillan Cellars partners with Sky Dive Chelan to offer a "VIP Winery Skydive," the only tandem winery skydive in the nation.

- One Wine – and the Valley's Mahogany and Merlot event – partners with Sky Dive Chelan during their annual Sky Dive Festival.

TOURISM

Chelan County is on the eastern slopes of the Cascade Mountain range in central Washington. Lake Chelan is the third deepest lake in the country. With its nearly year-round sunshine, it has developed into an all-season outdoor recreational destination. In addition to agriculture, tourism plays a large part in the local economy in the Valley.

Aviation is important to tourism because it provides a pathway to connect the Valley to the rest of the world. Tourism is the number one reason for fly-ins and take-offs during the summer season, accounting for an estimated 60 to 70% of summer activity. Summer time chartered flights average an estimated six per week. Caitlin Airways, based in Twisp, includes Chelan on its charter flight opportunities, and according to the Airport Operations Manager, flies in frequently during summer season.

Partnerships between Lake Chelan Valley events and Airport events increase both visibility and revenues, and invite tourists to come to the Airport:

- The Cruzin Chelan Event partners with the Airport's annual fly-in event, now called "Wings and Wheels"
- The Mahogany and Merlot Event, One Wines, and the Lake Chelan Brewery – partners with Sky Dive Chelan during their annual Sky Dive Festival
- Tsillan Cellars partners with Sky Dive Chelan to offer a "VIP Winery Skydive"
- Lake Chelan Brewery partners with Sky Dive Chelan during their Festival

USER-LEVEL ECONOMIC VALUE

The broadest measure of economic contribution is the user-level benefits that are derived from access to and use of aviation services in the area. This analysis explores the intrinsic value that users derive from the Airport and aviation-supported services.

U. S. FOREST SERVICE

The U.S. Forest Service has a yearly agreement with the City for a helibase and firefighting capabilities at the Airport. In 2014, the Airport hosted the helibase for the Carlton Complex Fire in 2014, establishing an Air Traffic Control Center and handling all logistics of the fire. Three Jet Rangers helicopters and a Blackhawk helicopter were based at the airport, as well as a water tender and heavy equipment, including bulldozers.

> "According to the WSDOT Aviation Economic Impact Study, "…the value of services must be seen in more than just a measure of gross business income or the number of jobs...Communities, particularly those in rural or remote areas, benefit from aviation services and activities in many ways that aren't captured in either the Airport or Industry Perspectives. One example of these services is aviation-supported firefighting activities, which protect private property from destruction wrought by wildfires. Preventing losses to private property supports the tax base of entire communities. It also protects natural resources that have both industrial uses (e.g. timber for logging) and recreational uses (e.g. hiking in State parks)" [p.iv]. In addition, the users derive value from a broad range of services such as medical evacuation, and search and rescue."

In addition to the lake itself, the Chelan Valley is surrounded by portions of a National Park, two National Forest Wilderness Areas and a National Recreation Area encompassing much of the Chelan drainage.

Agricultural/Forestry/Fishing is the top job provider in Chelan County. To protect these resources, the Chelan Airport hosts a fire-fighting helibase and command center, and a Chelan Fire and Rescue facility.

CHELAN FIRE AND RESCUE, #7

The present water system at the Airport does not provide "measureable fire flow" and does not meet the International Fire Code standards that would permit new building permits to be issued. The current fire-suppression system, an irrigation system, shuts down in the winter months. The irrigation system also does not allow any sprinkler/early detection fire systems to be installed in hangars or businesses. An additional burden to hangar and business owners is an elevated cost of fire insurance, currently a Class 9, whereas Chelan businesses typically are a Class 6.

Figure 9 – Chelan Fire and Rescue #7

Chelan Fire and Rescue owns a building on Airport property. To address fire incidents, the facility houses a 4000 gallon tender, a structural tank engine, and a mechanic work station with an employee on duty 10 hours per day, four days per week. Once domestic water is supplied to the Airport, Chelan Fire and Rescue may actively consider upgrading the facility, including live-in dormitory space for their voluntary firefighters. The presence of both measureable fire flow and on-site firefighters would greatly enhance the value and safety of not only the Airport, but the surrounding community and its industries.

LAKE CHELAN COMMUNITY HOSPITAL

Lake Chelan Community Hospital (LCCH) utilizes the Airport to transport its Intensive Care Unit (ICU) patients to Seattle or Spokane hospitals. The majority of its air lifts are via fixed wing aircraft. LCCH estimates 35 transports per year, with Northwest MedStar frequently providing ICU transports.

An Opportunity Lost: Northwest MedStar had investigated putting their base at the Chelan Airport, but it could not get a building permit. It eventually chose to locate at Anderson Field Airport, in Brewster, Washington. Northwest MedStar will position an EC-135 air medical helicopter and critical care flight crew at Anderson Field Airport, leasing land from the airport and purchasing a 3,600-square-foot hangar at the airport. Northwest MedStar will also be placing a 1,400-square-foot crew quarters near the hangar. The local base will be home to 14 flight crew members, Metro Aviation pilots and a Metro Aviation mechanic. The investment of this additional base, including construction and medical equipment (not including the aircraft), is estimated at more than $575,000. Annual crew salaries and benefits are estimated at more than $1 million.

OTHER USERS/NEARBY NEIGHBORS

Other Airport users and neighbors that were contacted included:

- ✓ ***Lake Chelan Helicopters***

Figure 10 – Lake Chelan Helicopters

Lake Chelan Helicopters provides professional flights in and around the Lake Chelan Valley, sight-seeing, touring homes for potential buyers or a flying wine tour. The business does not have a hangar, but does sometimes pick up passengers at the Airport. To use the Airport more often, owner Dale England would like to see a restaurant at the Airport, as well as more amenities.

- ✓ ***Imco General Construction*** has contract construction work at Wells Dam as well as Holden, and flies aircraft into the Airport for work-related meetings.

- ✓ Several ***property owners*** with acreage adjacent to the Airport are interested in land development once domestic water is brought to the area: "…there should be a discussion to put water on the rest of the flats; don't undersize it."

AIRPORT PROFILE and ECONOMIC AVIATION IMPACTS

Airport Acreage: The Airport currently has 16 acres developed, along with 24 acres inside the Airport boundary that can be utilized for development after completion of the upcoming improvements and once the water issue has been resolved. The 2013 Airport Improvement Plan indicates an additional 24 acres just outside the existing airport footprint identified as "potential aviation related area" that would require Airport acquisition for development. These two 24-acre parcels are each considered in estimating potential future development at the Airport (total of 64 acres).

Rural Industrial Acreage: There are 57 acres zoned Rural Industrial near the Airport and outside the UGA. These acres are considered in estimating potential future development near the Airport – both in the "0-5 Year Build-out" and the "20 Year Build-out." Rural Industrial lands support activities such as agricultural processing and support facilities, fabrication, storage, transportation and shipping, and wholesale trade.

The "Projected Economic Metrics" table is shown below, with narrative following.

PROJECTED ECONOMIC METRICS

Scenario	# Jobs Direct	# Jobs Indirect	# Jobs Total	$ Direct	$ Indirect/ Induced	0-5 yr Impact $	0-5 Yr. Total Impact $	20 Yr. Impact $	20 Yr. Total Impact $
0-5 YEAR BUILDOUT									
Airport - 16+24 = 40 acres									
Business Labor Income	29	8	**37**	2,302,027	314,249	2,616,277			
Total Business Output				**5,831,331**	**909,188**	**6,740,519**			
Visitor Spending Labor Income	4	1	5	93,854	72,723	166,578			
Total Visitor Spending Output				**260,419**	**227,346**	**487,765**			
One-Time Waterline Construction									
Construction Labor Income	18	10	**28**	1,083,032	457,563	1,540,595			
Total Construction Output				**2,584,352**	**1,181,578**	**3,765,930**			
TOTAL AIRPORT 40 acres	**51**	**19**	**70**	**8,676,102**	**2,318,112**		**10,994,214**		
RI - 57 acres									
Labor Income	85	21	**106**	2,550,000	525,000	3,075,000			
Total RI Output				**6,120,000**	**1,260,000**	**7,380,000**			
TOTAL RI - 57 acres	**85**	**21**	**106**	**6,120,000**	**1,260,000**		**7,380,000**		
0-5 YEAR BUILDOUT TOTALS	**136**	**40**	**176**	**14,796,102**	**3,578,112**		**18,374,214**		

20 YEAR BUILDOUT							
Airport - 6+24+24 = 64 acres							
Business Labor Income	119	30	**149**	7,497,000	750,000	8,247,000	
Total Business Output				**17,992,800**	**1,800,000**	**19,792,800**	
Visitor Spending Labor Income	4	1	5	93,854	72,723	166,577	
Total Visitor Spending Output				**260,419**	**227,346**	**487,765**	
TOTAL AIRPORT 64 acres	**123**	**31**	**154**	**18,253,219**	**2,027,346**		**20,280,565**
RI - 57 acres							
Labor Income	3,342	86	**428**	6,840,000	1,720,000	8,560,000	
Total RI Output				**16,416,000**	**4,128,000**	**20,544,000**	
TOTAL RI - 57 acres	**342**	**86**	**428**	**16,416,000**	**4,128,000**		**20,544,000**
20 YEAR BUILDOUT TOTALS	**465**	**117**	**582**	**34,669,219**	**6,155,346**		**40,824,565**

ECONOMIC METRIC METHODOLOGY AND NOTES

USING THE WSDOT AVIATION ECONOMIC IMPACT CALCULATOR

The estimated economic impacts were built upon the previously-reported WSDOT 2010 data, using the WSDOT Aviation Economic Impact Calculator available at www.wsdot.wa.gov/aviation/planning/economiccalc. This tool is designed to assist users in estimating an airport's change in regional economic impacts based on potential changes in activity at the airport. The calculations in this tool are high-level estimates designed to give a sense of magnitude of economic impacts, but are not to be taken as specific projections. The tool uses averages and typical ranges to provide a reasonable estimate of impacts based on the types of changes entered, which should not be assumed to be precise calculations.

The base data used in the Calculator comes from the Airport Information System (AIS) database, which consists of airport activity information self-reported by airport managers. Users update this database by

providing (1) Fuel Sales Offered at Airport, (2) Changes in Flight Activity, (3) Changes in Business Activity, (4) Changes in Cargo Activity, and (5) Capital Projects.

The most current WSDOT airport profile of Chelan Airport was released in March 2012 by their Economic Impact Study, Appendix C Profiles, pages 72-73 [see **Appendix D – Airport Profile and Economic Aviation Impacts – 2010 Data**].

Current Airport Business Direct Jobs at the Airport, and forecasted jobs, include:

- ✓ 29 projected additional Airport Business Direct Jobs in 0-5 years, based on input from interviews, were included in the Calculator, as detailed in the table below.
- ✓ 5 jobs shown in the 2010 data base and 9 jobs added between 2010 to 2014 were NOT included in the Calculator

AIRPORT BUSINESS DIRECT JOBS: **Aviation and/or Aviation-Related Businesses**	**Jobs from 2010 Data**	**2010 to End 2014 Added Jobs ***	**Projected New Airport Business Direct Jobs, based on Interviews**	**TOTAL JOBS**
Aircraft and Aircraft Engine Manufacturing	0	0	5	5
Other Manufacturing/Fabrication	0	2	2	4
Warehousing and Storage	0	0	4	4
Machinery/Equipment Repair and Maintenance	4	2	9	15
Sightseeing Transportation	0	5	5	10
Retail Businesses	0	0	2	2
Other Businesses and Support Services	1	0	2	3
TOTAL	**5**	**9**	**29**	**43**

GENERAL NOTES

- The Calculator uses JOBS to calculate, NOT FTE's. For this CERB study, it is estimated that the 29 projected new jobs will translate to a total of 23 FTE's.

Reference also:

- APPENDIX D – AIRPORT PROFILE AND ECONOMIC AVIATION IMPACTS – 2010 DATA
- APPENDIX H – WSDOT AVIATION CALCULATOR RESULTS 2015

NOTES RE: AIRPORT PROJECTED ECONOMIC METRICS

One perspective to provide context and comparison to this study's projected airport metrics is to compare the Chelan Airport with Pangborn Memorial Airport in East Wenatchee, Washington. The 2012 WSDOT Aviation Economic Study (reporting 2010 data) indicates Pangborn had 171 direct jobs, 113 Indirect/induced jobs, for a Total Impact of 284 jobs – from both Airport Businesses and Visitor Spending.

Pangborn Airport Estimated Regional Impact from Airport Businesses

Estimated Economic Impact	Direct	Indirect/Induced	Total Impact
Jobs	**90**	**65**	**155**
Labor Income	$ 3,900,000	$ 2,300,000	6,200,000
Output	$ 15,600,000	$ 6,700,000	22,300,000

Pangborn Airport Estimated Regional Impacts from Visitor Spending

Total Estimated Visitor Spending:	**$ 9,179,700**			
Direct	**Indirect/Induced**	**Total Impact**	**All State**	**% State**
Jobs 81	**48**	**129**	**94,000**	**0.14%**
Labor Income $ 2,500,000	$ 2,300,000	$	$	0.14%
Output $ 8,000,000	$ 7,000,000	$	$	0.15%

Source: http://www.wsdot.wa.gov/NR/rdonlyres/A8A1211F-D236-4F47-8A76-58B50544C154/0/2012_0402_AppendixC_AirportProfiles.pdf

(Note: Information on the Pangborn Airport website notes a 2001 study commissioned by the Washington Department of Transportation found that Pangborn Memorial Airport directly and indirectly supports 632 jobs. Source: http://www.pangbornairport.com/aboutpangborn.html However, for consistency of reference material, this study will use the WSDOT Aviation data.)

Because Pangborn is a Commercial Service Airport and Chelan is a Community Service Airport, it may be argued that they are not readily comparable. Nevertheless they are located within 50 miles of one another and share many socio-demographic characteristics. A review of WSDOT Community Service Airport profiles did not reveal an airport that could be comparable to the Chelan Airport.

Pangborn has approximately 70 acres of developed land (not including runways, taxiways, and unused lands) and 171 direct jobs; the ratio of jobs per acre is 171 direct jobs divided by 70 acres = 2.44 jobs per acre. It is reasonable to assume the potential for the Chelan Airport to develop to a density of 2.44 jobs per acre, with both current pent-up demand and future demand.

It is assumed that the existing 16 developed acres and 24 undeveloped areas currently under Airport zoning can be utilized. It is also assumed that the additional 24 acres adjacent to the Airport, identified in the Airport Master Plan, will be purchased for Airport industrial property, and utilized for full build-out. Based on a build-

out of 2.44 jobs per acre, the potential number of jobs that could be accommodated on the 64 acres identified is 156.

0-5 Year Build-out, Airport

- The Aviation Calculator used the May 2014 BLM Occupational Employment and Wages median hourly wage of $32.59 for Aircraft Mechanics and Service Technicians in Washington State for projecting direct dollar Airport jobs, or about $67,000/year.
- The list of business sectors mirrors the list in the Aviation calculator. While none of the businesses could commit to these new jobs, reasonable assumptions were made based on their plans for growth. This forecast includes growth for 7 existing businesses, and 4 new businesses that might be expected once the airport can accommodate growth.

- It is assumed that the existing Airport lands (16+24 acres) will be used in the 0-5 Year Build-out and will not have been completely developed during that 5-year period. It is assumed that, based on a density of 2.44 jobs per acre, that approximately 18 acres will be utilized.

0-5 Year Airport – One-Time Waterline Construction

- Construction costs associated with extending water to the Airport were estimated at $4 million. Once this estimate was input into the calculator, it produced the jobs and impacts, as shown.

20 Year Build-out, Airport

- For purpose of this CERB study and to estimate Airport 20 Year Build-out, direct dollars were estimated at approximately $63,000/year and indirect/induced dollars at $25,000/year. These lower direct and indirect/induced dollars reflect an expected mix of aviation, aviation-related and other jobs (such as warehouse/storage).
- Inflation was not calculated into these projections.
- Growth was assumed at 7% per year beyond the 0-5 year period, yielding 119 total jobs in 20 years. A growth of 7% exceeds the expected population growth in the Chelan area but is appropriately more closely tied to growth in visitor, leisure and hospitality spending.
    - In the currently-available ESD report, https://washingtonesd.wordpress.com/2015/05/01/an-analysis-of-wenatchees-economy/, “Between the Marches of 2014 and 2015 leisure and hospitality (primarily hotels and restaurants) jumped from 5,000 to 5,700 jobs, an appreciable 700 job and 14.0 percent upturn…Estimates indicate that trade, transportation, warehousing and utilities gained 700 jobs between the Marches of 2014 (8,700 jobs) and 2015 (9,400 jobs), an 8.0 percent upturn.
    - According to the City of Chelan, the amount of hotel tax (Stadium Funds) realized an increase in dollars of 7.48% from 2013 to 2014.
    - Hotel tax dollars collected the first four-months of 2015 indicated a significant increase of 26.49% over the same 4-month period from 2014.
- The existing 16+24 acres can accommodate approximately 98 jobs at a density of 2.44 jobs per acre, requiring the use of the identified additional off-site acreage during the 20 year time frame.

NOTES RE: RURAL INDUSTRIAL (RI) PROJECTED ECONOMIC METRICS

Jobs Per Acre, Industrial Lands

While it is difficult to find comparable lands, there is still utility in citing two cities and one county, with their forecasted ratio of jobs per acre of industrial lands.

Mt. Vernon, Washington
Source: http://www.mountvernonwa.gov/DocumentCenter/View/14
Leonard, Boudinot & Skodje, Mt. Vernon, Washington "Historic Commercial & Industrial Allocations", Memorandum, February 22, 2005.

"In 2003, the Skagit County Council of Governments updated their Countywide Comprehensive Plan long-term countywide employment and land demand forecast…The 2003 forecast allocated 19,770 commercial and industrial jobs for urban areas and 1,370 to rural…Almost 2,360 of net developable commercial and industrial acres is required to meet the projected job growth between 2000 and 2025. Urban areas will need 1,940 net developable acres and rural areas need 415 acres…"

- ✓ For Mt. Vernon's 2000-2025 projections, the number of projected jobs per acre for rural industrial lands is 1,370 jobs divided by 415 acres = 3.3 jobs per acre.

Clark County, Washington
Source: http://www.clark.wa.gov/planning/documents/02-Issue_Paper_2_Pop-Job_Projections_PC01-16-2014.pdf
Clark County Comprehensive Plan 2016 Update, Planning for growth 2015 – 2035, Population and Job Projections – Issue Paper 2

"…The Department of GIS recently completed running its annual vacant lands model. The 2013 results indicate urban growth areas contain…3,587 net acres of industrial land with an employment capacity of 32,283, at 9 jobs per acre.

- ✓ For Clark County's 2015-2035 projections, the number of projected jobs per acre for urban (not rural) industrial land between 2015-2035 is 3,587 acres = 9 jobs per acre.

City of Hillsboro, Washington County, Oregon
Source: http://www.co.washington.or.us/lut/planningprojects/reserves/upload/12-8-08_rcc-mtgmaterials.pdf
WASHINGTON COUNTY URBAN & RURAL RESERVES COORDINATING COMMITTEE MONDAY, DECEMBER 8, 2008 – 1:30 P.M. BEAVERTON LIBRARY 12375 SW 5th Ave.

- ✓ The City of Hillsboro's 2008-2028 Long-Term Land Need Projections estimates an urban industrial land need of 2,261 gross acres, with 1,809 net acres = 14.9 jobs per acre.

For purpose of this study, the projected jobs per acre for industrial land is calculated at an average of these three examples (3.3, 9, and 14.9) = 27.2 jobs divided by 3 = 9 projected jobs per industrial acre. While it could be argued that these examples may not represent expected development near the Airport, the assumed 9 jobs

per acre is very close to the target projection used by the Port of Chelan County for industrial development in Chelan County of 10 jobs per acre of industrial land.

With 57 acres and 9 jobs per acre, there is a potential for 513 jobs at full build-out. Full build-out is assumed in 30 years with a linear build-out, or 16.7% build-out in 5 years (85 jobs) and 66.7% build-out in 20 years (342 jobs).

0-5 Year Build-out, Rural Industrial

- For purpose of this CERB study and to estimate Rural Industrial 5 Year Build-out, direct dollars were estimated at $30,000/year. These lower direct dollars reflect an expected mix of aviation-related jobs and other jobs. Indirect/induced dollars were estimated at $25,000/year to reflect an expected mix of aviation support jobs and other jobs.
- Inflation was not calculated into these projections.
- At 9 jobs per acre, at the end of the 5 year period, it is expected that 9.5 of the 57 acres will be built-out.

20 Year Build-out, Rural Industrial

- For purpose of this CERB study and to estimate Rural Industrial 20 Year Build-out, direct dollars were estimated at $20,000/year and indirect/induced dollars also at $20,000/year. These lower dollars reflect an expected mix of aviation-related jobs, aviation support and other jobs, and possibly fruit packinghouse jobs, which are lower pay and less than 12 months per year.
- Inflation was not calculated into these projections.
- At 9 jobs per acre, at the end of the 20 year period, it is expected that 38 of the 57 acres will be built-out.

Other Considerations for Development

SITE ASSESSMENT

The site is appropriate for the contemplated development [see **Appendix E – Airport Layout – Acreage**]. The area considered is within the City's UGA and is zoned Airport, Airport Commercial, and Rural Industrial [see **Appendix F – Zoning Map**]. This zoning allows for the contemplated development. The transportation system in the area appears to be adequate for the contemplated uses. There is a state highway (97A) connecting the Airport to the City of Chelan. This road extends to the north and intersects SR 97 in approximately one mile.

There are no critical areas identified in the vicinity. A cultural resource review has not been completed, however, the route from the City to the Airport is along a constructed bench far above the Columbia River, and the likelihood for cultural resources is negligible.

The site is adequate to support the anticipated development. Additional development could be supported if the UGA were expanded in the area.

While the current constraint to development is the lack of water for fire protection, as development occurs, other improvements may be required for the full build-out described. These improvements may include the following:

- Transportation improvements to SR 97A, including turn lanes. Other transportation improvements may be required depending on traffic generated.
- Sewer service. It is likely that sewer service will be required for full build-out, either through a force main to connect to the City's existing treatment system.
- Power system improvements may be required including upgrades to the existing system, or potentially a new substation.

LOCATION ANALYSIS – OTHER ADEQUATELY-SERVED VACANT INDUSTRIAL LAND, CHELAN COUNTY

Previous studies have been performed regarding vacant industrial land in Chelan County. Those studies indicate a general paucity of vacant industrial land in the County. Most of the vacant industrial land that has been previously identified is in the Wenatchee area, with some minor areas along the Wenatchee River Corridor.

While not in Chelan County, and not in proximity to the Chelan Airport, there is an ample supply of vacant land in the nearby East Wenatchee area in Douglas County, including lands near Pangborn Airport (50 miles distant) with a full range of urban services. Douglas County recently added 348 acres of industrial lands to the Pangborn Urban Service area which now totals 863 acres of lands available for industrial development that is served by a full range of urban services. In Grant County, both the Port of Quincy and Moses Lake have significant quantities of flat easily developable industrial lands with a full range of urban services ready for development. Industrial areas within Douglas and Grant Counties have significant advantages due to their proximity to major transportation corridors and population centers.

The primary vacant industrial land in Chelan County that is close to the Chelan airport is that associated with the City of Chelan [see **Appendix G – Chelan Area Industrial Vacancy**]. The bulk of this land is in the Apple Blossom Center development, just outside the center of the City. There is currently approximately 656 acres of vacant industrial land in this area that is fully served with roads and utilities. This land may be more attractive than lands near the Airport for general development activities due to the closeness of other services. Industrial development in Apple Blossom Center has been slow, and much of this area may ultimately be found to be more appropriately utilized for commercial development. Development at the Airport may more likely be associated with airport businesses, where there is currently pent-up demand for aviation and related development.

LOCAL ECONOMIC DIVERSIFICATION EFFORTS – PLANNING FOR THE FUTURE

The City can plan upgrades to leverage and concentrate significant economic development to the Airport and surrounding area.

WATER TO THE AIRPORT

It all starts with water – without water, additional building development of the Airport and surrounding area is not possible.

FIBER TO THE AIRPORT

An initial meeting took place with Chelan County PUD to discuss the possibility of providing fiber to the Airport. The Chelan County PUD is "open for further discussions" about this possibility.

If it is determined that a pipeline route is the most economical manner of getting water to the airport, the City will investigate installing conduit along the pipeline route to accommodate PUD fiber.

The presence of fiber would:

- ✓ Provide reliable, high-speed internet connection to the Airport, and provide redundancy to the current SkyFi system
- ✓ Significantly enhance the economic value and feasibility of establishing and/or expanding businesses on the Airport and/or in adjacent/nearby industrial-zoned properties
- ✓ Leverage the value of domestic water to the Airport by concentrating needed infrastructure
- ✓ Provide greater quality of life for area residents.

SEWER FORCE MAIN TO THE AIPRORT

Serving the Airport with sewer will also enhance more concentrated development. The City may investigate installing a sewer force main to the Airport and area adjacent to the pipeline route.

NEXT GEN TECHNOLOGY

According to the WSDOT Aviation Economic Impact Study, the "FAA and the state are currently working to help prepare airports for the acquisition and implementation of NextGen technology, which will increase capacity and safety, as well as reduce emissions and noise" [p. v]. The technology will support SeaTac, regional airports like Pangborn, and may even support small Community Service airports like the Chelan Municipal Airport, giving everyone a step up to the next level.

"The primary purpose of the planning underway is to study the performance and interaction of an entire aviation system to understand the interrelationship of the member airports: interaction of airports with the aviation user requirements, economy, population, and surface transportation of a specific geographic area…The Aviation System Plan Update timeline is a kickoff in December 2014 to completion December 2016." While implementation of the technology is further into the future, the timeline nevertheless closely aligns with Chelan Airport upgrade proposal timelines.

"NextGen represents an evolution from a ground-based system of air traffic control to a satellite-based system of air traffic management. NextGen will:

- ✓ Improve approaches & low-visibility operations
- ✓ Enable more arrivals and departures
- ✓ Safely allow less separation between aircraft
- ✓ Allow more direct routes
- ✓ Reduce fuel consumption
- ✓ Reduce carbon emissions
- ✓ Reduce delays
- ✓ Reduce noise"

Source: WSDOT Aviation Division: Aviation System Plan Update, Rob Hodgman Senior Aviation Planner, http://www.wsdot.wa.gov/NR/rdonlyres/3F1440C3-3BF2-456F-AEA7-7102C719CF8D/0/2014_Workshopslides_AviationSystemPlan_NextGen.pdf

The Port and the City will be involved in any discussion and decision-making regarding potential implementation of this technology at the Airport.

LOOKING AHEAD, PLANNING FOR THE FUTURE – CONCLUSIONS

City-funded improvements, the current CIP to upgrade infrastructure, domestic water, possibly fiber, possibly force sewer main, and potential addition of NextGen Technology, could each be completed or a work in progress within the next 3-8 years, and could position the Airport as a first class, small rural community airport. Planning, coordinating and leveraging these opportunities will ensure the most success.

POSSIBLE FUNDING MECHANISMS

There are a number of avenues to finance these improvements including utilizing a utility local improvement district (ULID), bonds, grants or loans. Descriptions of some of the financing options are in the following sections.

Grants and Loans

There are a number of grant and loan programs that should be considered for funding improvements. Those programs include the following:

- ✓ U.S. Department of Commerce: Public Works Trust Fund; Community Development Block Grant (CBDG); Community Economic Revitalization Board (CERB).
- ✓ U.S. Department of Agriculture Rural Development: Rural Utilities Services, Water, and Waste Disposal
- ✓ Washington State Department of Health: Drinking Water State Revolving Fund.

Local Improvement Districts and Utility Local Improvement Districts

An LID or ULID is a mechanism for funding infrastructure that assesses benefited properties based on the special benefit received by the construction of specific facilities (RCW 35.43.042). Most often used for local facilities, some LIDs also recover related general facilities costs. Substantial legal and procedural requirements can make this a relatively expensive and time consuming process.

General Facilities Charges

A general facilities charge, or connection charge as provided by Revised Code of Washington (RCW) 57.08.005, refers to a one-time charge imposed on new customers as a condition of connection to the utility system. The purpose of the general facilities charge is two-fold: 1) to promote equity between new and existing customers; and 2) to provide a source of revenue to fund capital projects. Equity is served by providing an approach for new customers to share in the capital costs incurred to support their addition to the system. General facilities charge revenues provide a source of cash flow to support utility capital needs; revenue can only be used to fund utility capital projects or to pay debt service incurred to finance those projects.

In the absence of a general facilities charge, growth-related capital costs would be borne in large part by existing customers. In addition, the net investment in the utility already collected from existing customers, whether through rates, charges and/or assessments, would be diluted by the addition of new customers, effectively subsidizing new customers with prior customers' payments. To establish equity, a general facilities charge should recover a proportionate share of the existing and future infrastructure costs from a new customer. From a financial perspective, a new customer should become financially equivalent to an existing customer by paying the general facilities charge.

Sales and Use Tax for Public Facilities in Rural Counties

RCW 82.14.370 allows Chelan County a rebate of up to 0.09 percent of the local sales and use tax to be used by the County to "finance public facilities serving economic development purposes in rural counties and finance personnel in economic development offices". Bringing water to the Airport addresses all of the stated goals of the underlying law:

(1) Promote the ongoing operation of business in rural distressed areas;

(2) Promote the expansion of existing businesses in rural distressed areas;

(3) Attract new businesses to rural distressed areas;

(4) Assist in the development of new businesses from within rural distressed areas;

(5) Provide family wage jobs to the citizens of rural distressed areas; and

(6) Promote the development of communities of excellence in rural distressed areas.

Public Debt

Revenue bonds are commonly used to fund utility capital improvements. The debt is secured by the revenues of the issuing utility and the debt obligation does not extend to the utility's other revenue sources. With this limited commitment, revenue bonds typically require security conditions related to the maintenance of dedicated reserves (a bond reserve) and financial performance (added bond debt service coverage). The utility agrees to satisfy these requirements by ordinance as a condition of bond sale.

Revenue bonds can be issued in Washington State without a public vote. There is no bonding limit, except perhaps the practical limit of the Airport's ability to generate sufficient revenue to repay the debt and provide coverage. In some cases, poor credit might make issuing bonds problematic or result in high interest rates.

Recommended Funding Mechanism

Grant funding is more difficult to acquire at this time than it has been in the past. Because of the lack of grant opportunities, it is important to evaluate the required stream of revenue that would be required to pay back loans, or to provide interim financing until GFC charges are collected. Assuming a 20 year payback period, a 5% interest rate, and a $4.0M project, the revenue requirements for repayment would be approximately $321,000 per year.

It is recommended that the City exhaust all avenues of funding the project with the sales and use tax rebate, available grants, or grant/loan combinations prior to considering other funding mechanisms.

SWOT ANALYSIS

This SWOT Analysis serves as a summary of strengths, weaknesses, opportunities, and threats regarding this water project to the Airport.

STRENGTHS (internal)

- ✓ Airport Infrastructure
  - Runway length 3,503 by 60 ft. (Twisp airport length: 2,701 ft.; Lopez Island airport length: 2,904 ft., Friday Harbor airport length 3402 ft.; Okanogan airport length: 2,533 ft.)
  - 46 hangars, 32 tie-downs, helipads, 6 ultralight pads.
  - Fuel capacity: 8,000 gal 100 LL (low lead); 5,000 gal Jet A
  - Accommodates single and twin prop, biplane, 8 to 12 passenger turbo props, small turbo jets; helicopters, ultra-lights
- ✓ City-funded Airport improvements approved and underway
- ✓ FAA/WSDOT CIP approved and underway to upgrade infrastructure, 2014-2021
- ✓ Current operations and airport activities
  - Aircraft rescue and firefighting capability – yearly U.S. Forest Service agreement hosts helibase and command center for fire fighting
  - On-site Chelan Fire and Rescue facility
  - Chartered flights estimated average 6 per week during summer months

- Business and corporate travel including but not limited to fruit industry business, large general contractors
- Lake Chelan Community Hospital uses airport for Intensive Care Unit (ICU) transports to Seattle and Spokane hospitals; average 35 per year
- Pent-up demand for building permits for additional hangars, remodels, new and/or expanding businesses
- Tourist/transient traffic accounts for estimated 60 to 70% summer activity
- Personal aviation transportation for both locals and visitors
- Businesses currently providing
  - Full service aircraft repair facility serving light single and twin engine private aviation and commercial aviation aircraft customers
  - Repairs, rebuilds, modifications and refurbishing of aircraft structures and components, structural repairs, and fabrication
  - Pilot training and certification, aircraft maintenance and restoration
  - Certified coach course and tandem sky diving courses
  - Agricultural crop dusting and drop-line aerial applications
  - Aerial sightseeing by plane, helicopter
  - Skydiving
  - Testing grounds for ultra-lights

✓ Geographics
- Convenient access to downtown Chelan and Lake Chelan Valley
- Close access to Lake Chelan Community Hospital for quick ICU transports
- Located on Highway 97A, joining the SR 97 corridor one mile from the Airport
- Weather – 300 days of sun
- Central location in the state for convenient and frequent small aircraft stop-over refueling
- Assessment has determined Airport site is appropriate for contemplated development
- Location analysis notes the general paucity of vacant industrial land in County

✓ Socioeconomics
- Strengthened over-all economy within Valley, County, and State encouraging growth and expansion within the Valley
- Agriculture and tourism are 2 of the top 5 industries in Chelan County
- Non-durable goods wholesale: fresh fruit packing houses economic "king" in Chelan County
  - Upward trend: biggest gainer of jobs between 2004-2012
  - Chelan Fruit with base in Chelan – biggest cooperative in the world
- Demographics – Lake Chelan Valley continuing to grow as both a tourist/recreational and retirement area

✓ Events – Collaboration and Partnerships providing increased Airport visibility, activity
- 15th Annual Lake Chelan Wings and Wheels, June 2015
  - Partners with Cruzin Chelan, a Chelan Chamber of Commerce event
- 3rd Annual Sky Dive Festival, October (2014: 224 participants; anticipate 350 in 2015)
  - Partners with Mahogany and Merlot Festival, and Lake Chelan winery, brewery

WEAKNESSES (internal)

✓ Airport Infrastructure
- Water
  - Lack of measureable fire flow does not meet International Fire Code standards
  - No building permits may be issued until fire suppression issue resolved
  - Current irrigation lines do not provide measureable fire flow
  - Irrigation lines turned off during winter months – no fire protection at all

        - Building sprinkler and early fire detection systems cannot be installed with current irrigation system
        - Potable water from wells contains silt, sand, rock; bottled water brought to airport
    - Facilities
        - Lack of ground transportation, courtesy car for visitors
        - Lack of on-site café/restaurant
        - Lack of adequate on-site visitor-centered amenities
- ✓ Economic Development
    - Pent-up demand for additional hangars, remodels, and new businesses languish due to inability to obtain building permits
    - Insufficient marketing/promotion of Airport value; low profile image in community
- ✓ Lack of documented metrics, including fly-in/take-off (cycles) data, economic development inquiries, demographic data (visitors versus local)
- ✓ Potential for incompatible uses – Serving the area with water may spur residential development incompatible with airport operations.

OPPORTUNITIES (External)

- ✓ Possible funding mechanisms exist to finance improvements
- ✓ Water to the Airport – Key to economic development:
    - Provide fire flow and fire suppression to Airport properties
    - Allow building permits to be issued for Airport economic development
        - New, larger hangars, larger aircraft – Sky Dive Chelan
        - New, larger hangar, larger aircraft – North Wind Helicopters
        - New, larger hangar to expand business for a helicopter service center – North Wind Helicopters
        - Café/restaurant – Sky Dive Chelan
        - Fire District #7 upgrades to current building to house volunteer firefighters
        - New additional hangars for pilot aircraft to satisfy demand (estimate 10-20)
    - Adequate water for fire suppression will lower insurance rates for hangar and business owners, rating them less risk adverse from a Class 9 to a Class 6
    - Water flow for fire suppression will allow hangar owners to install sprinkler systems in their hangar, for first-alert fire protection and/or mitigating fire damage
- ✓ Other Potential Technologies and Utilities
    - Fiber connection to Airport – Chelan County PUD is open to further discussions and consideration about this possibility
        - PUD fiber would enhance airport services, and also nearby property zoned light industrial, encourage new and/or expanding businesses, and quality of life for residential homeowners
    - Sewer Force Main – an opportunity may exist to lay sewer line while ground has been opened along the route
    - NextGen Airport technology, an evolution from a ground-based system of air traffic control to a satellite-based system of air traffic management will:
        - Improve approaches and low-visibility operations
        - Enable more arrivals and departures
        - Safely allow less separation between aircraft
        - Allow more direct routes
        - Reduce fuel consumption
        - Reduce carbon emissions
        - Reduce delays
        - Reduce noise

- ✓ Industry and Business Opportunities nearby Airport
  - The affordable land/lease costs at the Airport attract certain types of development.
  - Expanded and/or new businesses bring added income, tax revenues for the City and County
  - Agriculture
    - Flat and affordable land to accommodate potential large distribution and shipping center, and packing house production facilities
    - Domestic water satisfies food safety regulations for packing house operations
  - Wine Industry
    - Affordable land for shared processing facilities
    - Opportunity to develop a winery cluster – a now sought-after trend
  - Affordable Housing – Apple Acres may provide flat and reasonably priced land for much needed affordable housing in the Lake Chelan Valley and outside the UGA near the Airport
  - Expanded businesses who may vacate their existing properties for move to Airport open up valuable land within Chelan city limits for more enhanced development opportunities – a double win for economic development
- ✓ Improved quality of life for area residents
  - Domestic water supply for area residents
  - Upgraded fire protection of life and property
  - Onsite fire fighters at Airport for immediate fire response
  - Potential of fiber and sewer accessible for expansion in surrounding area
- ✓ Socioeconomic Status of Chelan County
  - Recovered and strengthened economy overall
  - The Valley's lake, wineries, golf courses, and nearby Stehekin continue to realize increased tourism and related revenues
  - Airport gaining visibility through event partnerships and its own activities

THREATS (External)

- ✓ Can the Chelan Airport be self-sufficient with projected economic development
  - City must focus on Airport sustainability
  - Airport must continue to differentiate itself and not compete with Pangborn Memorial Airport
- ✓ Location from nearby airports
  - Pangborn Memorial Airport is 50 miles away; Twisp Municipal Airport is 48 miles from Chelan.
- ✓ Current lack of sufficient year-round industries and economic drivers in the Lake Chelan Valley, in part due to:
  - Nationwide lack of industrial development (out-sourcing)
  - Lack of sufficient transportation corridors to attract development
- ✓ Higher insurance rates for hangar owners due to inadequate fire suppression: current hangar owners are in a Class 9 for risk management; the rest of Chelan is in a Class 6
- ✓ Future lost opportunities: prohibition of building permits result in further lost opportunities (such as Northwest MedStar decision to locate in Brewster, Washington)
- ✓ High costs of aircraft ownership may impact overall growth in the personal aviation arena
- ✓ Perception of stagnation in general aviation industry, business aviation not fully recovered from great recession
- ✓ Potential loss of current tenants if water is not made available and resulting reduction in revenue
- ✓ Very narrow market for airport tenants
- ✓ Significant volume of undeveloped industrial lands near-by with low demand

CITY OF CHELAN MARKET STRATEGY – GOALS, OBJECTIVES, ACTIONS, TIMELINE

GOAL #1: IMPROVE AIRPORT INFRASTRUCTURE

- ✓ **Objective #1:** Provide domestic water to the Chelan Municipal Airport
  - Action 1: Identify funding mechanisms to install waterline to the airport no later than December 2016. Possible funding mechanisms are described herein. Identify sources of repayment for any loans taken out to fund this effort
  - Action 2: Complete environmental analysis, public participation, and construction of waterline to the airport no later than 2018
- ✓ **Objective #2:** Follow through and complete both City-funded and CIP-funded Airport improvements, 2015 through 2020
- ✓ **Objective #3:** Provide additional Airport infrastructure needs
  - Action 3: Upgrade visitor amenities by end of 2016
  - Action 4: Provide and/or partner with Lake Chelan Valley businesses to establish a courtesy car service at the airport by Summer 2015
- ✓ **Objective #4:** Continue to dialogue with Chelan County PUD to provide fiber to the Airport

GOAL #2: RAISE AWARENESS OF AIRPORT AND LINK TO CHELAN VALLEY ECONOMIC DEVELOPMENT

- ✓ **Objective #5:** Increase airport visibility in the media, on the internet, and in the community
  - Action 5: Obtain at least two feature stories in Chelan Valley Mirror and/or GoLakeChelan.com by Spring 2016
  - Action 6: Increase hit rate on City Airport website page by 15% by Spring 2016
  - Action 7: On a yearly basis, invite and arrange Lake Chelan Valley high school student tours of the Airport to increase aviation awareness
- ✓ **Objective #6**: Increase awareness of the airport's economic contribution and potential to the economy
  - Action 8: Partner with City/Airport, Lake Chelan Chamber of Commerce and local businesses to form a small Task Force by Spring 2016 with a focus to brand and promote airport awareness
  - Action 9: Yearly, Task Force to meet with at least two community groups to provide airport updates and contributions to economic development (Rotary, Lions, Community Round Table, etc.)
  - Action 10: Tenant and User Retention – Yearly, meet with each current airport tenant and user to review customer satisfaction and current needs
  - Action 11: Yearly, update the community on tax revenues generated by airport operations, through media, internet, and community presentations
  - Action 12: As the City/Airport is a Chamber of Commerce member, host a Chamber "Business After Hours" (BAH) event at the airport Spring 2016.
  - Action 13 : Promote and market Airport fly-in events

GOAL #3: TRACK AND DOCUMENT AIRPORT METRICS

- ✓ **Objective 7:** Install recently developed software package capable of accurately tracking and documenting take-offs and landings by Fall 2015.
- ✓ **Objective 8:** Ongoing: Track metrics that document and/or impact airport economic development and contributions to the community

- Action 14: Services – Track and document inquiries and requests for Airport services (hangar, tie-down spaces, helipads, potential tenant interest, etc.
- Action 15: Demographics – Document socio-economic demographics of individuals/businesses making requests
- Action 16: Hangar Occupancy – Continue to track and document hangar, tie-down, helipad space leases
- Action 17: Revenue Tracking, Forecasting
  - Continue to track, document, and budget forecast quarterly and yearly tax revenues and their sources
  - Continue to track, document, budget forecast revenue from hangar/tie-down leases, Forest Service/DNR usage, etc.; prepare quarterly/yearly reports
- Action 18: Economic Metrics – Track and update yearly Projected Economic Metrics

SUMMARY OF FINDINGS

In order to enhance the Airport's financial stability, as well as create economic development opportunities, it must be priority number one that domestic water is brought to the Airport, which will resolve its lack of fire flow for fire suppression and allow building permits to resume on Airport property, as well as expand economic development opportunities to the surrounding Rural Industrial lands.

Thirty-one individuals were interviewed for this project; an overwhelming number agreed that water to the airport would allow long-denied building permits to be issued once again and satisfy both pent-up demand and future development. Further, those interviewed recognized the value of domestic water in the Apple Acres area, particularly providing new opportunities for economic development in Rural Industrial zoned properties.

Using the WSDOT Economic Calculator and its methodology, the Projected Economic Metrics provides a robust picture of potential opportunities as a result of extending water to the Airport. Over a 0 to 5 year period following water at the Airport, and including construction of the water line to the Airport (not including the Visitor Spending Impacts), 47 direct jobs, and 18 indirect jobs are estimated, along with an estimated total impact of almost $11 million.

It should be noted that the median hourly wage of Aircraft Mechanics and Service Technicians in Washington State is $32.59. While not all of the potential airport jobs will be these family wage job earners, nevertheless, the industry bolsters economic activity around it, creating many support and related jobs. The 2015 living/family wage for Chelan County varies by number of working adults and children, and is shown by the hourly rate that an individual must earn to support their family. For two adults (one working) and two children, the living wage is $22.07/hour. http://livingwage.mit.edu/counties/53007. It is estimated that 23 of the 29 new airport business direct jobs, and 10 of the 18 one-time construction jobs will have wages between $22.07/hour and $32.59/hour.

Using the same methodology and applying it to additional potential Airport acreage and additional Rural Industrial zoned acreage, the 20-year projected economic outlook is significant: an estimated 465 direct jobs and 117 indirect jobs for a total of 582 jobs, and an impact of over $40 million.

With domestic water supplied to the airport, the Airport and its surrounding area hold many attractions for the City of Chelan:

- Flat land

- Affordable prices
- Property for new businesses
- Expansion for existing businesses
- An Airport system that facilitates and enables services:
    - Emergency air medical transportation
    - Protects the environment
    - Facilitates law enforcement
    - Aids agriculture
    - Firefighting and base of operations – protects property values
    - Fire rehabilitation efforts
    - Search and rescue operations
    - Access to communities when ground transportation is disrupted
    - Evacuation efforts
    - Facilitates commerce
    - Supports recreation
    - Welcomes tourists
    - Connects the community to the rest of the world
- Infrastructure to further support and concentrate significant economic development

City-funded improvements, the current CIP, and potential to upgrade infrastructure, domestic water, and possibly fiber, forced sewer main, and possible addition of NextGen Technology, could each be completed or a work in progress within the next 3 to 8 years. Planning, coordinating and leveraging opportunities to concentrate infrastructure at and near the Airport will ensure the most success.

With access to potential grant funds, and/or grant/loan funds, providing domestic water to the Airport can be both viable and economically feasible. The economy as a whole is in an upswing, there is pent-up demand for growth at the Chelan Airport, and the Lake Chelan Valley is continuing to grow as a tourist destination. Planning and building infrastructure now will enable economic expansion and new businesses to the Airport and its neighbors, and benefit the Lake Chelan Valley as a whole.

QUOTES

"The Airport is a diamond in the rough" – Jeff Slater, Airport Operations Manager, City of Chelan

"There's zero growth without water…it's number one" – Will Mutter, Lake Aero (Airport business)

"Water means expansion" – Todd Higley, Sky Dive Chelan (Airport business)

"There should be a discussion to put water on the rest of the flats; don't undersize it" – Marion Peebles, Chair, Chelan Fruit Board of Directors; and Member, Chelan Fresh Board of Directors; Orchardist.

"Seldom does a day go by when I don't get a phone call asking about the availability of hangar space" – Jeff Slater, Airport Operations Manager, City of Chelan

"I've gotten at least 20 serious inquiries for hangars and/or businesses at the airport, but no building permits are allowed due to lack of water for fire suppression" – Will Mutter, Lake Aero

"Nice little airport…the average pilot loves this airport" – Kameron Blevins, North Wing, Inc.

"I believe the airport will become a key economic driver, and over time there will be demand for more airport capacity and improved access" – Bill Ayer, Pilot wanting to build Airport hangar

SCOPE OF WORK REFERENCE SHEET

SOW Objective: Work with the Port, the City Chamber of Commerce, the Washington State Employment Security Department, and other local agencies to meet the CERB Planning Study minimum requirements.

This project responds to the following questions, and references pages and/or sections of the report addressing each question.

1. Perform a product market analysis linked to economic development.
   - ✓ Entire document
2. Develop a market strategy containing action elements linked to timelines.
   - ✓ City of Chelan Market Strategy – Goals, Objectives, Actions, Timeline
3. Work with local stakeholders to identify targeted industries.
   - ✓ Interview List
4. Identify the group responsible for implementing the marketing strategy. Provide a description of the group's capacity to complete the responsibility.
   - ✓ City of Chelan, Co-owner, Chelan Airport
5. Assess the site's appropriateness for development with support from RH2.
   - ✓ Site Assessment
6. Provide a location analysis of other adequately served vacant industrial land in Chelan County. Mapping will be provided by RH2.
   - ✓ Location Analysis
7. Support RH2 in assessing available methods to secure funding for the public facilities improvements within a given time frame.
   - ✓ Possible Funding Mechanisms
8. Provide an analysis of how the project will assist local economic diversification efforts.
   - ✓ Projected Economic Metrics; entire document
9. Indicate the specific issues that will be addressed.
   - ✓ City of Chelan Market Strategy – Goals, Objectives, Actions, Timeline
   - ✓ Other Considerations for Development
   - ✓ Possible Funding Mechanisms
10. List one or more economic outcomes that the City expects from the proposed CERB project.
    - ✓ Projected Economic Metrics
    - ✓ SWOT Analysis
    - ✓ City of Chelan Market Strategy – Goals, Objectives, Actions, Timeline
11. Describe the specific, quantifiable measures of the outcome(s) that will indicate success. Describe in measurable terms what the City expects to be able to show as progress toward the outcome for each year before the whole outcome has been achieved.
    - ✓ City of Chelan Market Strategy – Goals, Objectives, Actions, Timeline
    - ✓ Projected Economic Metrics
    - ✓ Other Considerations for Development
    - ✓ Possible Funding Mechanisms

12. Describe what data the City will collect to determine whether the outcome is being achieved.
    - ✓ City of Chelan Market Strategy – Goals, Objectives, Actions, Timeline
    - ✓ Projected Economic Metrics
    - ✓ Other Considerations for Development
    - ✓ Possible Funding Mechanisms

13. Describe the data collection procedure including when data will be collected, from whom and by whom.
    - ✓ City of Chelan Market Strategy – Goals, Objectives, Actions, Timeline

14. Provide the estimated median hourly wage of the jobs created when development occurs.
    - ✓ Economic Update and Socio-Demographics – Chelan County

15. Assuming the project is determined to be feasible, provide the following information within the final report:
        - o Total estimated jobs created in FTEs.
        - o Describe benefits offered to employees.
        - o Describe the median hourly wage of the new jobs in relation to the median hourly County wage.
        - o The County 3-year unemployment rate in relation to the state rate.
        - o County population change in the last 5 years.
        - o The estimated jobs created represent what percentage of the County's labor force.
        - o The estimated jobs created represent what percentage of the County's unemployed workers.
        - o Estimated new annual state and local revenue generated by the private business
    - ✓ Economic Update and Socio-Demographics – Chelan County

Economic Feasibility Analysis: Extend Domestic Water to Chelan Municipal Airport

Appendices

APPENDIX A – ECONOMIC UPDATE AND SOCIO-DEMOGRAPHICS – CHELAN COUNTY

APPENDIX B – CHELAN CITY CODE

APPENDIX C – LETTER OF SUPPORT FROM PORT OF CHELAN COUNTY

APPENDIX D – AIRPORT PROFILE AND ECONOMIC AVIATION IMPACTS – 2010 DATA

APPENDIX E – AIRPORT LAYOUT – ACREAGE

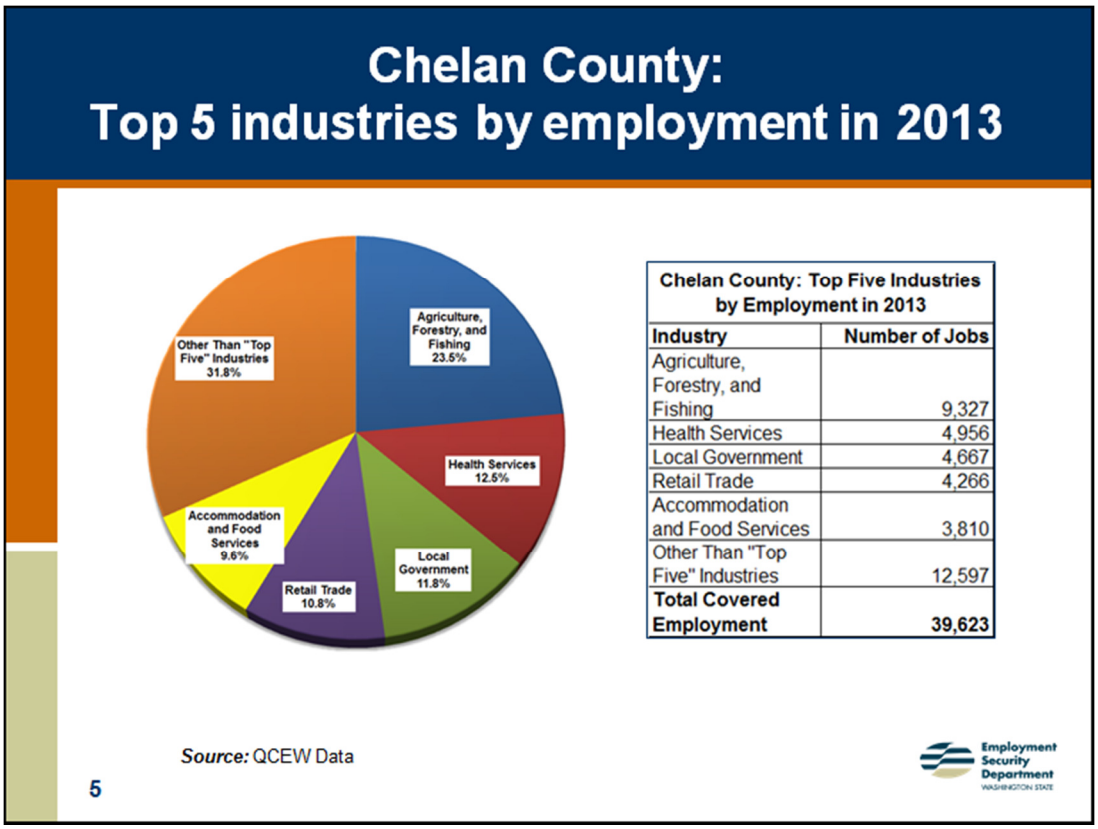
APPENDIX F – ZONING MAP

APPENDIX G – CHELAN AREA INDUSTRIAL VACANCY

APPENDIX H – WSDOT AVIATION CALCULATOR RESULTS 2015

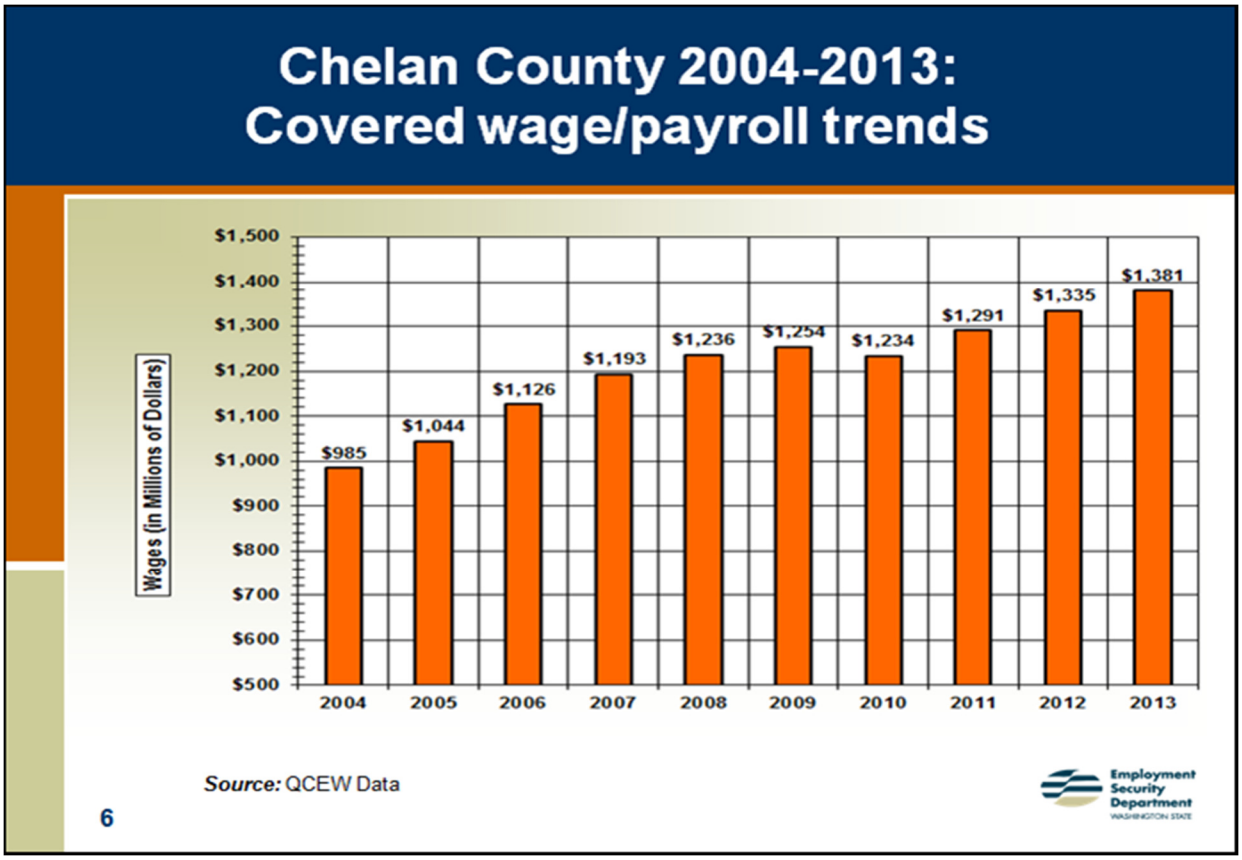
APPENDIX A – ECONOMIC UPDATE AND SOCIO-DEMOGRAPHICS – CHELAN COUNTY

(Source: The Wenatchee MSA Economy – 2014 in Review (selected slides)
For: The Chelan and Douglas Counties Advisory Committee, North Central Workforce Development Council, Donald W. Meseck, Regional Labor Economist, March 4, 2015)

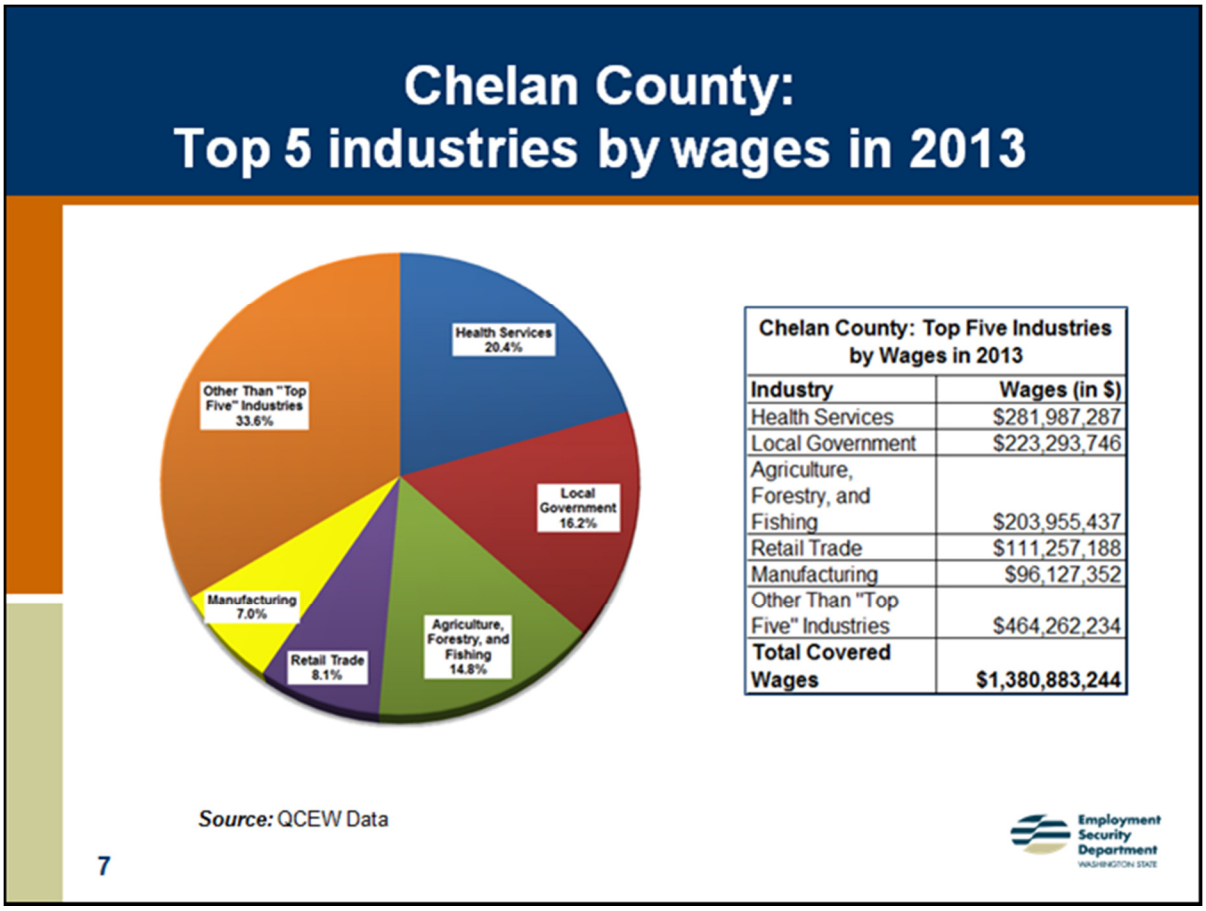


Chelan County: Top Five Industries by Employment in 2013	
Industry	**Number of Jobs**
Agriculture, Forestry, and Fishing	9,327
Health Services	4,956
Local Government	4,667
Retail Trade	4,266
Accommodation and Food Services	3,810
Other Than "Top Five" Industries	12,597
Total Covered Employment	**39,623**

SLIDE 5: This slide ranks Chelan County's Top Five industries in terms of the numbers of jobs in the 22 major industries/sectors, mentioned earlier. In 2013, QCEW data showed that Chelan County's labor market provided 39,623 jobs. More than two-thirds of all local jobs were in five, two-digit NAICS industries or sectors (i.e., agriculture, health services, local government, retail trade, and accommodation and food services). Agriculture was clearly the top job provider in Chelan County (9,327 jobs) in 2013, with 23.5 percent of total covered employment. Private health services was a distant second, tallying nearly 5,000 jobs and accounting for 12.5 percent of all jobs countywide.



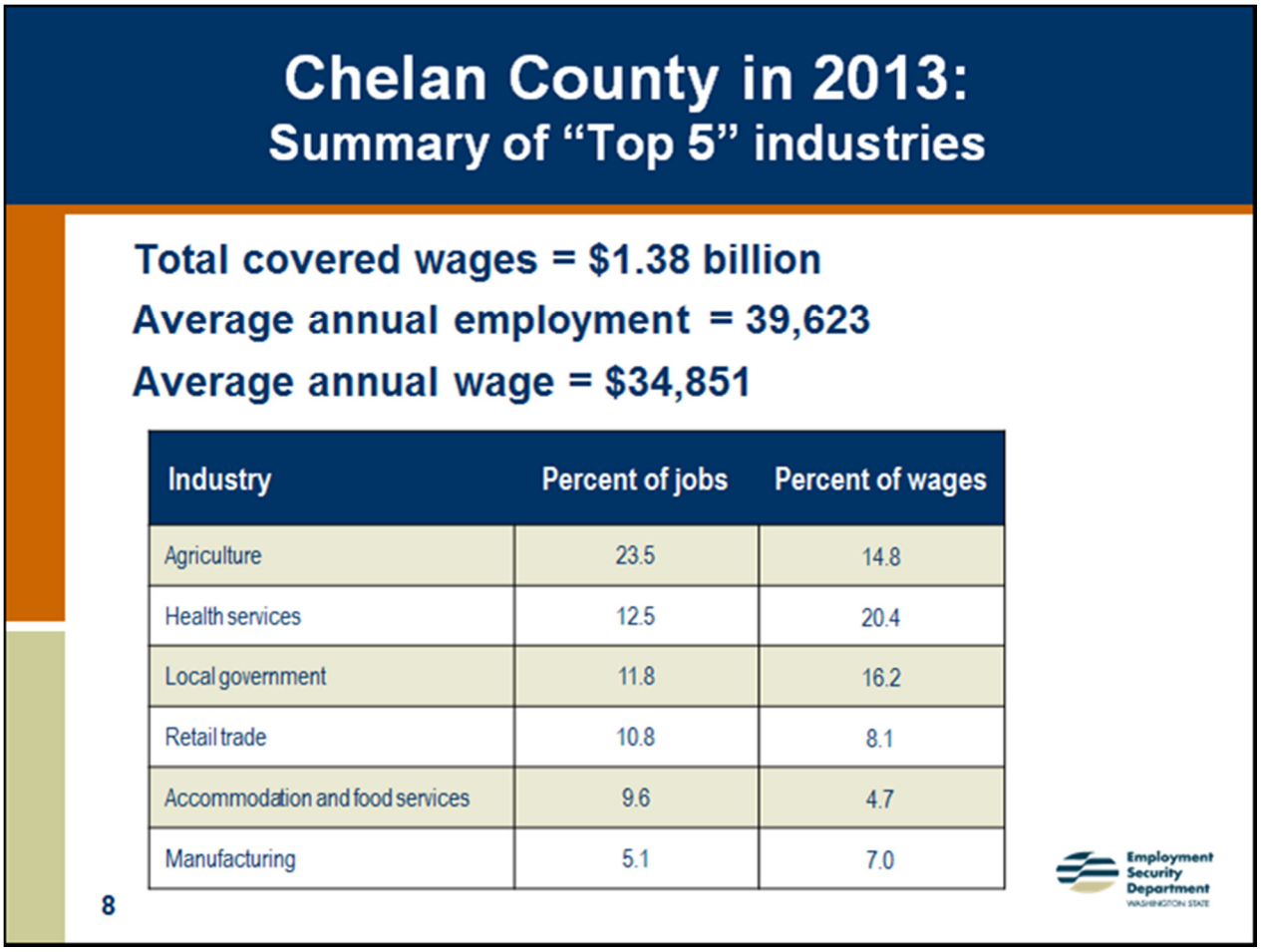
SLIDE 6: Covered wages, or payroll data (not adjusted for inflation), in Chelan County for the past 10 years is graphed here. Although the national recession occurred from December 2007 through June 2009 (according to the National Bureau of Economic Research or NBER), total wages decreased locally only in 2010. Job losses were especially severe in Chelan County's construction and local government sectors, which likely caused the lion's share of this wage loss. The fact that the wage/payroll downturn did not correlate exactly with job downturns (in 2008, 2009, *and* 2010) could suggest that a greater share of job losses during the recession occurred in part-time jobs and in lower-paying industries.



Chelan County: Top Five Industries by Wages in 2013	
Industry	**Wages (in $)**
Health Services	$281,987,287
Local Government	$223,293,746
Agriculture, Forestry, and Fishing	$203,955,437
Retail Trade	$111,257,188
Manufacturing	$96,127,352
Other Than "Top Five" Industries	$464,262,234
Total Covered Wages	**$1,380,883,244**

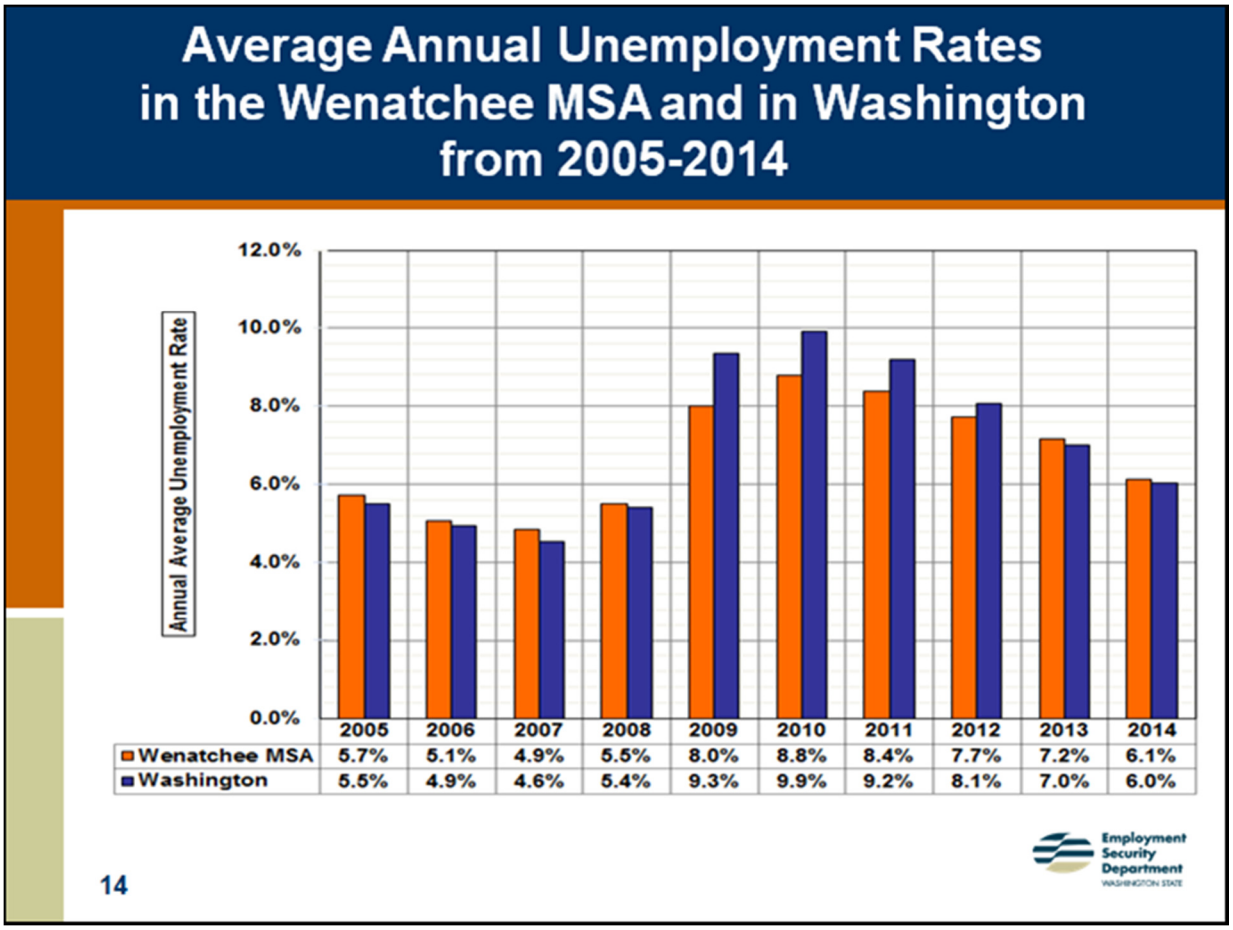
SLIDE 7: This slide ranks Chelan County's Top Five industries in terms of the wages/payrolls in the 22 major industries/sectors. In 2013, QCEW data showed that Chelan County's workers received $1.38 billion in wages. Approximately two-thirds of all wage income occurred in five, two-digit NAICS industries or sectors (i.e., health services, local government, agriculture, retail trade, and manufacturing).

Although agriculture was clearly the top job provider in Chelan County in 2013, with 23.5 percent of total covered employment; private health services provided a $282.0 million payroll, ranking this industry first out of 22 industries/categories in wages, and accounting for 20.4 percent of all earned wage income countywide. Roughly one out of every five dollars earned in Chelan County, is earned in health services (i.e., at a doctor/dentist's office, in a hospital, nursing home, vocational rehab facility, etc.).



SLIDE 8: This slide summarizes the differences between the industries that provided the most jobs in the Chelan County economy in 2013, and the industries that pumped the most money (via wages/payrolls) into that economy. Specifically:

- Agriculture provided 23.5 percent of all jobs countywide, but supplied only 14.8 percent of total wage income. Why? Many jobs in agriculture are seasonal.
- Conversely, health services tallied 12.5 percent of total covered employment, but accounted for 20.4percent of total wage income – indicating it is a relatively "good paying" industry.
- The local retail trade sector accounted for 10.8 percent of all jobs in the County, but 08.1 percent of total wage income.
- Accommodation and food services (primarily hotels and restaurants) accounted for 9.6 percent of all jobs in the County, but 4.7 percent of total wage income.
- Manufacturing supplied only 5.1 percent of all jobs in Chelan County but 7.0 percent of total payroll.

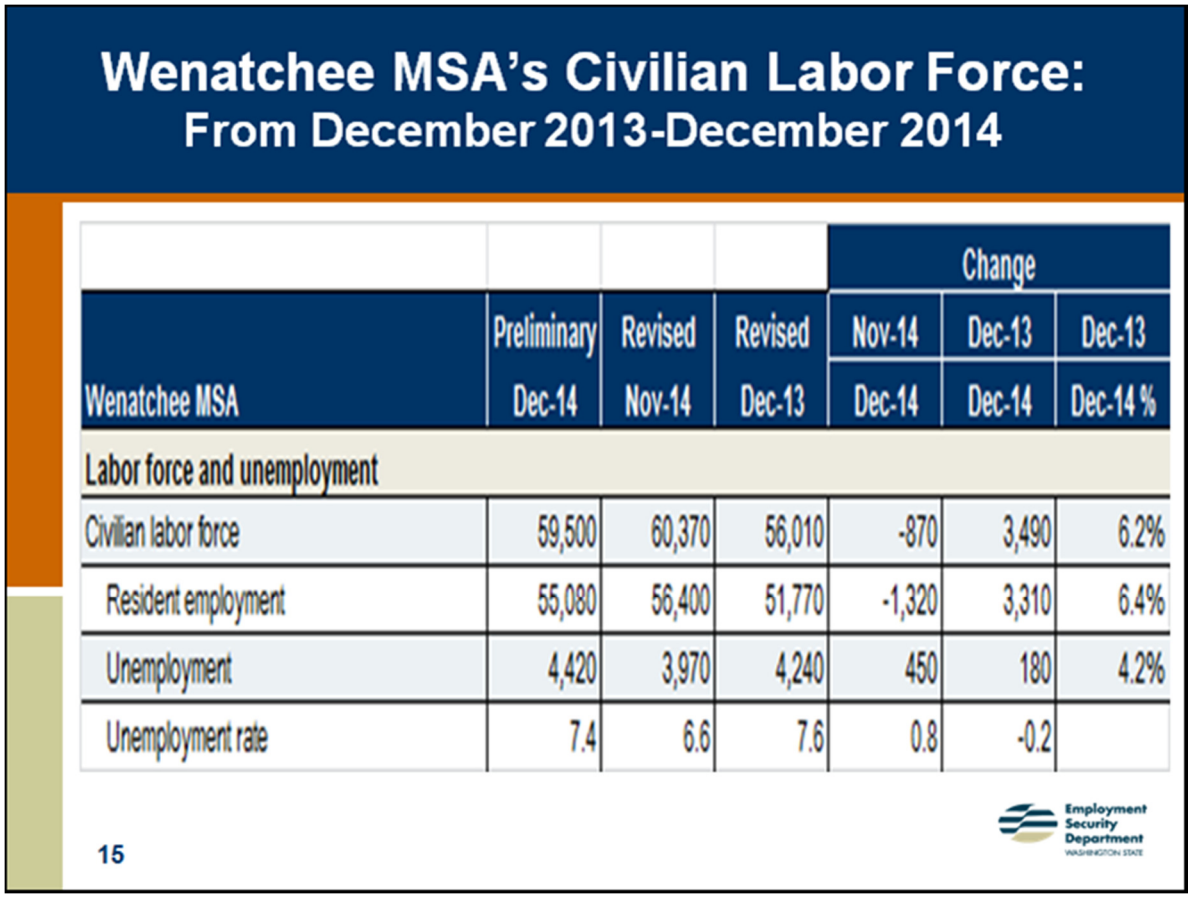


SLIDE 14: The average annual unemployment rate for the State and for the Wenatchee MSA peaked in 2010 and declined in 2011, 2012, 2013, and 2014.

There are still some concerns when comparing average annual unemployment rate trends for the MSA and for the State. Note the difference in the magnitude of the rates, in both areas, from 2005-2008, and from 2009-2013:

- From 2005-2008, in the Wenatchee MSA and across Washington, unemployment rates were in the 4-5 percent range.
- From 2009-2013, not seasonally adjusted rates have lingered in the 7-8 percent range. Fortunately, the trend is moving in the right direction.

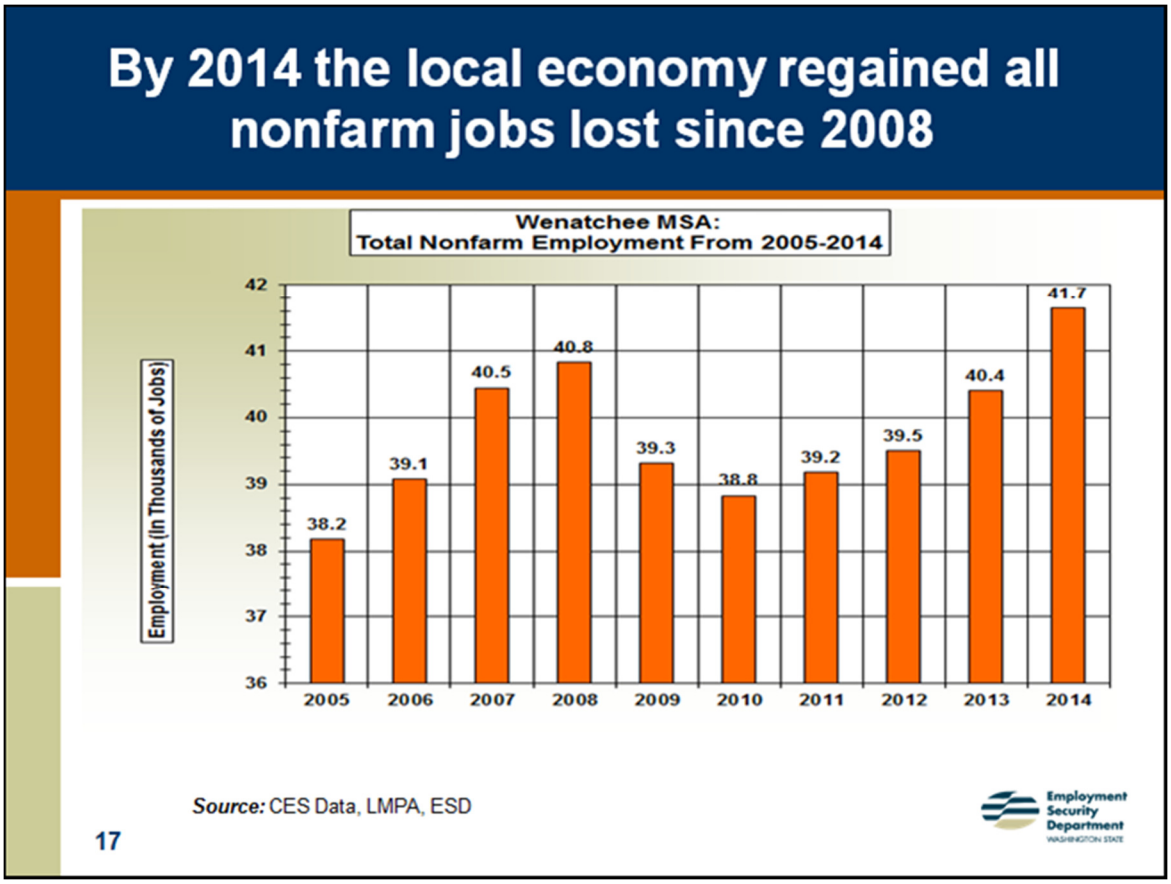
The average annual rate for 2014 of 6.1 percent was one and one-tenth points less than the 7.2 percent reading for calendar year 2013. This 6.1-percent unemployment rate falls between the low pre-recession unemployment range of 4-5 percent versus the high recession and post-recession range of 7-8 percent. Let's hope the Wenatchee MSA's rate continues to dwindle during 2015.



Wenatchee MSA's Civilian Labor Force: From December 2013-December 2014

Wenatchee MSA	Preliminary Dec-14	Revised Nov-14	Revised Dec-13	Change Nov-14 Dec-14	Change Dec-13 Dec-14	Change Dec-13 Dec-14 %
Labor force and unemployment						
Civilian labor force	59,500	60,370	56,010	-870	3,490	6.2%
Resident employment	55,080	56,400	51,770	-1,320	3,310	6.4%
Unemployment	4,420	3,970	4,240	450	180	4.2%
Unemployment rate	7.4	6.6	7.6	0.8	-0.2	

SLIDE 15: The Wenatchee MSA's CLF increased 1.4 percent in 2014. Between the Decembers of 2013 and 2014 the CLF jumped 6.2 percent, from 56,010 to 59,500 residents (meaning that 3,490 more residents were in the labor force). Although the number of unemployed residing in Chelan and Douglas counties also grew from 4,240 in December 2013 to 4,420 in December 2014 (meaning that 180 more residents were out of work), the labor force expanded more rapidly and consequently the Wenatchee MSA's unemployment rate declined from 7.6 to 7.4 percent during this timeframe (as shown in this slide).



SLIDE 17: The National Bureau of Economic Research (NBER) announced that the national recession occurred from December 2007-June 2009. But, the effects of this recession hit the Wenatchee MSA's nonfarm labor market heavily in 2009 and 2010.

A brief, recent history of the Wenatchee MSA's nonfarm economy follows:

- The "peak" total nonfarm employment "peaked" in 2008 at 40,800 jobs.
- The recession hit and local job market "tanked" in 2009 and 2010. The employment "trough" occurred in 2010, when nonfarm employment averaged 38,800.
- In 2014, after four years of slow, steady nonfarm employment growth (i.e., 2011, 2012, 2013, and 2014) the Wenatchee MSA's economy regained all nonfarm jobs lost in 2009 and 2010.

Wenatchee MSA - Nonfarm job growth in major industries in 2014

Industry	Ann. Avg. Employment in 2013	Ann. Avg. Employment in 2014	Job Change	Percent Change
Total Nonfarm [1]	40.4	41.7	1.3	3.1%
Total Private	31.8	32.9	1.2	3.6%
Goods Producing	4.6	4.9	0.4	7.7%
Mining, Logging, and Construction	2.1	2.3	0.3	12.1%
Manufacturing	2.5	2.6	0.1	4.0%
Service Providing	35.8	36.7	0.9	2.5%
Private Services Providing	27.2	28.0	0.8	3.0%
Trade, Transportation, Warehousing, and Utilities	9.6	9.5	(0.1)	-1.4%
Retail Trade	5.8	5.9	0.1	1.3%
Education and Health Services	6.5	6.8	0.3	4.7%
Leisure and Hospitality	5.4	5.8	0.4	6.6%
Government	8.6	8.7	0.1	1.1%
Federal Government	0.9	0.8	(0.1)	-5.8%
State Government	1.2	1.2	(0.0)	-1.3%
Local Government	6.6	6.7	0.2	2.4%

Employment Security Department
WASHINGTON STATE

20

SLIDE 20: The Wenatchee MSA averaged 41,700 jobs in 2014, a solid 1,300-job and 3.1-percent upturn over the 40,400 jobs tallied in 2013. Only one private sector industry lost jobs last year and that was the trade, transportation, warehousing, and private utilities category. It declined by 100 jobs, a 1.0 percent downturn. Retail trade, a sector within this broad category, actually rose 2.0 percent (up 100 jobs) in 2014. Hence, some of the average annual downturn likely occurred in the local wholesale trade and transportation industries - which have been affected by the West Coast ports labor dispute and work slowdown between the International Longshore and Warehouse Union (ILWU) and the Pacific Maritime Association (PMA). These organizations were in contract negotiations since May 2014. Their six-year contract expired in July 2014, according to the *Seattle Times*. The good news is that this labor dispute was finally resolved in February 2015.

SOCIO–DEMOGRAPHICS – CHELAN COUNTY

Source: Donald W. Meseck, Regional Labor Economist, Washington Employment Security Department. Updated October 2014 (selected information)

http://fortress/wa/gov/esd/employmentdata/reports-publications/regional-airports/county-profiles/chelan-and-douglas-counties-profile#lab

Regional context
Chelan County is on the eastern slopes of the Cascade Mountain range in central Washington. Chelan County has a very diverse geographic area that includes mountains and lakes and flat areas next to the Columbia River. The varied terrain supports the two major industries in the area, tourism and agriculture. Chelan County ranks third in the state in land area and is sparsely populated as measured by persons per square mile.

Industry employment by age and gender (Source: The Local Employment Dynamics)
The Local Employment Dynamics (LED) database, a joint project of state employment departments and the U.S. Census Bureau, matches state employment data with federal administrative data. Among the products is industry employment by age and gender. All workers covered by state unemployment insurance data are included; federal workers and non-covered workers, such as the self-employed, are not. Data is presented by place of work, not place of residence. Some highlights:

Chelan County – 2012

- ✓ The county's largest jobholder age group was the 55+ year-olds, accounting for 23.9 percent of the workforce. This group was closely followed by the 45 to 54 year-olds, accounting for 22.5 percent of the workforce.
- ✓ Men held 49.4 percent and women held 50.6 percent of all jobs in Chelan County.
  - Male-dominated industries included mining (86.5 percent), construction (83.6 percent), utilities (74.8 percent) and manufacturing (73.2 percent).
  - Female-dominated industries included healthcare and social assistance (78.2 percent), finance and insurance (76.2 percent) and educational services (67.9 percent).

Wages and income (Source: Employment Security Department; Bureau of Labor Statistics; Bureau of Economic Analysis; U.S. Census Bureau; U.S. Census Bureau, American Community Survey)

Chelan County averaged 39,623 jobs in 2013 covered by unemployment insurance with a total payroll of approximately $1.38 billion and an average annual wage of $34,851. In 2012, the median hourly wage (unadjusted for inflation) in Chelan County was $14.87.

Personal income
Personal income includes earned income, investment income, and government payments such as Social Security and Veterans Benefits. Investment income includes income imputed from pension funds and from owning a home. Per capita personal income equals total personal income divided by the resident population.

In 2012, Chelan County's per capita personal income was $39,797. Washington State was $46,045 and the nation was $43,735.

The U.S. Census QuickFacts reported median household income for the period 2008 to 2012 at $50,582 for Chelan County, compared to the state at $59,374.

Chelan County's poverty rate was 12.8 percent over the period 2008 to 2012. In comparison, Washington State's rate was 12.9 percent and the nation's rate was 14.9 percent, according to the U.S. Census Bureau QuickFacts.

Population (Source: U.S. Census Bureau)
Chelan County's population in 2013 was 73,967, growing 2.1 percent from April 1, 2010 to July 1, 2013. The pace of growth in the county's population was less robust than the state's 3.7 percent growth rate from April 1, 2010 to July 1, 2013.

Population facts (Source: U.S. Census Bureau QuickFacts)

	Chelan County	Washington state
Population 2013	73,967	6,971,406
Population 2010	72,456	6,724,543
Percent change, 2010 to 2013	2.1%	3.7%

Age, gender and ethnicity (Source: U.S. Census Bureau QuickFacts)
The percent of the population age 65 and older in Chelan County was 17.0 percent, higher than the state's at 13.6 percent in 2013. Chelan County's shares of the population under 18 years of age were larger than that of the state at 24.4 percent in 2013, compared to the State's 22.9 percent. The population under the age of 5 years was higher in Chelan County at 7.0 percent compared to the state's at 6.4 percent in 2013. Chelan County was 50.1 percent female in 2013. The state's share was 50.0 percent. Chelan County recorded over one-fourth of its total population in 2013 as Hispanic or Latin, more than double the population share of Hispanics, at 27.1 percent of the population in Chelan County in 2013, than did the state at 11.9 percent.

Educational attainment (Source: U.S. Census Bureau QuickFacts)

According to the 2008-12 American Community Survey (ACS) a lower percentage of adults age 25 years and older in Chelan County were a high school graduate or higher than those in the state (90.0 percent) or in the nation (85.7 percent). In Chelan County, 83.5 percent of adults 25 years or older held a high school or a more advanced degree. Correspondingly, there were fewer college graduates compared to the state and nation. In Chelan County, only 24.1 percent of residents age 25 and older held a bachelor's degree or higher.

Demographics (*Source: U.S. Census Bureau QuickFacts)*

	Chelan County	Washington state
Population by age, 2013		
Under 5 years old	7.0%	6.4%
Under 18 years old	24.4%	22.9%
65 years and older	17.0%	13.6%
Females, 2013	50.1%	50.0%
Race/ethnicity, 2013		
White	93.9%	81.2%
Black	0.9%	4.0%
American Indian, Alaskan Native	1.8%	1.9%
Asian	1.1%	7.9%
Native Hawaiian, Other Pacific Islander	0.2%	0.7%
Hispanic or Latino, any race	27.1%	11.9%

APPENDIX B – CHELAN CITY CODE

Chapter 17.18

ZONE AP – CHELAN MUNICIPAL AIRPORT DISTRICT

Sections:

17.18.010 Purpose.

A. This zone relates to the property within the boundary of the Chelan Municipal Airport.

B. The primary purposes of the Chelan Municipal Airport District are:

1. To assure that the property comprising the Chelan Municipal Airport will continue to be used in a manner that is compatible with a general aviation airport and aircraft operations.

2. To establish a framework within which both commercial and recreational aviation and aviation-related activities can prosper.

C. This chapter provides for both aviation-related and compatible commercial and light industrial development within the airport zone.

D. Development standards are established to assure the orderly and appropriate use of airport property. These standards identify and protect the operating spaces necessary for aircraft. They also set regulations for commercial and light industrial/manufacturing development that may occur on airport property.

E. This chapter is adopted pursuant to Chapter 14.12 RCW, the "Airport Zoning Act," Federal Air Regulation Part 77 "Objects Affecting Navigable Airspace" and Federal Aviation Administration Advisory Circular 150/5300-13 "Airport Design," as now exist or as may be hereafter amended. (Ord. 1075 § 1 (part), 1997).

17.18.020 Permitted uses.

A. Aviation uses, including, but not limited to the following types of activities, provided they comply with the development standards of this chapter:

1. Runways, taxiways, navigational equipment, aircraft parking areas and other facilities and features normally associated with a general aviation airport.

2. Aircraft sales, repair, rebuild, maintenance service and storage and the facilities essential for or important to their operation.

3. Schools related to aircraft and flight operations and the facilities essential for or important to their operation.

4. Hangars intended for the storage of aircraft.

5. Fixed base operations providing aviation and aircraft services to the general public.

6. Storage of aviation fuel, oil and other fluids commonly used in aircraft.

7. Air terminal facilities including those used for both cargo and passengers.

8. Uses directly dependent upon airport services such as aircraft assembly.

B. Medical uses associated with a general aviation airport, including but not limited to the following types of activities, provided they comply with the development standards of this chapter.

1. Structures used to provide first aid and/or medical stabilization necessary prior to air evacuation. (FAA Advisory Circular 150/5210-2A "Airport Emergency Medical Facilities and Services").

2. Facilities necessary for the staging of helicopter and fixed-wing air-ambulance aircraft including those necessary for ambulances and other emergency vehicles.

C. Special event as defined in and pursuant to the provisions of Chapter 5.50 of the Chelan Municipal Code, as the same exists now or may hereafter be amended. (Ord. 1245 § 1, 2002; Ord. 1075 § 1 (part), 1997).

17.18.030 Accessory uses.

A. Storage of personal property inside leased spaces, as long as such storage does not interfere with the primary use of such space. (Ord. 1075 § 1 (part), 1997).

17.18.040 Conditional uses.

A. Agricultural aircraft mixing/loading sites, defined as a site (location) anywhere within the boundary of Chelan Municipal Airport at which more than three hundred gallons of liquid pesticide (formulated product) or three thousand pounds of dry pesticide or at which a total of one thousand five hundred pounds of pesticides as active ingredients are being mixed, repackaged or transferred from one container to another within a calendar year. In addition to those that may be included in the conditions of approval, the following conditions must be met:

1. All operational area activities occurring at a permanent mixing/loading site shall take place on or within an operational area containment facility.

2. The operational area containment facility shall be constructed of concrete or other material with similar permeability. If synthetic materials are used in construction, they shall be chemically compatible with the products mixed and loaded at the site. A written confirmation of compatibility from the manufacturer shall be kept on file at the site or the nearest location from which the site is administered.

3. The facility shall be constructed with sufficient surface area, using curbs or other means, to prevent any discharge from leaving the containment area.

4. The containment facility shall be of adequate size and design to contain one hundred twenty-five percent of the capacity of the largest storage container, or application equipment used at the facility up to a maximum of one thousand five hundred gallons.

5. The operational area containment facility shall slope to a liquid-tight collection point or sump that allows spilled or deposited materials to be easily recovered. An above-ground tank may be used in conjunction with the containment facility to meet the capacity requirement. If an above-ground tank or tanks are used for temporary storage, the tank(s) shall be located within operational area or secondary containment. The tank shall be clearly and conspicuously labeled "pesticide rinsate" followed by the major category of pesticide such as insecticide, herbicide, fungicide.

6. Any pump used for recovering material from the operational area containment facility shall be manually activated.

7. The operational area containment facility shall not have a discharge outlet or valve. Operational area containment facilities may be interconnected.

8. Mixing/loading sites shall be enclosed by a fence with locking gate. Fences shall be constructed of nonflammable materials and shall not exceed ten feet in height.

9. Mixing/loading sites shall have an outdoor night security lighting system approved by the Chelan building department.

10. Water acquisition and holdings systems must meet the specifications of the city of Chelan.

11. Agricultural chemical mixing/loading sites shall comply with all applicable sections of the Washington State Department of Agriculture's Rules Relating to Secondary and Operational Containment for Bulk Pesticides and Fertilizer Storage Facilities, Chapters 16-229 and 16-201 WAC, as now exist or as may be hereafter amended.

B. Public and semi-public buildings, structures and uses essential to the welfare of the city of Chelan such as fire stations, pump stations and water storage. (Ord. 1075 § 1 (part), 1997).

17.18.050 Development and use standards.

A. Nonconforming Uses. Nothing contained herein shall require any change or alteration of a lawfully constructed or established structure or use, or use authorized under an existing lease, in existence upon these regulations as specified in the nonconforming provisions of this title.

B. General Provisions.

1. All uses shall be compatible with the continued operation of the airport. No uses shall be allowed which:

a. Release into the air any substances which would impair visibility or otherwise interfere with the operation of aircraft.

b. Produce light emissions, either direct or indirect (reflective), which would interfere with pilot vision including the reduction of night vision capability of pilots while on the ground.

c. Produce emissions which would interfere with aircraft communications systems or navigational equipment.

2. No uses shall cause or produce objectionable effects which would impose a hazard or nuisance to adjacent properties by reason of smoke, soot, dust, radiation, odor, noise, vibration, heat, glare, toxic fumes or other conditions that would adversely affect the public health, safety and general welfare.

3. No uses which require the manufacturing or warehousing of materials which are explosive, flammable, toxic, corrosive, or otherwise exhibit hazardous characteristics shall be permitted except for the storage of aircraft fuel, oil,

hydraulic fluid, paint and materials intended for aerial application for agricultural purposes provided those materials are warehoused, loaded and unloaded according to the requirements of this chapter and other applicable regulations and laws.

4. Except as provided herein, no structure or any portion thereof on the premises of a permitted use shall be used for a residential dwelling. Exceptions to this section include:

a. Airport manager's residence.

b. Structures necessary to temporarily shelter individuals responding to an emergency as identified and authorized by the city of Chelan or other governmental entity.

c. Primitive camping for those bringing aircraft to the airport. This shall not include any utility hookups. Campers shall camp at the plane parking site or in designated areas.

C. Noise. Noise originating from aircraft in flight and that which is directly related to flight operations shall be expected to impact people in surrounding districts and is generally exempt from noise standards. Noise from aviation testing and maintenance that is not related to imminent flight shall be restricted to certain hours, locations or other effective conditions by the Chelan airport board upon finding that the noise causes unreasonable impacts.

D. Lighting.

1. Structural lighting, with the exception of airport navigational lighting, shall not project directly into any residential district.

2. Sign and building exterior lighting shall not project directly into the runway, taxiway or airport approach surfaces to the extent that it is a hazard or a distraction to aircraft.

3. Lighting of vehicle and aircraft parking areas shall not create a nuisance to adjacent zones nor shall it pose a hazard to other vehicular traffic.

4. Airport lighting used to illuminate runways, taxiways, airplane parking areas and to provide visual guidance for landing aircraft shall comply with the Chelan Municipal Airport development plan, as now exists or as may be hereafter amended, a copy of which is on file at City Hall.

E. Height Restrictions. The height restrictions shall be in accordance with Federal Air Regulations Part 77 "Objects Affecting Navigable Airspace" and Federal Aviation Administration Advisory Circular 150/5300-13 "Airport Design."

F. Setbacks.

1. Front: Five feet.

2. Side: Ten feet, five feet where bordered by taxiway or roadway greater than twenty feet in width.

3. Rear: No requirement.

G. Building Design.

1. Color: Earth tone colors.

2. Doors: No sliding doors with supports that extend beyond exterior walls of building.

3. Floors: All buildings must have concrete floors.

4. Height: Thirty-five feet.

5. Construction: All buildings must be built out of metal. (Ord. 1075 § 1 (part), 1997).

APPENDIX C – LETTER OF SUPPORT FROM PORT OF CHELAN COUNTY

port of chelan county
establishing innovation

COMMISSIONERS:
Ron Johnsen-Rodriguez, District 1
JC Baldwin, District 2
Michael H. Mackey, District 3

November 19, 2014

Community Economic Revitalization Board
1011 Plum Street SE
Olympia, WA 98504
RE: CERB Grant Application – Chelan Municipal Airport Domestic Water Extension

Dear Board Members,

As the designated ADO for Chelan County, the Port of Chelan County supports the City of Chelan in their Planning Grant application for providing domestic water to the Chelan Municipal Airport. The City of Chelan operates the Chelan Municipal Airport (Airport) in partnership with the Port of Chelan County. The requirement for fire flow has been front and center every time a new prospect asks to build at the airport. The limitation is fire flow. There is currently a pent-up demand for hangar space at the Airport. There is currently no fire flow available at the airport that would allow any new hangar construction or any other light industrial development. City water service must extend in order to provide fire flow, then allowing further economic development.

In further support, the Port of Chelan County has approved $2,500 of matching funds.

The Port of Chelan County thanks CERB for their consideration of this application.

Mark Urdahl
Executive Director
Port of Chelan County

cc: Mike H. Mackey, Port of Chelan County Commissioner
Paul Schmidt, City of Chelan Administrator

RECEIVED
NOV 26 2014
CHELAN CITY CLERK

Olds Station Business Park – 238 Olds Station Road, Suite A – Wenatchee, Washington USA 98801 –
Phone: 509.663.5159 – Fax: 509.662.5151 - www.portofchelancounty.com

APPENDIX D – AIRPORT PROFILE AND ECONOMIC AVIATION IMPACTS – 2010 DATA

Source: WSDOT Aviation Economic Impact Study, Appendix C_Profiles, pages 72-73, March 2012

Chelan Municipal

PO Box 2871 Chelan, WA 98816

Lake Chelan Airport serves as a genreal purpose multiuse airport catering to recreational users, agricultural spray planes and helicopters, medical transports, charter flights and periodically fire suppression activities by the Forest Service and Department of Natural Resources. It has a private repair service and fueling tanks for jet fuel and aviation gas. It is located aproximately 3 miles north east of the City of Chelan.

NOTE: Data on this page comes from the WA Airport Information System Database (AIS).

AIRPORT CHARACTERISTICS

Location		Service Classification		Approach	
Legislative Dist:	12	**Federal:**	General Aviation Airport	**Airport Elevation:**	1,263
Associated City:	Chelan			**Approach Category:**	B: 91 to < 121 knots
County:	Chelan	**State:**	Service		

Organizational Structure		Runway(s)		Type of Airport	
Ownership Type:	Joint	**Number:**	1	**FAA:**	IsB
Owner:	City of Chelan/Port of Chelan	**Type(s):**	Asphalt	**Description:**	Cessna Citation I

AIRPORT ACTIVITY

Activities	Based	Transient
Agricultural Spraying	☐	☑
Air Ambulance	☐	☐
Medical Transport	☐	☑
Airplane Parts Manufacturing	☐	☐
Aerial Surveying	☐	☐
Wildland Firefighting	☐	☐
Skydiving/Parachute Drops	☐	☑
Aerial Tours	☐	☐
Civil Air Patrol	☐	☐
Cargo Activity	☐	
Flight Training	☑	
Commercial Carrier Activity	☐	

Based Aircraft	
AIS Last Updated: 11/21/2011	
Jet	0
Multi-Engine	3
Single-Engine	53
Rotor Based	2
Glider	0
Military	0
Ultralight	8
Seaplane	0
Total	**66**

Fixed Based Operators	
AIS Last Updated: 5/4/2010	
No. of FBOs	0

Cargo	
Number of Cargo Carriers	-
Total Cargo Volume (Tons)	-

Ground Transportation	
AIS Last Updated: 12/1/2010	
Bus Service	☑
Taxi Service	☑
Marine Service	☐
Rail Service	☑
Shuttle Service	☑
Limo Town Car	☐
Other Ground Transportation	☑

Comparison by State Classification

	Airport	Classification Low	Classification High
Based Aircraft	66	21	239
Operations	10,000	-	90,006

Commercial Enplanements*

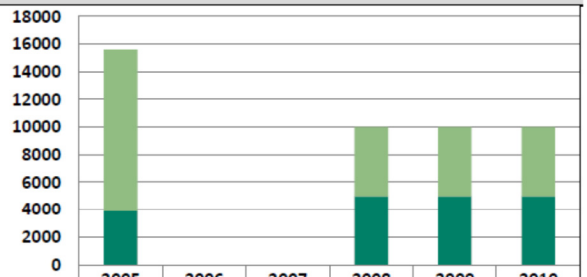
2010	-
2009	-
2008	-

*Enplanements are passengers boarding a commercial aircraft. Does not include disembarking passengers.

Fuel Service

80 LL	☐
100 LL	☑
MoGas	☐
Jet A	☑
Helicopter Fuel	☐

Take Offs and Landings (Operations)



	2005	2006	2007	2008	2009	2010
Military Itinerant	0					0
Military Local	0			0	0	0
Commercial Air Taxi	0			0	0	0
Commercial Air Carrier	0			0	0	0
General Itinerant	11700			5000	5000	5000
General Local	3900			5000	5000	5000

Chelan Municipal

PO Box 2871 Chelan, WA 98816

Airport Businesses and Visitors

Economic and Fiscal impacts calculated for each airport start with activity that can be directly associated with the airport, namely the businesses operating at the airport and the visitors traveling through the airport. For economic impacts, multiplier effects are estimated from this initial activity as portions of wages and business and visitor spending are re-spent within the local economy. Impacts of airport businesses are analyzed within the defined economic impact region, visitor spending is analyzed statewide, since once visitors land they may spend their dollars throughout the state. For fiscal impacts, taxes paid to various types of jurisdictions from this business and visitor activity are estimated.

NOTE: All impacts are shown in 2010 dollars.

ECONOMIC IMPACTS

AIRPORT BUSINESSES

Counties in Impact Region: Chelan

Direct Jobs: Estimated jobs on the airport footprint (excluding businesses that are not aviation-dependent).

Direct Labor Income: Estimated income paid to the Direct Jobs located on the airport footprint.

Direct Output: Estimated value of original business activity that remains in the economic impact region (some business activity will be exported outside of the region).

Indirect/Induced Impacts: Increases in regional impacts from the local re-spending of direct dollars.

Total Impacts: The sum of Direct, Indirect, and Induced Impacts, for a total regional impact.

Estimated Regional Impact from Airport Businesses

Estimated Economic Impact	Direct	Indirect/Induced	Total Impact
Jobs	1	0	1
Labor Income	$ 47,000	$ 14,000	61,000
Output	$ 78,000	$ 38,000	116,000

VISITOR SPENDING

Impact Region: Washington State (once visitors land they may spend their money throughout the state).

Total Visitor Spending: Estimated total annual spending by visitors traveling through this airport.

Direct Jobs: Estimated jobs supported by the total estimated visitor expenditures.

Direct Labor Income: Estimated income paid to the Direct Jobs supported by visitor expenditures.

Direct Output: Estimated value of original visitor spending that remains in the state (some visitor spending dollars paid to businesses will be exported out of the state).

Indirect/Induced Impacts: Increases in regional impacts from the local re-spending of direct dollars.

Total Impacts: The sum of Direct, Indirect, and Induced Impacts, for a total regional impact.

Estimated Regional Impacts from Visitor Spending

Total Estimated Visitor Spending: $ 305,100

	Direct	Indirect/Induced	Total Impact	All State Impacts	% State Impact
Jobs	4	2	6	94,000	0.01%
Labor Income	$ 94,000	$ 73,000	$ 167,000	$ 3,311,700,000	0.01%
Output	$ 260,000	$ 227,000	$ 487,000	$ 10,160,600,000	0.00%

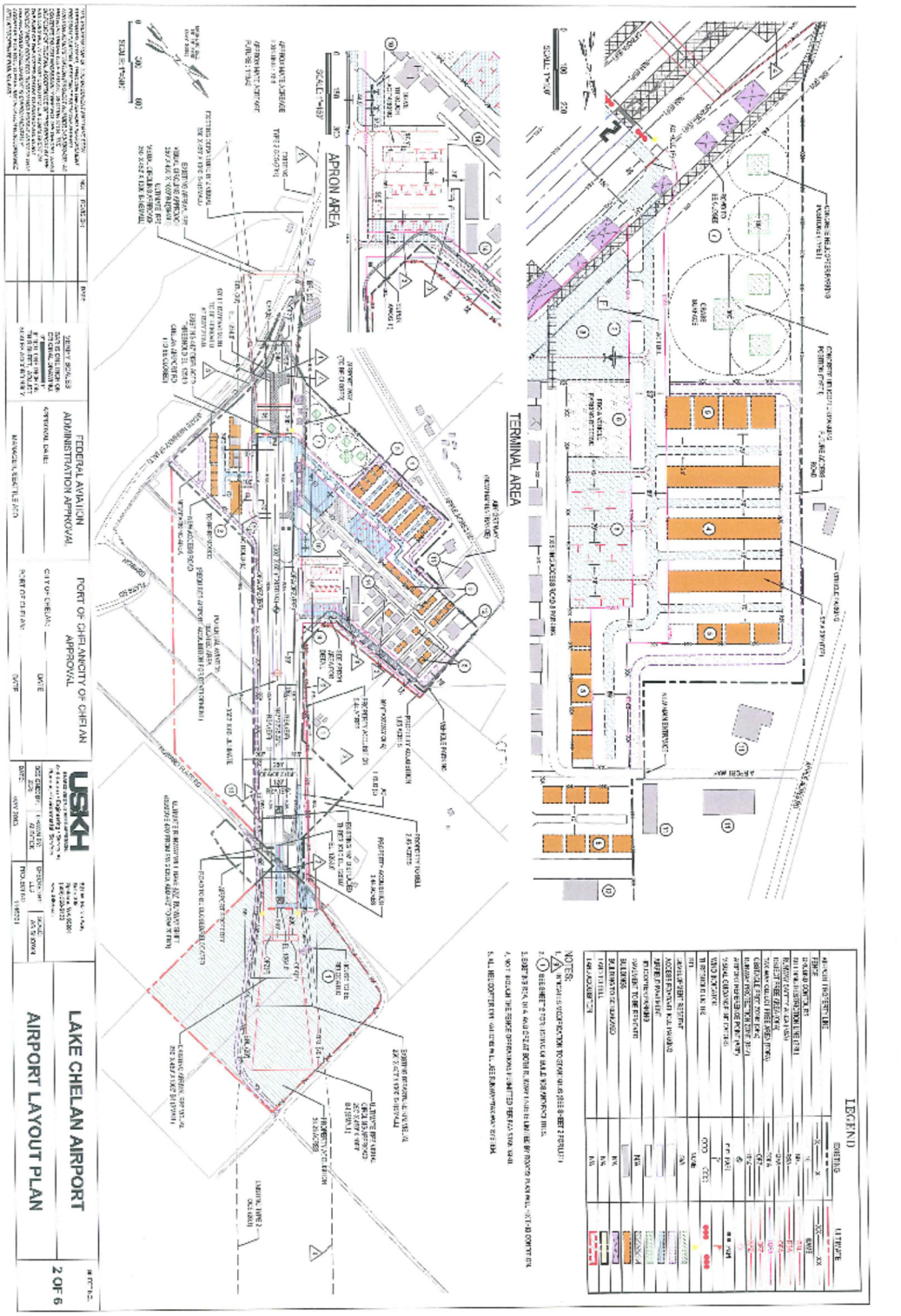
FISCAL IMPACTS

Estimated Taxes Paid to Each Jurisdiction Type

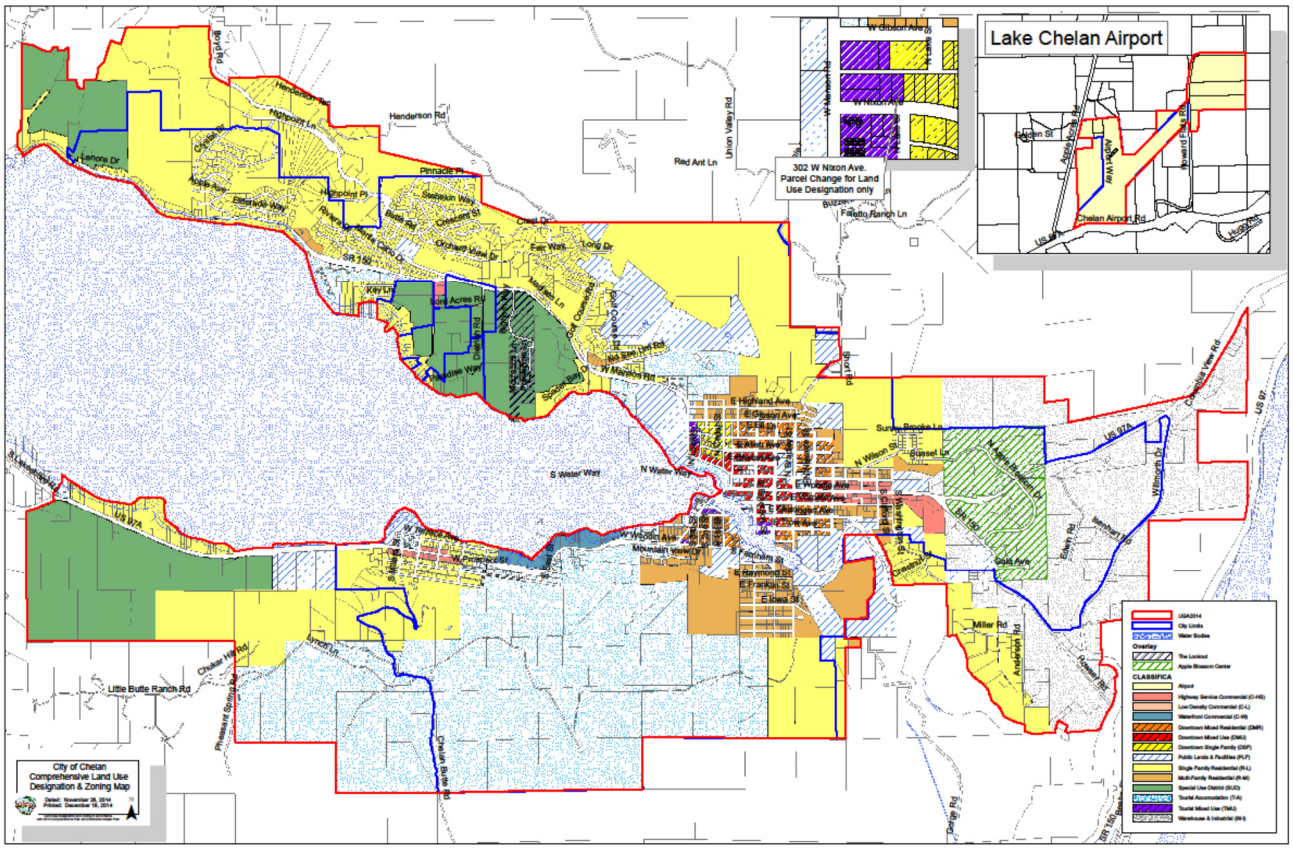
	Cities	Counties	Special Districts	State	Total Taxes
Airport Businesses	$ 1,800	$ 4,800	$ 4,800	$ 33,000	$ 44,400
Visitors	$ 2,900	$ 2,900	$ 2,900	$ 15,000	$ 23,700
Total	$ 4,700	$ 7,700	$ 7,700	$ 48,000	$ 68,100

NOTE: Tax estimates include Aircraft Excise Tax, Property Tax, Business & Occupation Tax, Sales Tax, Aviation Fuel Tax, State and Local Utility Taxes, Rental Car Tax, and Lodging Tax.
Special Districts include Transit, Schools, Hospitals, Fire, EMS, Parks, Ports, Utilities, and others.

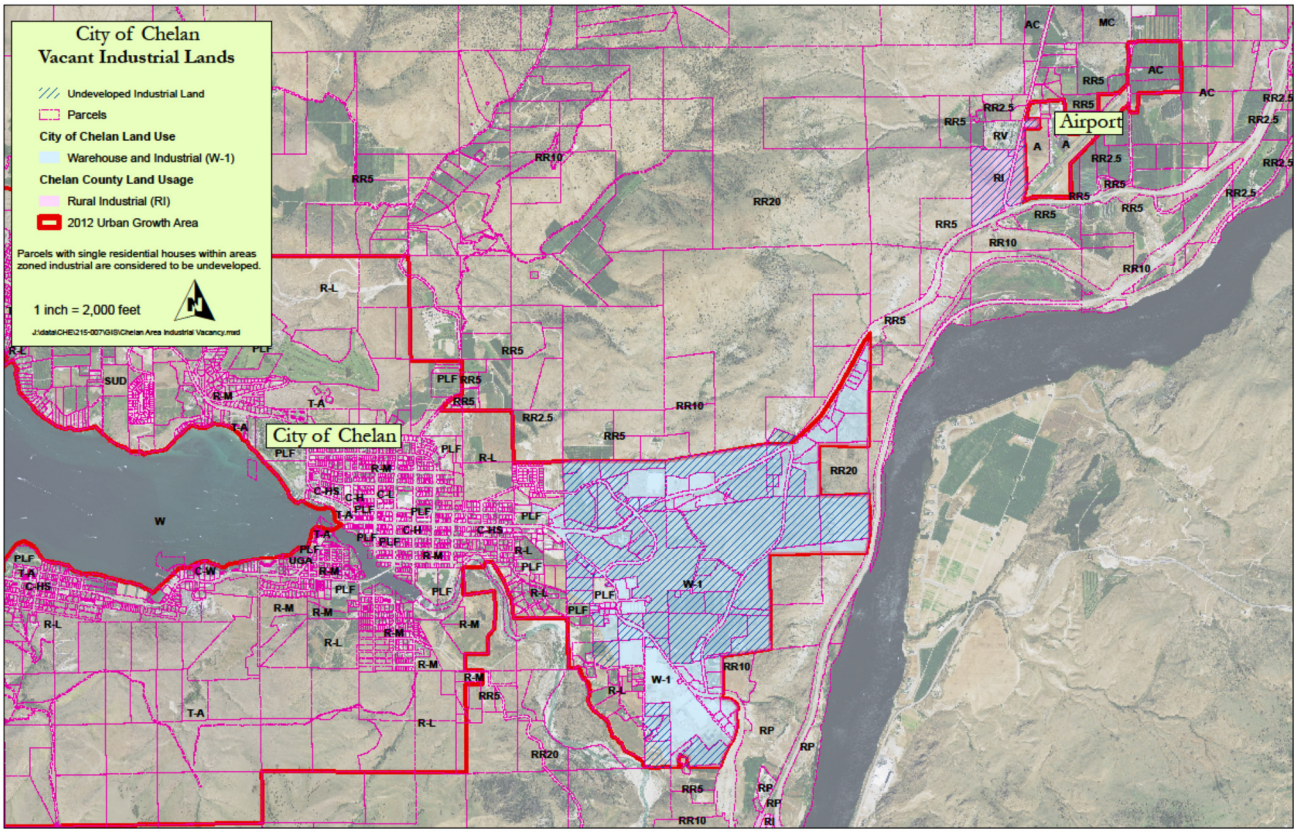
APPENDIX E – AIRPORT LAYOUT – ACREAGE



APPENDIX F – ZONING MAP



APPENDIX G – CHELAN AREA INDUSTRIAL VACANCY



APPENDIX H – WSDOT AVIATION CALCULATOR RESULTS 2015

Changes in Business Activity

	Est. New Sales	Est. New Wages	Est. New Jobs	Wages Per Job	Sales Per Job
Aircraft and Aircraft Engine Manufacturing	X	X	5		
Other Manufacturing/Fabrication	X	X	2		
Warehousing and Storage	X	X	4		
Mgmnt., Scientific, and Technical Consulting Services	X	X	X		
Machinery/Equipment Repair and Maintenance	X	X	9		
Scientific Research and Development	X	X	X		
Sightseeing Transportation	X	X	5		
Retail Businesses	X	X	2		
Other Businesses and Support Services	X	X	2		

- **Direct Impacts:** Direct impacts represent the amount of the initial business activity (from aviation-related businesses on the airport, or from visitors traveling through the airport) that remains within the local economy.
  Jobs and wages that are entered in the Business Activity categories become direct jobs and wages in the impact tables because the jobs (and the wages associated with them) are all assumed to be located on the airport, which is within the economic impact region. However, if total sales are entered, the direct output is less than total sales because only a portion of those sales are assumed to be re-spent within the local economy.
- **Indirect and Induced Impacts:** Indirect and induced impacts result when the direct dollars are recirculated within the local economy, such as when an industry purchases supplies from another local business and when employees make local purchases for their households.
- **Total Impacts:** Total impacts are the sum of the direct, indirect, and induced impacts.

Washington State Department of Transportation

Aviation Economic Impact Calculator

Airport Name	Year	Counties in the Economic Impact Region
Lake Chelan 26147.A	2015	Chelan

Disclaimer

Welcome to the WSDOT Aviation Economic Impact Calculator. This tool is designed to assist users in estimating an airport's change in regional economic impacts based on potential changes in activity at the airport. The calculations in this tool are high-level estimates designed to give a sense of magnitude of economic impacts, but are not to be taken as specific projections. The tool uses averages and typical ranges to provide a reasonable estimate of impacts based on the types of changes entered, which should not be assumed to be precise calculations.

The base data used in the Calculator comes from the Airport Information System (AIS) database, which consists of airport activity information self-reported by airport managers. It is important to keep in mind that inaccuracies or out of date information in the AIS may result in estimates that are inconsistent with the current state of the airport.

Selected Economic Impact Scenario

Fuel Sales offered at this airport

	Currently	New Scenario
Aviation Gas (AvGas)	Yes	Yes
Jet Fuel	Yes	Yes

Aviation Calculator Results 2015

Airport Businesses

The Aviation Economic Impact Calculator data, updated for this CERB study, include:

- ✓ 29 projected new Airport Business Direct Jobs, 0-5 years following water service provided to the Airport, based on interviews
  - The "New Scenario" indicates 34 Direct Jobs. The Calculator automatically includes 5 jobs from the existing 2010 database; however, the estimated dollars do NOT reflect a double impact
- ✓ 18 additional Direct Jobs created from one-time construction activity
- ✓ 9 jobs were added between 2010 and the end of 2014. However, the purpose of this CERB study is to forecast only NEW jobs as a result of water to the airport; therefore, the 9 jobs were NOT included into the calculator.

CURRENT ESTIMATED ECONOMIC IMPACTS		
Direct	**Indirect/ Induced**	**Total Impact**
Jobs		
0.0	0.0	**0.0**
Labor Income		
$0	$0	**$0**
Total Output		
$0	$0	**$0**

NEW SCENARIO ONGOING ESTIMATED ECONOMIC IMPACTS		
Direct	**Indirect/ Induced**	**Total Impact**
Jobs		
34.0	8.0	**42.0**
Labor Income		
$2,302,027	$314,249	**$2,616,277**
Total Output		

$5,831,331	$909,188	**$6,740,519**

TOTAL EXISTING + NEW SCENARIO ONGOING ESTIMATED ECONOMIC IMPACTS		
Direct	**Indirect/ Induced**	**Total Impact**
Jobs		
34.0	8.0	**42.0**
Labor Income		
$2,302,027	$314,249	**$2,616,277**
Total Output		
$5,831,331	$909,188	**$6,740,519**

NEW SCENARIO ONE-TIME ESTIMATED ECONOMIC IMPACTS (From Construction)		
Direct	**Indirect/ Induced**	**Total Impact**
Jobs		
18.0	10.0	**28.0**
Labor Income		
$1,083,032	$457,563	**$1,540,595**
Total Output		
$2,584,352	$1,181,578	**$3,765,930**

Visitor Spending

NOTE: Because the takeoff/landings data was over-estimated in the 2010 database, the 2015 new data section was not updated to reflect a higher number than reported in 2010. Therefore, the "New Scenario Ongoing Estimated Economic Impacts" reflects no new changes, and the "Total Existing + New Scenario Ongoing Estimated Economic Impacts" remains unchanged from 2010.

CURRENT ESTIMATED ECONOMIC IMPACTS

Direct	Indirect/ Induced	Total Impact
Jobs		
3.6	1.6	**5.1**
Labor Income		
$93,854	$72,723	**$166,578**
Total Output		
$260,419	$227,346	**$487,765**

NEW SCENARIO ONGOING ESTIMATED ECONOMIC IMPACTS

Direct	Indirect/ Induced	Total Impact
Jobs		
0.0	0.0	**0.0**
Labor Income		
$0	$0	**$0**
Total Output		
$0	$0	**$0**

TOTAL EXISTING + NEW SCENARIO ONGOING ESTIMATED ECONOMIC IMPACTS

Direct	Indirect/ Induced	Total Impact
Jobs		
3.6	1.6	**5.1**
Labor Income		
$93,854	$72,723	**$166,578**
Total Output		
$260,419	$227,346	**$487,765**

RH2 TECHNICAL

Memorandum

Client: City of Chelan

Project: Preliminary Evaluation of Water Service to Airport

Project File: CHE 215.007 **Project Manager:** Karen Kornher, P.E.

Composed by: Karen Kornher, P.E.

Reviewed by: Randy Asplund, P.E.

Subject: Airport Water System – Fire Flow Analysis

Date: June 9, 2015

Signed
6/9/2015

Signed
6/9/2015

Introduction

RH2 Engineering, Inc. (RH2), evaluated alternatives for providing fire flow to the Lake Chelan Airport (Airport). Three alternatives were identified:

- Alternative 1: Provide fire flow from the Washington Street zone of the City of Chelan (City) water system; this zone was formerly the Chelan River Isenhart (CRI) water system. Fire flow to be provided via a new 16-inch mainline from to the Airport
- Alternative 2: Use a smaller diameter transmission pipe from Washington Street zone to a new reservoir near the Airport. Install new distribution pipe from the reservoir to the Airport.
- Alternative 3: Utilize a new stand-alone water system near Airport, including well source and pump station; reservoir and transmission/distribution mainlines between the Airport and the new reservoir.

In the first two alternatives, water would be provided to the Airport from the Washington Street zone of the City's water system, while the third alternative would utilize a new source. The first alternative would use existing storage within the Washington Street zone of the City's water system to provide fire suppression storage for the Airport; the latter two alternatives would provide storage via a new reservoir near the Airport.

Overview maps for the three alternatives are shown in **Appendix A**.

Planning Data and Growth Projection

Per Table 2.3 in the 2007 Chelan River Isenhart Water District Water System Plan (2007 CRI Plan), the average daily demand (ADD) for the CRI water system was 23,274 gallons per day (gpd). Water usage data received from the City for 2013 and a portion of 2014 estimates the 2014 ADD for the Washington Street Zone at 74,680 gpd. This equates to an annualized consumption growth rate of 15.69 percent for this zone from 2006 to 2014. This annualized rate likely overestimates growth for this zone going forward; a large portion of the 2006 to 2014 growth can be attributed to the addition of a Walmart to the zone during this period. Water usage records for this zone exhibit a 1 percent decline in water usage in the 12 month period of June 2013 through May 2014 compared to the period of June 2012 through May 2013. Looking forward, RH2 projects total growth in the Washington Street zone to be in line with the estimate of 2.42 percent for commercial growth estimated by the 2010 City of Chelan Water System Plan (2010 Plan).

The rate of growth for the Airport vicinity is assumed to be the same as the growth rate for commercial and industrial lands as was outlined in the 2007 CRI plan. The plan assumed fully built-out commercial and industrial lands to have a density of 1.3 equivalent residential unit per acre (ERU/acre). The 2012 Urban Growth Area (UGA) around the Airport encompasses 117 acres. The Airport property is 54 acres currently consisting of an approximated 3 ERUs. It is assumed that the 63 acres of non-Airport property will build out to the 1.3 ERU/acre density in 20 years. This equates to the current UGA around the Airport containing 85 ERUs at full buildout and 47 ERUs in 2026. Because of pent-up demand for development at the Airport associated with the current lack of fire flow, this growth rate is assumed to be reasonable.

Washington Street System Analysis

Water Usage Analysis and Projection

Per the 2007 CRI Plan, water usage between January 2004 and April 2006 exhibited an ADD of 151 gpd per residential connection. During this period, there were 101 residential connections and 30 non-residential connections. For planning purposes, the CRI assigned a percentage of ERUs to each existing connection, and estimated future residential connections to be equal to one ERU each, with an ADD of 250 gpd per ERU. The CRI plan used a maximum daily demand (MDD) per ADD factor of 2.0 and a peak hour demand (PH per MDD of 3.33.

The 2010 Plan calculates a higher usage per ERU than the 2007 CRI Plan at an ADD of 468 gpd/ERU with an MDD/ADD factor of 2.6 and a PHD/MDD factor of 2.0 for the City water system. To be

consistent with the 2010 Plan, RH2 has assumed the ADD/ERU of 468 gpd/ERU from the 2010 Plan for the current Washington Street zone and has adjusted the number of existing ERUs to conform to the metered usage.

The 2015 estimated Washington Street zone ADD of 76,487 gpd equates to 163 ERUs in the zone as shown in **Table 1**. With the assumption that the Airport will be served from the Washington Street zone in the future, the Airport ERU's have been added to **Table 1** starting in 2017. The Washington Street Zone is projected to serve 260 ERUs in 2026.

Table 1
Washington Street ERU Projections

Average Daily Demand

Demand per ERU (gpd/ERU)[4]	468

Washington Street Zone Consumption Growth Rate

Average Annual Consumption Growth Rate (2006-2014)[2]	15.69%
Projected Annual Consumption Growth Rate (2015-2026)[3]	2.42%

Description	Actual	Projected							
	2006	2014	2015	2016	2017	2018	2019	2020	2026
	(-7 yrs)	(-1 yrs)	(0 yrs)	(+1 yrs)	(+2 yrs)	(+3 yrs)	(+4 yrs)	(+5 yrs)	(+11 yrs)
Washington Street Zone Projected Water Usage									
Average Daily Demand Projection									
Demand (gpd)[1]	23,274	74,680	76,487	78,338	85,382	89,196	93,056	96,965	121,496
Total System ERUs[7]	50	160	163	167	182	191	199	207	260
Maximum Day Demand Projection									
Demand (gpd)[5]	60,512	194,168	198,867	203,679	221,993	231,909	241,947	252,109	315,889
Peak Hour Demand Projection									
Demand (gpm)[6]	84	270	276	283	308	322	336	350	439

[1] 2006 usage data per the 2007 CRI Water System plan; 2014 usage data estimated from 2013-2014 usage data
[2] Annualized growth rate calculated from water usage in Washington zone in years 2006 and 2014
[3] Projected growth rate per 2010 Chelan Water System plan commercial growth rate
[4] Per 2010 Chelan Water System plan
[5] MDD/ADD factor of 2.6 per 2010 Chelan Water System plan
[6] PHD/MDD factor of 2.0 per 2010 Chelan Water System plan
[7] ERU's calculated from demand projections; Airport ERU's assumed to be added to Washington Street zone in 2017

Source Analysis and Projection

The source for the Washington Street zone is the two 20-horsepower (hp) booster pumps at the Washington Street booster pump station. This pump station has a total capacity of 400 gallons per minute (gpm) per the 2010 Plan. The 400 gpm capacity can serve up to 237 ERUs based on Washington State Department of Health (DOH) requirements. The source currently serves 163 ERUs,

so has a surplus capacity of 74 ERUs. At the projected growth rate shown in **Table 1**, the source will be require upsizing to serve the PHD beginning in 2022.

This zone is also supplied with fire flow from a 1,500 gpm fire pump located adjacent to the Washington Street booster pump station.

Storage Analysis and Projection

The existing Wilmorth Reservoir serves as storage for the Washington Street zone with a capacity of 256,000 gallons. The storage analysis and projection for the Washington Street zone is shown in **Table 2** and discussed in the following sections.

Table 2
Washington Street Storage Projections

Description	Actual	Projected							
	2006	2014	2015	2016	2017	2018	2019	2020	2026
	(-7 yrs)	(-1 yrs)	(0 yrs)	(+1 yrs)	(+2 yrs)	(+3 yrs)	(+4 yrs)	(+5 yrs)	(+11 yrs)
Washington Street Zone Projected Water Usage									
Average Daily Demand Projection									
Total System ERUs[1]	50	160	163	167	182	191	199	207	260
Available Storage (gallons)									
Storage	256,000	256,000	256,000	256,000	256,000	256,000	256,000	256,000	256,000
Required Storage (gallons)									
Operational	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
Equalizing	0	0	0	0	0	0	0	0	0
Standby	10,000	31,915	32,687	33,478	36,488	38,118	39,768	41,438	51,921
Fire Suppression Storage	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
Totals[2]	174,000	174,000	174,000	174,000	174,000	174,000	174,000	174,000	174,000
Required Storage (gallons)									
Surplus or Deficit	82,000	82,000	82,000	82,000	82,000	82,000	82,000	82,000	82,000

[1] Airport ERU's assumed to be added to Washington Street zone storage in 2017

[2] Standby storage nested with fire suppression storage

Operational Storage

The operational storage of the Wilmorth Reservoir is assumed to remain at 24,000 gallons per Table 3-9a of the 2010 Plan.

Equalizing Storage

Per the DOH Design Manual, equalizing storage is not required for the Wilmorth reservoir due to the Washington Street booster pumps (zone source) having a capacity greater than the PHF for this zone. It is assumed that the source will be upsized prior to the PHF exceeding the source capacity.

Standby Storage

The required standby storage is calculated by Equation 9-3 of the DOH Manual. Per page 3-18 of the 2010 Plan, the Washington Street booster pump station has a capacity of 200 gpm with the largest pump out of service. It is assumed that this pump can run continuously for 1,440 minutes per day. Using Equation 9-3, no standby storage is required when the source capacity is larger than the ADD, as is the case for the Washington Street zone. The DOH Manual recommends a minimum of 200 gallons per ERU be provided as standby storage in this situation. To be consistent with the 2010 Plan, it is assumed that standby storage will be nested with fire suppression storage.

Fire Suppression Storage

Per the 2010 Plan, the fire flow requirements for the Washington Street zone are 1,500 gpm at 20 pounds per square inch (psi) for 2 hours, with a stated requirement of 180,000 gallons. Because this zone is served by the 1,500 gpm Washington Street fire pump, consideration should be given to include the fire pump in satisfying these demands. With the use of the fire pump, and 150,000 gallons of storage, 2,750 gallons for 2 hours is available in this zone.

Within this zone, Walmart requires 2,000 gpm at 20 psi for 4 hours, and 1, 600 gpm at 47 psi for 2 hours. With the fire pump in operation, fire suppression storage must be provided for the remaining 500 gpm at 20 psi for 4 hours, and 100 gpm at 47 psi for 2 hours, equating to a total of 132,000 gallons of fire suppression storage required for Walmart.

Desired fire flow to the Airport has been determined to be 2750gpm for 2 hours. With the use of the fire pump this equates to 1,250 gpm for 2 hours, or 150,000 gallons of storage.

It is assumed that the fire pump will continue to augment storage in this zone for the foreseeable future; as such, the required storage in this zone has been set at 150,000 gallons. This extends the period that the existing reservoir can be used and allows the City to continue to collect revenue for the construction of a second reservoir. At the time additional storage is needed, the continued use of the fire pump should be evaluated versus additional storage.

Airport Water System Analysis

Analysis of the Airport water system addresses the requirements for a stand-alone well and/or storage reservoir that serves only the Airport.

Water Usage Analysis and Projection

Without water usage records for the Airport, it is conservatively assumed that usage at the the Airport currently equates to 3 ERUs. This provides an ADD of 1,404 gallons per day, which would provide an average of 20 gallons per day to 70 (non-resident) people. The Airport is projected to serve 47 ERUs in 2026.

Source Analysis and Projection

It is assumed that a new well would need to supply all existing and future demands. If a stand-alone system were built to provide fire flow to the Airport, then at a minimum, the source would be sized

to provide the MDD plus an additional 77 gpm necessary to replenish the 330,000 gallons of required fire suppression storage within 72 hours. This would require a minimum source flow rate of 80 gpm currently, and 147 gpm in 20 years. In both cases, the MDD plus fire flow replenishment rate is higher than the PHF.

For purposes of this study, it is assumed that a new well would need to provide 150 gpm to meet 20-year demands.

Storage Analysis and Projection

It is assumed that a new reservoir would be needed for all existing and future storage needs. The Airport has the projected storage requirements shown in **Table 3**.

Table 3
Airport Storage Projections

Description	Actual	Projected							
	2006 (-7 yrs)	2014 (-1 yrs)	2015 (0 yrs)	2016 (+1 yrs)	2017 (+2 yrs)	2018 (+3 yrs)	2019 (+4 yrs)	2020 (+5 yrs)	2026 (+11 yrs)
Airport Projected Water Usage									
Average Daily Demand Projection									
Total System ERUs			3	7	11	15	19	23	47
Required Storage (gallons)									
Operational			40,000	40,000	40,000	40,000	40,000	40,000	40,000
Equalizing			0	0	0	0	0	0	0
Standby			600	1,400	2,200	3,000	3,800	4,600	9,400
Fire Suppression Storage			333,000	333,000	333,000	333,000	333,000	333,000	333,000
Totals[1]			373,000	373,000	373,000	373,000	373,000	373,000	373,000

[1] Standby storage nested with fire suppression storage

Operational Storage

The operational storage for a future Airport reservoir is assumed to be 40,000 gallons which is approximately 10 percent of the required reservoir volume.

Equalizing Storage

It is assumed that no equalizing storage will be necessary for the Airport as the new Airport source (or a supply line from the City system) will be sized to provide flows greater than the PHF, as described above.

Standby Storage

It is assumed that any upgrade to the Airport water system would include a source capable of supplying the PHF for the Airport. Based on this assumption, standby storage will be equal to 200 gallons per ERU, necessitating 9,400 gallons in 2026.

Fire Suppression Storage

The fire flow required for the Airport will be 2,750 gpm at 20 psi for 2 hours, equating to 330,000 gallons.

Alternatives Analysis

Alternative 1

Alternative 1 would provide all water, including fire flow, from the Washington Street zone of the City's water system.

Alternative 1 requires a 16-inch-diameter gravity main be installed from the existing Wilmorth reservoir to the Airport. It is assumed that a small diameter recirculation main and pump would be installed with this pipeline to avoid stagnation of water in this large diameter pipeline. With the static head available at the reservoir, a 16-inch pipe would be required to provide fireflow at minimum of 20 psi to the Airport. Hydraulic calculations for this option are shown in **Appendix B**.

The existing Washington Street fire pump would provide 1,500 gpm of fire flow to the airport. The additional 1,250 gpm for 2 hours (150,000 gallons) required for the Airport would be provided in the existing storage within the Wilmorth reservoir. The ERUs associated with the Airport would increase the required standby storage within the Washington Street zone, as shown in **Table 2**.

The approximate total project cost for this alternative is $4.0 million as shown in **Appendix C**. A limited geotechnical investigation as included in **Appendix D** indicates that there is limited rock excavation required along this alignment.

Alternative 2

Alternative 2 would provide a smaller diameter transmission pipe from the Washington Street zone to a new reservoir near the Airport. It would also provide new distribution pipe from the reservoir to the Airport.

Alternative 2 requires an 8-inch diameter gravity main from the existing Wilmorth reservoir to a proposed reservoir located near the Airport. It is assumed that a small diameter recirculation main and pump would be installed with this pipeline to avoid stagnation of water in this pipeline and reservoir. The reservoir would be sited at an elevation equivalent to the existing Wilmorth reservoir and distribution pipe to the Airport would provide fire flow at a minimum of 20 psi to the Airport.

An 8-inch mainline would be sufficient to convey the flow required to replenish the fire suppression storage within 72 hours. Hydraulic calculations for this option are shown in **Appendix B**.

The reservoir would be sized to provide fire suppression and standby storage for the Airport as required by **Table 3**. A 12-inch distribution main would be installed to convey fire flow from the new reservoir to the Airport.

Limited fire flow could also be transferred from the Airport system back to the Washington Street zone, however, because of the small size of the line, the available flow would be limited to 120 gpm.

The approximate total project cost for this alternative is $5.6 million as shown in **Appendix C**. As with Alternative 1, a limited geotechnical investigation as included in **Appendix D** indicates that there is limited rock excavation required along the water main alignment.

Alternative 3

Alternative 3 requires a stand-alone water system at the Airport, including a well source and pump station, and reservoir and transmission/distribution mainlines between the Airport and the new reservoir.

The reservoir would be sized the same as for Alternative 2. To reduce stagnation of water in the reservoir, at minimum a reservoir mixer should be installed. Hydraulic calculations for this option are shown in **Appendix B**.

The approximate total project cost for this alternative is $4.6 million (**Appendix C**).

Conclusion

A discussion of the major advantages and disadvantages follows:

Alternative 1:

The primary advantage to Alternative 1 is that existing and future fire suppression storage in this alternative will remain fully usable to both the Washington Street Zone and the Airport. Water stagnation will be minimized in this alternative because it has the highest daily usage to fire suppression storage ratio. Further, this alternative has significantly lower O&M costs than Alternative 3 since it does not include a new source pump station. The main disadvantage to this alternative is the high cost of large mainline pipe installation from the Washington Street zone to the Airport.

Alternative 2:

Of the three alternatives, Alternative 2 is the least attractive alternative. The primary disadvantages for this alternative include: creating a large amount of potentially stagnant fire suppression storage that is largely unusable for the Washington Street zone; and it does not avoid the primary issue with Alternative 1, installing mainline piping from the Washington Street zone to the Airport.

Alternative 3:

The primary advantage to Alternative 3 is that it avoids laying mainline piping approximately 2.5 miles from the Washington Street zone to the Airport. However, the significant disadvantages for this alternative include: creating fire suppression storage for the Airport that is completely unusable by the Washington Street zone (this will increase storage water stagnation due to the low daily usage); creating an entirely separate water system that the City must operate, thus leading to increased O&M costs; and the inherent risk in trying to develop a reliable well source near the Airport that can produce the required flow rates for this system.

The long-term maintenance and replacement costs for Alternative 3 are far greater than Alternative 1. A life cycle cost analysis would clearly show that Alternative 1 is the lowest lifetime cost alternative. From a lifetime cost standpoint, Alternative 1 is the preferred alternative.

A Project Report is not required by DOH for Alternative 1; a waterline to the Airport is addressed in the City's 2010 Water System Plan (WSP). The Airport is included in the City's Retail Service Area given in the WSP. The Chelan Municipal Code 13.34 addresses the City's policy related to development outside the City limit but within the UGA, and allows the extension if the utility extension is consistent with sound urban planning, and providing that the properties served are ultimately annexed into the city at a time deemed appropriate by the City. Design criteria for the water line are provided in the WSP, and an exemption was given by DOH for distribution main project reports.

Appendices

Appendix A – Preliminary System Maps for Alternatives

Appendix B – Hydraulic Calculations for Alternatives

Appendix C – Planning-level Cost Estimates for Alternatives

Appendix D –Geotechnical Investigation Technical Memorandum

Appendix A
Preliminary System Maps for Alternatives

AGENDA BILL NO. 2015A-02A
Exhibit 1

Approximate Airport ground surface elevation: 1260 ft

Pipeline to avoid high point along highway
Ground Surface Elevation: 1440 ft

New 16" mainline to Airport

Existing Wilmorth Reservoir
Overflow Elevation: 1430 ft

City of Chelan

Airport Fire Flow Alternatives

Alternative #1

Contours (40 ft)

1 inch = 1,500 feet

0 750 1,500 3,000 Feet

Document Path: J:\data\CHE\215-007\GIS\Overview Map.mxd

New 12" distribution mainline to Airport

New Airport Reservoir
Overflow Elevation: 1420 ft

Approximate Airport ground surface elevation: 1260 ft

Pipeline to avoid high point along highway
Ground Surface Elevation: 1440 ft

New 8" transmission mainline to new Airport reservoir

Existing Wilmorth Reservoir
Overflow Elevation: 1430 ft

City of Chelan

Airport Fire Flow Alternatives

Alternative #2

Contours (40 ft)

1 inch = 1,500 feet

0 750 1,500 3,000 Feet

Document Path: J:\data\CHE\215-007\GIS\Overview Map.mxd

NO. 2015A-02A
Exhibit 1

New 12" distribution mainline to Airport

New Airport Reservoir
Overflow Elevation: 1480 ft

New 6" transmission mainline to reservoir

Approximate Airport ground surface elevation: 1260 ft

New source well and booster pump station

WELL

Collins Ln
Golden St
Jonathon St
Apple Acres Rd
Airport Way
Howard Flats Rd
Chelan Airport Rd
US 97A
Cagle Gulch Rd
Sunset Ridge Rd
Union Valley Rd
W Highland Ave
E Highland Ave
W Gibson Ave
E Gibson Ave
E Eli Ave
E Nixon Ave
E Allen Ave
W Madison Rd
N Lake St
N Cedar St
N Columbia St
N Emerson St
N Saunders St
N Navarre St
N Wilson St
Hilltop Pl
Sunset Ln
E Johnson Ave
E Woodin Ave
E Wapato Ave
E Okanogan Ave
E Trow Ave
W Woodin Ave
W Webster Ave
N Water Way
S Water Way
S 1st St
S 2nd St
S Emerson St
S Chelan St
S Washington St
Chestnut St
E Packard St
E Raymond St
E Franklin St
E Iowa St
E Prospect St
Gorge Rd
SR 150
Isenhart Rd
Edwin Rd
Shop Ave
Gala Ave
Willmorth Dr
Miller Rd
Anderson Rd
US 97
N Shore Dr
Fredrick Ct
Beebe Ranch Rd
E Shore Ct
River Glen Dr
S Shore Dr

City of Chelan

Airport Fire Flow Alternatives

Alternative #3

Contours (40 ft)

1 inch = 1,500 feet

0 750 1,500 3,000 Feet

Document Path: J:\data\CHE\215-007\GIS\Overview Map.mxd

Appendix B
Preliminary System Maps for Alternatives

Alternative 2		
Provide new reservoir near Airport with smaller diameter transmission pipe from Washington Street zone to new reservoir. New distribution pipe from reservoir to Airport.		
Existing Wilmorth Reservoir Elevation		
Reservoir Overflow Elevation	1430	ft
Static Head above Airport Ground Elevation	**65**	**psi**
Transmission Piping - Mainline from Wilmorth to Airport Reservoir		
Pipe Size	8	in
Maximum Flow (including flow to replenish fire suppression storage)	147	gpm
Pipe Length	16000	ft
Total Headloss	4	psi
Proposed Reservoir - Airport		
Maximum Allowable Reservoir Overflow Elevation	1430	ft
Static Head at Airport Ground Elevation	**65**	**psi**
Distribution Piping - Airport Reservoir to Airport		
Pipe Size	12	in
Maximum Flow (including fire flow)	2760	gpm
Pipe Length	3300	ft
Total Headloss	27	psi
Static Head at Airport Ground Elevation	**38**	**psi**

Alternative 1		
Provide fireflow from Washington Street zone via new 16" mainline from Wilmorth reservoir to Airport.		
Existing Wilmorth Reservoir Elevations		
Reservoir Overflow Elevation	1430	ft
Reservoir Drawdown Elevation	1410	ft
Airport Ground Elevation (approx)	1260	ft
Static Head	150	ft
Static Head above Airport Ground Elevation	**65**	**psi**
Mainline Between New Wilmorth Reservoir and Airport		
Pipe Size	16	in
Airport Fire Flow	2750	gpm
Airport MDD Flow	10	gpm
Maximum Flow	2760	gpm
Velocity at Maximum Flow	4.4	fps
Pipe Length	13750	ft
Friction Headloss	52.8	ft
Approximated Minor Losses (20% of Friction Headloss)	10.6	ft
Total Headloss	63.4	ft
Total Headloss	27	psi
Water Pressure at Airport Ground Surface during Fire Flow	**38**	**psi**

Notes:
1) Piping route is approximate

Alternative 3		
New stand-alone water system near Airport including well source and pump station; reservoir and transmission/distribution mainlines between Aiport and new reservoir.		
New Airport Reservoir Volume		
Airport Fire Suppression Storage (2750gpm for 2 hrs)	330000	gal
Operating Storage	24000	gal
Equalizing Storage	0	gal
Standby Storage	2000	gal
Required Volume for New Reservoir	**356000**	**gal**
Transmission Piping - Mainline from Wilmorth to Airport Reservoir		
Pipe Size	6	in
Flow req'd to refill reservoir in 72 hours	77	gpm
Airport MDD Flow	10	gpm
Maximum Flow	87	gpm
Velocity at Maximum Flow	1.0	fps
Pipe Length	3200	ft
Friction Headloss	2.4	ft
Approximated Minor Losses (20% of Friction Headloss)	0.5	ft
Total Headloss	2.9	ft
Total Headloss	1	psi
New Airport Reservoir Elevation		
Reservoir Overflow Elevation	1430	ft
Reservoir Drawdown Elevation	1410	ft
Airport Ground Elevation (approx)	1260	ft
Static Head	150	ft
Static Head above Airport Ground Elevation	**65**	**psi**
Distribution Mainline Between Reservoir and Airport		
Pipe Size	12	in
Airport Fire Flow	2750	gpm
Airport MDD Flow	10	gpm
Maximum Flow	2760	gpm
Velocity at Maximum Flow	7.8	fps
Pipe Length	3300	ft
Friction Headloss	51	ft
Approximated Minor Losses (20% of Friction Headloss)	10	ft
Total Headloss	62	ft
Total Headloss	27	psi
Water Pressure at Airport Ground Surface during Fire Flow	**38**	**psi**

Appendix C
Planning-level Cost Estimates

City of Chelan

Airport Water System - Fire Flow Analysis

Engineer's Estimate of Probable Cost

April 2015

Alternative 1

Provide fireflow from Washington Street zone via new 16" mainline from Wilmorth reservoir to Airport.

Item	Description	Unit Price		Quantity	Total Cost
1	Mobilization (10%)	L.S.	$ 255,000	1	$ 255,000
2	16" Transmission Main (Washington Street Zone to Airport) with Rock Excavation	L.F.	$ 150	13750	$ 2,062,500
3	2" Recirculation Main (Washington Street Zone to Airport)	L.F.	$ 10	13750	$ 137,500
4	Rock Excavation	C.Y.	$ 125	2600	$ 325,000
5	Recirculation Pump Station	L.S.	$ 20,000	1	$ 20,000
	Subtotal (Construction)				**$ 2,800,000**
	Engineering Design and Permitting (15% of construction)				$ 420,000
	Engineering Services During Bidding and Construction (10% of construction)				$ 280,000
	Subtotal (Engineering)				**$ 700,000**
	Tax on Construction Cost Only (8.2%)				$ 229,600
	Total Project Cost				**$ 3,729,600**
	Contingency (10% of construction)				$ 280,000
	Total Project Cost with Contingency *(rounded)*				**$ 4,010,000**

Assumptions:

1) Recirculation rate of 25 gpm required to turnover water in pipeline water within 4 days

City of Chelan

Airport Water System - Fire Flow Analysis

Engineer's Estimate of Probable Cost

April 2015

Alternative 2

New reservoir near Airport with smaller diameter transmission pipe from Washington Steet zone to new reservoir.
New distribution pipe from reservoir to Airport.

Item	Description	Unit Price		Quantity	Total Cost
1	Mobilization (10%)	L.S.	$ 299,000	1	$ 299,000
2	0.4 MG Reservoir	L.S.	$ 835,000	1	$ 835,000
3	8" Transmission Main (Washington Street Zone to Airport Reservoir) with Rock Excavation	L.F.	$ 85	16000	$ 1,360,000
4	12" Distribution Main (Airport Reservoir to Airport) with Rock Excavation	L.F.	$ 100	3300	$ 330,000
5	Rock Excavation	C.Y.	$ 125	2200	$ 275,000
6	2" Recirculation Main (Reservoir to Airport)	L.F.	$ 10	16000	$ 160,000
7	Recirculation Pump Station	L.S.	$ 30,000	1	$ 30,000
	Subtotal (Construction)				**$ 3,289,000**
	Land Acquisition	Acre	$ 40,000	1.5	$ 60,000
	Legal Costs (5% of constuction)				$ 164,450
	Engineering Design and Permitting (20% of construction)				$ 657,800
	Engineering Services During Bidding and Construction (15% of construction)				$ 493,350
	Subtotal (Engineering)				**$ 1,375,600**
	Tax on Construction Cost Only (8.2%)				$ 269,698
	Total Project Cost				**$ 4,934,298**
	Contingency (20% of construction)				$ 657,800
	Total Project Cost with Contingency *(rounded)*				**$ 5,600,000**

Assumptions:

1) Recirculation rate of 80 gpm required to turnover water in pipeline and reservoir water within 4 days

City of Chelan

Airport Water System - Fire Flow Analysis

Engineer's Estimate of Probable Cost

April 2015

Alternative 3

New stand-alone water system near Airport including well source and pump station; reservoir and transmission/distribution mainlines between Airport and new reservoir.

Item	Description	Unit Price		Quantity	Total Cost
1	Mobilization (10%)	L.S.	$ 202,000	1	$ 202,000
2	0.4 MG Reservoir with Mechanical Mixer	L.S.	$ 850,000	1	$ 850,000
3	6" Transmission Main (Well to Airport Reservoir) with Rock Excavation	L.F.	$ 50	3300	$ 165,000
4	12" Distribution Main (Airport Reservoir to Airport) with Rock Excavation	L.F.	$ 100	3300	$ 330,000
5	Rock Excavation	C.Y.	$ 125	500	$ 62,500
6	Well Pump Station	L.S.	$ 400,000	1	$ 400,000
7	Well Drilling and Development	V.F.	$ 300	700	$ 210,000
	Subtotal (Construction)				**$ 2,219,500**
	Land Acquisition	Acre	$ 50,000	1.5	$ 75,000
	Legal Costs				$ 456,075
	Engineering Design and Permitting				$ 760,125
	Engineering Services During Bidding and Construction				$ 456,075
	Subtotal (Engineering)				**$ 1,747,275**
	Tax on Construction Cost Only (8.2%)				$ 181,999
	Total Project Cost				**$ 4,148,774**
	Contingency (20% of construction)				$ 443,900
	Total Project Cost with Contingency *(rounded)*				**$ 4,600,000**

Assumptions:

1) Well depth assumed to be to Columbia River water table elevation

2) Well and pump station to be located on existing Airport property

3) 6" pipe assumed to be laid in same trench as 12" pipe

Appendix D
Geotechnical Investigation

RH2 TECHNICAL

Memorandum

Client: City of Chelan

Project: Preliminary Evaluation of Water Service to Airport

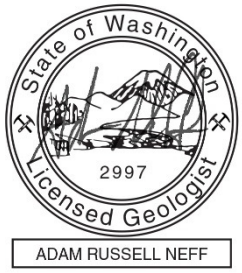
Project File: CHE 215.007 **Project Manager**: Karen Kornher

Composed by: Adam Neff, L.G.

Reviewed by: Steve Nelson, L.G., L.HG., L.E.G.

Subject: Subsurface Conditions along State Route 97A East of the City of Chelan

Date: May 8, 2015



Project Summary

On April 14, 2015, RH2 Engineering Inc., oversaw the excavation of nine test pits to depths of 4.0 to 6.5 feet, along the eastern shoulder of State Route 97A (SR97A) east of the City of Chelan. The excavations were conducted to document and characterize the subsurface conditions along a potential future water main alignment. Test pits were excavated using a 420 Cat rubber-tired backhoe equipped with a 1.5-foot bucket, owned and operated by KRCI, LLC.

The investigation covered the portion of the proposed alignment along SR97A from approximately ¼ mile north of Willmorth Drive (milepost (MP) 236.6) to Apple Acres Road (MP 237.8) A geotechnical exploration results map is attached.

The test pits revealed a mix of materials ranging from fine-grained wind-blown fine sand and silt (loess) to hard crystalline rock (tonalite). Most of the material was easily excavated with the backhoe. Some bedrock and boulders were encountered, indicating that larger excavation equipment (40 to 60 ton class), hydraulic rock hammering (hoe-ram), and/or blasting may be required to complete the project.

Alignment Characterization

- From MP 236.6 to 237.0, test pits encountered a sandy/rocky material that was moderate to easy to excavate. This material is likely fill derived from the excavation portion of the road cut during construction of the highway. It is unlikely that bedrock or significant amounts large boulders, large enough to classify as rock excavation, exist along this section of the proposed route, however, it is still possible. For planning purposes, less than 10 percent of this portion of the route will require rock excavation.
- From MP 237.0 to 237.2, test pits encountered native silts and sands. One large boulder was encountered, but was likely derived from rock fall from the steep slopes above the route in this area. It is not anticipated that any rock excavation will be required for this portion of the route. However, other similar large boulders may be encountered during the project.
- From MP 237.2 to 237.5, test pits encountered hard to very hard, relatively unweathered and unfractured bedrock, which is mapped by the U.S. Geologic Survey (Tabor et. al., 1987) as Tonalite, a granite-like igneous rock. This entire portion of the route will require rock excavation, which could be accomplished with an excavator-mounted hydraulic hammer or pick (hoe ram), but may also require blasting.
- From MP 237.5 to the end of the investigation at MP 237.8, test pits encountered layers of sand and gravel underlying loess to a depth of 6.5 feet. The soft loess is readily excavated, while the deeper coarser sand and gravel was medium dense. No rock excavation is expected in this section, except for the rare rockfall boulder.

Conclusions

Based on the test pits observed during this investigation, significant portions of the proposed route will require rock excavation to complete the project. This effort may be accomplished with an excavator-mounted hydraulic rock pick to remove boulders and weathered bedrock or blasting to breakup hard bedrock. The total amount, in linear footage, of rock excavation estimated to complete a pipeline along this alignment is approximately 1,765 feet, assuming that 10 percent of the first section and all of the third section will need rock excavation, as described above.

References

- R. W. Tabor, V. A. Frizzell, Jr., J. T. Whetten, R. B. Waitt, D. A. Swanson, G. R. Byerly, D. B. Booth, M. J. Hetherington, and R. E. Zartman, 1987. Geologic Map of the Chelan 30-Minute by 60-Minute Quadrangle, Washington. Prepared for the United States Geological Survey Miscellaneous Investigations Series MAP I-1661.

Attachments:

1) Geo Exploration Results Map
2) Test Pit Logs

TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
Columbia View Rd
Wilmorth Dr
US 97
US 97A
Golden St
Jonathon St
Starking St
Rome St
Beebe Ave
Apple Acres Rd
Airport Way
Chelan Airport Rd
N Shore Dr
Beebe Ranch Rd
Fredrick Ct
E Shore Ct

City of Chelan
Geo Explorations

Geo Test Pits

Pipeline Excavation Difficulty

1-Hard rock and/or large boulders, assume all rock excavation

2-Rocky fill material, ~1-10% rock excavation

3-Native loess overlying sands and gravels, no rock excavation

3-Native loess overlying sands and gravels, <1% rock excavation

PLSS - Sections

1 inch = 700 feet

0 350 700 Feet

Document Path: J:\data\CHE\215-007\GIS\Geo_results.mxd

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earth User Community

RH2 ENGINEERS PLANNERS SCIENTISTS	**Test Pit/Exploration Log** **TP1** Exploration Name	**City of Chelan** **Airport Feasibility Assessment** Project	**SR150 – East of Chelan** Location
Adam Neff, L.G. Inspected by:	**April 13, 2015** Date	**CHE 215.007** Project #	**Cat 419D rubber-tired extenda-hoe – 1.5 ft bucket** **Operator: Johnny, KRCI LLC** Backhoe and Operator

Depth	Description	Sketch/Photo
0 to 5.5 feet	Brown gravelly sand w/ cobbles and boulders. Large angular rock clasts. Medium dense. Fill.	

Notes:

*Sample of material taken.

RH2 ENGINEERS PLANNERS SCIENTISTS	**Test Pit/Exploration Log** **TP2** Exploration Name	**City of Chelan** **Airport Feasibility Assessment** Project	**SR150 – East of Chelan** Location
Adam Neff, L.G. Inspected by:	**April 13, 2015** Date	**CHE 215.007** Project #	**Cat 419D rubber-tired extenda-hoe – 1.5 ft bucket** **Operator: Johnny, KRCI LLC** Backhoe and Operator

Depth	Description	Sketch/Photo
0 to 5.5 feet	Grey brown sandy gravel w/ cobbles. Large angular rock clasts. Medium dense. Slight moisture. Fill.	

Notes:

*Sample of material taken.

RH2 ENGINEERS PLANNERS SCIENTISTS	**Test Pit/Exploration Log** **TP3** Exploration Name	**City of Chelan** **Airport Feasibility Assessment** Project	**SR150 – East of Chelan** Location
Adam Neff, L.G. Inspected by:	**April 13, 2015** Date	**CHE 215.007** Project #	**Cat 419D rubber-tired extenda-hoe – 1.5 ft bucket** **Operator: Johnny, KRCI LLC** Backhoe and Operator

Depth	Description	Sketch/Photo
0 to 6.0 feet	Brown sandy cobble. Rock clasts angular. Medium dense. Slight moisture. Fill.	

Notes:
Hit large boulder at approximately 2.5 feet, moved east to reach completion depth.
*Sample of material taken.

RH2 ENGINEERS PLANNERS SCIENTISTS	**Test Pit/Exploration Log** **TP4** Exploration Name	**City of Chelan** **Airport Feasibility Assessment** Project	**SR150 – East of Chelan** Location
Adam Neff, L.G. Inspected by:	**April 13, 2015** Date	**CHE 215.007** Project #	**Cat 419D rubber-tired extenda-hoe – 1.5 ft bucket** **Operator: Johnny, KRCI LLC** Backhoe and Operator

Depth	Description	Sketch/Photo
0 to 4.0 feet	Grey brown sandy cobble with gravel and boulders. Rock clasts angular. Very Dense. Moisture. Fill.	

Notes:
Hit refusal, large boulder, at approximately 4.0 feet, possibly removable with large excavator.
*Sample of material taken.

RH2 ENGINEERS PLANNERS SCIENTISTS	**Test Pit/Exploration Log** **TP5** Exploration Name	**City of Chelan** **Airport Feasibility Assessment** Project	**SR150 – East of Chelan** Location
Adam Neff, L.G. Inspected by:	**April 13, 2015** Date	**CHE 215.007** Project #	**Cat 419D rubber-tired extenda-hoe – 1.5 ft bucket** **Operator: Johnny, KRCI LLC** Backhoe and Operator

Depth	Description
0 to 1.3 feet	Grey brown sandy cobble with gravel and boulders. Rock clasts angular. Very Dense. Moisture. Fill.
1.3 to 6.5 feet	Brown medium sand with silt and boulders. Slightly moist. Medium dense. Native material. Several large boulders

Notes:
*Sample of material taken.

Sketch/Photo

RH2 ENGINEERS PLANNERS SCIENTISTS	**Test Pit/Exploration Log** **TP6** Exploration Name	**City of Chelan** **Airport Feasibility Assessment** Project	**SR150 – East of Chelan** Location
Adam Neff, L.G. Inspected by:	**April 13, 2015** Date	**CHE 215.007** Project #	**Cat 419D rubber-tired extenda-hoe – 1.5 ft bucket** **Operator: Johnny, KRCI LLC** Backhoe and Operator

Depth	Description
0 to 0.5 feet	Grey crushed rock
0.5 to 2.0 feet	Brown and grey gravelly sand with silt. Slightly moist. Medium dense. Fill.
2.0 to 6.0 feet	Light grey gravelly coarse sand. Moist, no fines, round gravel clasts, native (flood gravels).

Notes:
*Sample of material taken.

Sketch/Photo

RH2 ENGINEERS PLANNERS SCIENTISTS	**Test Pit/Exploration Log** **TP7** Exploration Name	**City of Chelan** **Airport Feasibility Assessment** Project	**SR150 – East of Chelan** Location
Adam Neff, L.G. Inspected by:	**April 13, 2015** Date	**CHE 215.007** Project #	**Cat 419D rubber-tired extenda-hoe – 1.5 ft bucket** **Operator: Johnny, KRCI LLC** Backhoe and Operator

Depth	Description	Sketch/Photo
0 to 4.0 feet	Grey brown sandy cobble with gravel and boulders. Rock clasts angular. Dense. Slight moisture. Fill.	

Notes:
Hit refusal, solid rock, at approximately 4.0 feet. *Sample of material taken.

RH2 ENGINEERS PLANNERS SCIENTISTS	**Test Pit/Exploration Log** **TP8** Exploration Name	**City of Chelan** **Airport Feasibility Assessment** Project	**SR150 – East of Chelan** Location
Adam Neff, L.G. Inspected by:	**April 13, 2015** Date	**CHE 215.007** Project #	**Cat 419D rubber-tired extenda-hoe – 1.5 ft bucket** **Operator: Johnny, KRCI LLC** Backhoe and Operator

Depth	Description	Sketch/Photo
0 to 3.5 feet	Medium brown fine sand with silt (loess). Soft. Slight moisture.	
3.5 to 6.5 feet	Grey well-graded sand with gravel. Moist. Medium dense. Native material.	

Notes:
*Sample of material taken.

RH2 ENGINEERS PLANNERS SCIENTISTS	**Test Pit/Exploration Log** **TP9** Exploration Name	**City of Chelan** **Airport Feasibility Assessment** Project	**SR150 – East of Chelan** Location
Adam Neff, L.G. Inspected by:	**April 13, 2015** Date	**CHE 215.007** Project #	**Cat 419D rubber-tired extenda-hoe – 1.5 ft bucket** **Operator: Johnny, KRCI LLC** Backhoe and Operator

Depth	Description
0 to 4.0 feet	Small lenses of sandy gravel alternating with gravelly sand with cobble. Chunks of asphalt throughout. Fill
4.0 to 6.5 feet	Brown-grey medium sand with gravel. Moist. Medium dense. Native material. Several large boulders

Notes:
*Sample of material taken.

Sketch/Photo

City Hall: P.O. Box 1669
135 E. Johnson Ave.
Chelan, Washington 98816
(509) 682-4037
Fax (509) 682-8009

September 3, 2015

Honorable Senator Patty Murray
2988 Jackson Federal Building
915 Second Avenue
Seattle, WA 98174

Dear Senator Murray:

On behalf of the Chelan community, I want to thank you for stopping on August 20, 2015 to see firsthand our challenges caused by this year's fire season. It does make a difference to our residents and especially to our emergency personnel, when our Congressional leaders take the time to witness all the efforts underway in fighting these wildfires.

In the course of your visit, I mentioned we did have some community needs that have become more evident and more critical during this unprecedented fire season. You asked that I get back in touch with you to provide more details about our needs. In response to you now, I have to say our most pressing community and regional need to better fight these wildfires is to have a fire protection system constructed at our Lake Chelan Airport.

The City of Chelan and Chelan County Port District jointly own the Lake Chelan Airport. The Lake Chelan Airport is recognized by the FAA as a general purpose airport that provides many aviation related services to the North Central Region of Washington. Because of its proximity and size, the Lake Chelan Airport is currently hosting the US Forest Service, as it did last year during the Carlton Complex Fire and other past fires, to base helicopter operations and incident command activities. We welcome their presence and are pleased we can be of service.

However, the Lake Chelan Airport does not have an adequate potable water system to provide fire hydrants and the necessary fire flow to protect the facilities at the Airport or support emergency operations during wild fires. For example, as I write this letter today, water tender trucks must drive into Chelan daily (6 miles round trip), to transport 100,000 gallons necessary for fire support activities at the Airport.

Recognizing the need for fire protection and the long term viability of the Airport, the City and Port jointly commissioned a study early this year on the cost/benefit of extending a City water pipe a distance of 3.2 miles to the Airport. The preliminary results of that study indicate the length of pipe required and the rocky terrain for excavation suggest the estimated cost to be in the range of $4 million. Subsequently, the City and Port are now working together to determine how to close the funding gap of approximately $2.5 million.

Planning / Building - 682-8017
City Shops - 682-8030 / 8031
Administration - 682-8019
Parks Department - 682-8023 / 8024
Utility Billing - 682-4037
Golf Course - 682-8026

Therefore, I ask for any assistance you might be able to offer in our effort to provide a fire protection system at the Lake Chelan Airport to further serve our region during wildfire events.

Sincerely,

Mayor Bob Goedde

Cc: Chelan County Port District Manager Mark Urdahl
Chelan County Fire District #7 Fire Chief Tim Lemon

- Photo of the helicopter landing field at the Lake Chelan Airport.

- Portable air traffic control trailer.

- National Guard units deployed at the Lake Chelan Airport.

- This amazing photo (photographer unknown) depicts the actions by U.S. Forest Service resources to save Chelan homes from the wildfires. This aircraft did not use the Lake Chelan Airport, but does depict the much appreciated effort utilized to fight the Chelan Complex Fire. It saved Chelan.