City of Waldport
Industrial Park Master Plan
100% Submittal

August 2017

Civil West Engineering Services, Inc.

Newport Office
609 SW Hurbert Street
Newport, OR 97365
541-264-7040

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Executive Summary

Section 1

The City of Waldport contracted with Civil West Engineering in October 2015 to conduct a Feasibility Study (Tier 1) and Master Plan (Tier 2) for the City of Waldport Industrial Park (IP) Area. This area includes approximately 160-acres of industrially-zoned property that is located along Crestline Drive in the southern part of the city, as shown in Figure 1.1. The area is currently only marginally improved due to transportation constraints and connectivity issues with public water and sewer systems.

Figure 1.1 Vicinity Map

The City's objective is to master plan the entire 160-acre site in order to ascertain its development potential, circulation and utility infrastructure needs, and environmental impacts. Once this information has been collected and evaluated, the City's goal is to proceed with engineering the necessary improvements to prepare the site for industrial use. The full site layout is shown on Figure 1.2, which includes the industrial park and potential roadway connections.

The purpose of this planning effort is to evaluate the best opportunities for the City of Waldport to expand and develop the City's employment base. The eventual development of the Industrial Park Master Plan will support and build upon the economic development vision and goals of the local community, Lincoln County and State of Oregon.

The focus of this Master Plan is to identify access road alternatives and utility infrastructure requirements, including domestic and fire protection water services, sanitary sewer system components and storm drainage requirements in order to service the area and ready it for industrial development.

1.1 Need for the Industrial Park

Goal 9 of the Waldport Comprehensive Plan, updated in September of 2013, identified the need for development of the Industrial Park area in order to create a business-friendly environment that increases living wage employment opportunities.

1.2 Purpose of the Master Plan

The purpose of the Industrial Park Master Plan is to furnish Waldport with a comprehensive planning document that provides engineering assessment of system components and guidance for future planning and management of the Industrial Park over the next 20 years.

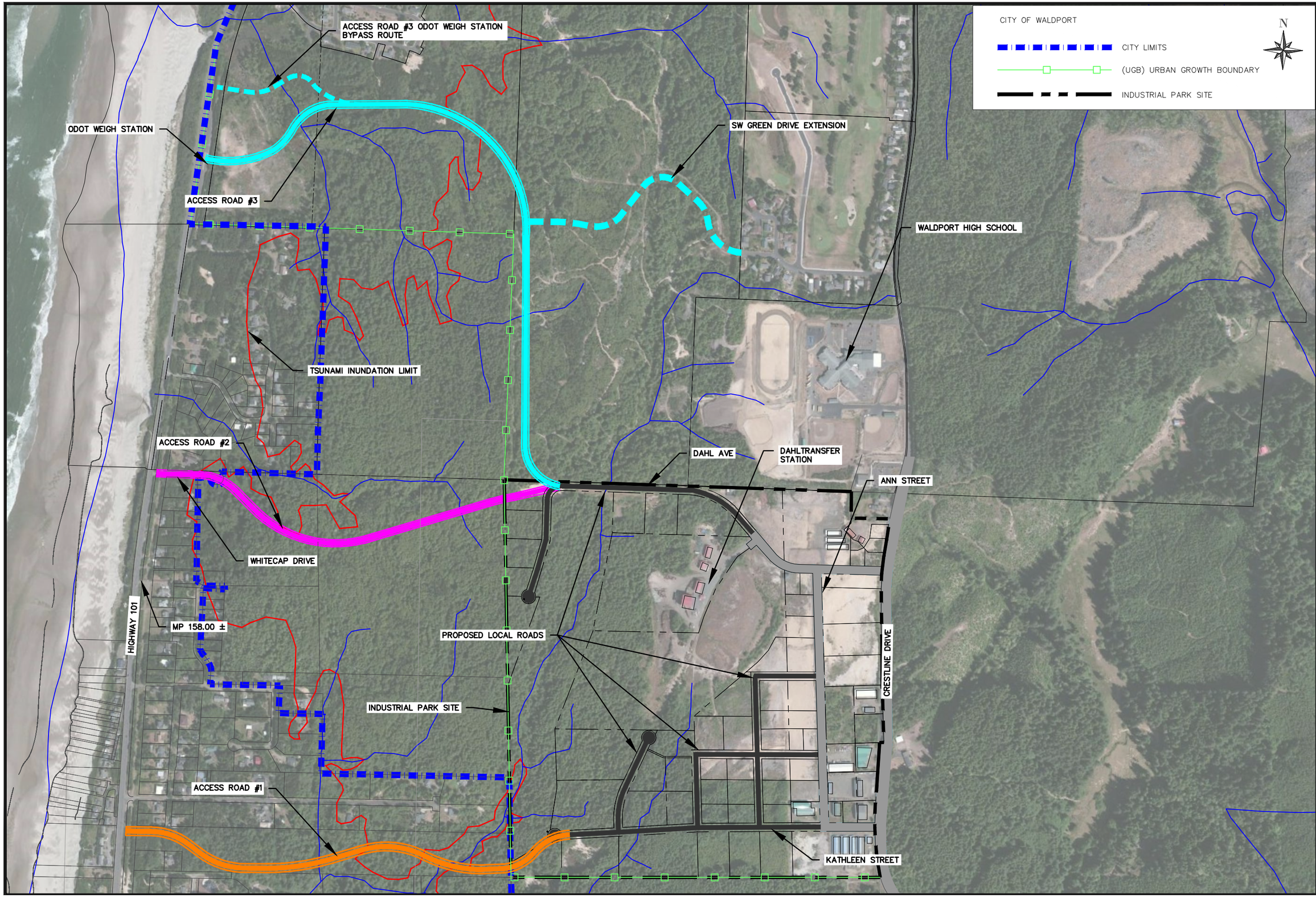
Principal plan objectives include:

- Description and mapping of existing water and sanitary sewer systems
- Prediction of phased development and associated water and wastewater demands
- Evaluation of existing wastewater and water system components
- Evaluation of the capability of the existing systems to meet future needs and regulations
- Recommendations for utility improvements needed to meet future needs and/or address deficiencies
- Recommendations for local road grades and alignments
- Recommendations for access road grades and alignments
- Recommendations for lot layout and grading schematic

This Plan details infrastructure improvements required to maintain compliance with State and Federal standards as well as provide for anticipated growth. Capital improvements are presented as projects with estimated costs to allow the City to plan and budget as needed.

1.3 Plan Authorization

The City contracted with Civil West Engineering Services, Inc. on October 7, 2016 to complete this phase of the Master Plan**.**



Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

WALDPORT INDUSTRIAL PARK

SITE LAYOUT

1" = NTS

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE
1.2

1.4 Past Studies and Reports

A Feasibility Study of the Industrial Park was completed in August of 2016. This preliminary study determined that the desired improvements are indeed feasible, and the City is moving forward with this comprehensive analysis that is necessary for the site's full development.

Adopted state and local plans were reviewed to establish a policy framework for the project. The following documents were among those reviewed:

- City of Waldport – Transportation System Plan, Comprehensive Plan, and Zoning Code.
- State of Oregon – Oregon Transportation Plan, Oregon Highway Plan, Oregon Bicycle and Pedestrian Plan, Transportation Planning Rule, Access Management Rule, and Pacific Coast Scenic Byway Corridor Management Plan for US 101 in Oregon.
- Southwest Lincoln County Water District (SWLCWD) – Water Management and Conservation Plan (2014).

The policy framework will provide the parameters within which the City of Waldport Industrial Area Master Plan must be developed, in order to ensure consistency between the Master Plan and existing state and local regulations.

1.5 Summary of Capital Improvement Projects

As part of the master planning efforts, numerous options for utility infrastructure and road alternatives were evaluated. Nonviable options were screened out, and a limited number of selected alternatives were established and evaluated in detail. A summary of these recommendations are provided below. Additional detail can be found in later sections of this planning document.

The various improvements recommended in the Master Plan are prioritized and separated into 4 zones of development (W, X, Y and Z), as shown in Figure 1.3. The zones have been grouped based on utility development sequencing, ease of construction cost and existing conditions and are described in Table 1.1, below.

Table 1.1: Industrial Park Zone Timeline and Description

Zone	W	X	Y	Z
Year Complete	2020	2023	2030	2037
Description	• Sewer service along Anne Street • Fire hydrants along Anne St • Main lift station at intersection of Kathleen & Ann St. • Roadside ditch system and gravel footpath along existing Anne St.	• New roads and gravel footpaths down Kathleen St, A St, 1st St & West B St • Sewer and water service down Kathleen Street • Sewer and water service along A St, 1st St & West B St. •One lift station and force main at end of Kathleen St. •Power and communications along new roads	• Dahl Ave. road extension with gravel footpaths • Sewer and water service down Dahl Ave. •One lift station and force main on Dahl Ave. (1640 ft) • Power and communications along new roads	• New roads and gravel footpaths along East B St., 2nd St. & 3rd St. • Two gravity pipe networks along B St., 2nd St. & 3rd St. • Power and communications along new roads

The cost estimates presented in Table 1.2 include four components: construction cost, engineering cost, contingency, and legal and administrative costs. More detailed costs for each system component are included in the applicable sections. The estimates presented herein are preliminary and are based on the level and detail of planning presented in this Study. The goal of these planning level cost estimates is to establish a reasonably

conservative budget and to allow fair cost-comparisons of alternatives. As projects proceed and more detailed, site-specific information becomes available, the estimates will require updating.

Table 1.2: Capital Improvement Projects Cost Estimates

Zone W			
Facility	***Location***	***Description***	***Cost***
Water System	Ex. Ann St., Ex. Dahl Ave, & Ex. Kathleen St.	Install Fire Hydrants along Kathleen Street.	$51,838
Sanitary Sewer System	Ex. Ann St., Ex. Dahl Ave, Ex. Kathleen St. & Ex. Crestline Drive	Install SS Pipe Network with Lift Stations on Ann St. and Kathleen St. & Force Main along Ann St.	$1,554,183
Local Roads	Ex. Ann St., Ex. Dahl Ave & Ex. Kathleen St.	Install Drainage Ditch and Gravel Path along existing roadsides (3,200 ft)	$457,210
Zone W Project Budget Estimate			**$2,063,230**
Zone X			
Facility	***Location***	***Description***	***Cost***
Water System	New Kathleen St., A St., East B St. & 1st St.	Install Water Main along roadsides	$474,875
Sanitary Sewer System	New Kathleen St., A St., East B St. & 1st St.	Install SS Pipe Network along roadsides, and a force main along Kathleen St.	$556,873
Local Roads	New Kathleen St., A St., East B St. & 1st St.	Install 3,675 lineal feet of Roads	$4,147,733
Zone X Project Budget Estimate			**$5,179,480**
Zone Y			
Facility	***Location***	***Description***	***Cost***
Water System	New Dahl Ave	Install Water Main along Roadside	$296,525
Sanitary Sewer System	New Dahl Ave	Install SS Pipe Network with Lift Station #3 & Force Main along Dahl Ave.	$518,034
Local Roads	New Dahl Ave	Install 2,270 lineal feet of Road	$1,732,050
Zone Y Project Budget Estimate			**$2,546,609**
Zone Z			
Facility	***Location***	***Description***	***Cost***
Water System	New 2nd St., 3rd St., & Utility Easement	Install Water Main along Roadside and Easement	$176,538
Sanitary Sewer System	New B St., 2rd St. & 3rd St.	Install SS Pipe Network to tie into Kathleen Street SS Pipe Network	$286,230
Storm Drainage	Lot 58	Storm Drainage Detention Pond	$68,730
Local Roads	New B St., 2rd St. & 3rd St.	Install 1560 lineal feet of Road	$1,620,121
Zone Z Project Budget Estimate			**$2,135,661**
City Infrastructure			
Facility	***Location***	***Description***	***Cost***
Sanitary Sewer System	Crestline Drive	Force Main from IP Site to WWTP	$1,767,550
City Infrastructure Budget Estimate			**$1,767,550**
		Total Project Budget Estimate	**$13,708,487**

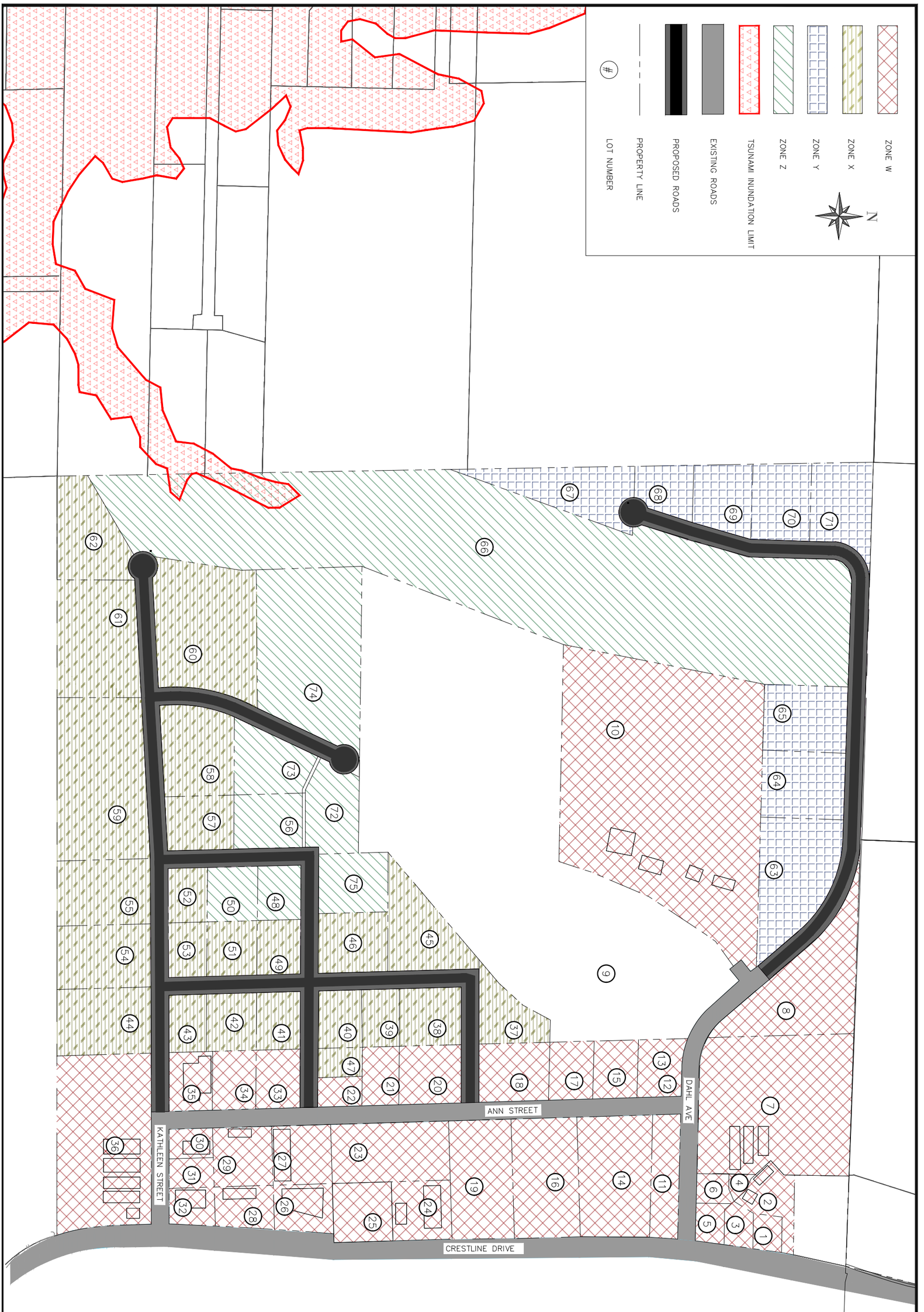


FIGURE 1.3

0 1"

1" = 300'

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DATE: 4/21/2017

WALDPORT INDUSTRIAL PARK

DEVELOPMENT ZONES

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

Civil West Engineering Services, Inc.

Background

Section 2

2.1 Planning Period

The anticipated planning period for this Master Plan is 20 years. The period must be short enough for current users to benefit from system improvements, yet long enough to provide reserve capacity for future growth and increased demand. Existing residents should not pay an unfair portion for improvements sized for future growth, yet it is not economical to build improvements that will be undersized in a relatively short period of time. The end of the planning period for this Master Plan is the year 2037, or 20 years from the completion of the Plan.

2.2 Planning Area

The Industrial Park Master Plan planning area is an approximately 160-acre site contained within the Waldport Urban Growth Boundary (UGB). Additional information and maps for the planning area are presented in Section 1.0.

2.3 Work Tasks (Tier 2)

The list below summarizes the services that will be required in order to adequately assess the development potential of the site.

2.3.1 Utilities (Water, Sewer)

Capacity, Supply & Demand: An in-depth Master Plan of the utility systems on and off the site will be required to provide adequate water and sewer services to the proposed development. This plan will address the capacity requirements of the developed site, and analyze this demand relative to the existing system's capacity. Recommendations and preliminary cost estimates will be made for improvements to the utility networks in order to sufficiently service the developed site.

2.3.2 Storm Drain / Hydrology

a. **System Master Plan:** In this item, we will prepare a master plan report identifying storm drainage flows on and around the site, making recommendations for improvements to the storm drainage system, identifying potential locations for future pipes, catch basins, manholes, etc. and developing preliminary cost estimates.

2.3.3 Site Planning

a. **Detailed Master Planning:** In this item, we will complete the site Master Planning services to establish a precise lot and roadway layout and general grading patterns for the entire useable area of the site.

2.4 Funding Source Acknowledgements

The City of Waldport received a $60,000 Special Public Works Fund Grant from the State of Oregon Infrastructure Finance Authority ("IFA") for preparation of the Tier 1 Feasibility Study, which is now completed. The IFA grant required a $25,000 match by the City ($15,000 cash & $10,000 in-kind services) which was earmarked for the Tier 2 Master Plan. The balance of funding necessary to complete the Tier 2 Master Plan is being met by a $60,000 Technical Assistance Grant from the Department of Land Conservation and Development ("DLCD") and contributions from property owners in the Industrial Park.

2.5 Physical Environment

2.5.1 Planning Area Location

The City of Waldport, incorporated in 1911, is located on the Oregon coast near the southern boundary of Lincoln County (Figure 2.1).

The north, east, and west edges of the city are formed by the Alsea Bay and the Pacific Ocean. The Alsea River, which has the largest basin in Lincoln County, empties into Alsea Bay east of the city. The west edge of Waldport is near the mouth of Alsea Bay and is exposed to the effects of Pacific Ocean storms and waves.

A bluff divides the city into northern and southern halves. The central part of the city is located north of the bluff, on a low-lying, flat alluvial shelf. South of the bluff, where the Industrial Park is located, the terrain varies from gently rolling to steep, with potential elevation changes of several hundred feet as the shoreline transitions into the coastal hills to the east. This is the area with greatest growth potential.

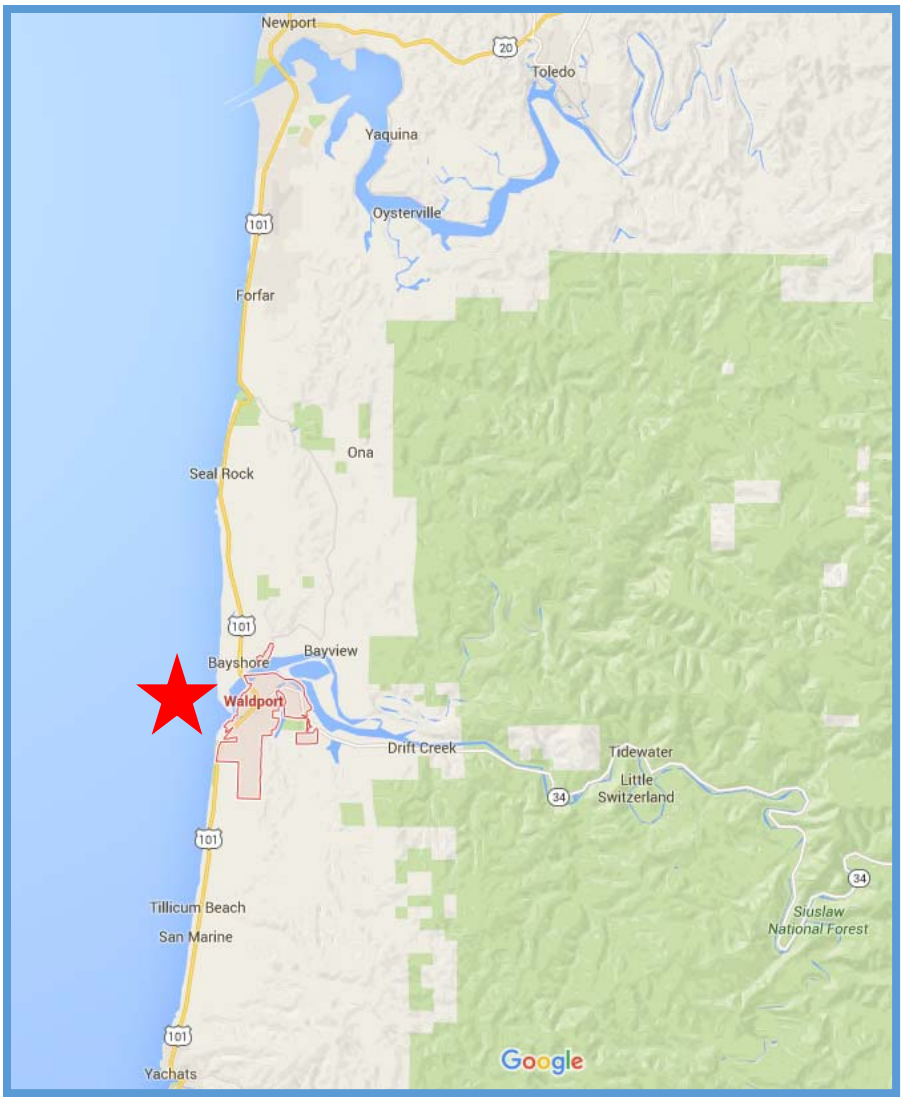


Figure 2.1 Vicinity Map

2.5.2 Zoning

The City of Waldport Comprehensive Plan has adopted a Land Use and Zone map, as shown in Figure 2.3. As illustrated, the Industrial Park area has been zoned as I-P or Planned Industrial Zone and is regulated by the Waldport Development Code Title 16.36 - Planned Industrial Zone I-P.

Adjacent land to the west and south of the project site has been zoned RR-2 or Rural Residential Zone, as regulated by the Lincoln County Comprehensive Plan, Land Use Planning - Chapter 1.1345. In addition, all Access Road options will encounter Lincoln County R-1 and RR-2 property. See Figure 2.2 for the Lincoln County zoning in this area.

This Master Plan will adhere to the regulations of both the City of Waldport and Lincoln County zoning regulations, as required.

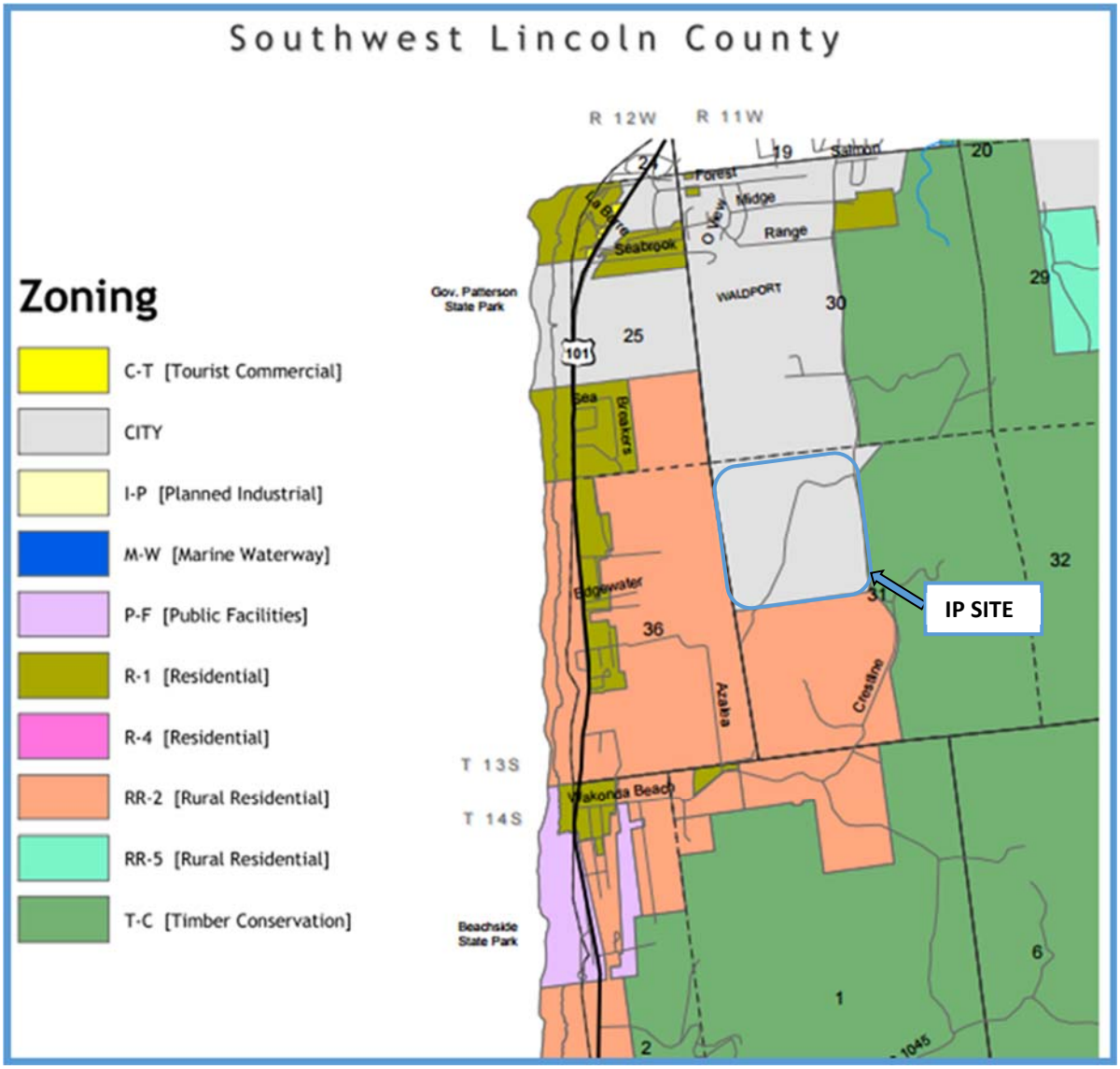


Figure 2.2: Lincoln County SW County Zone Map (January 2005)

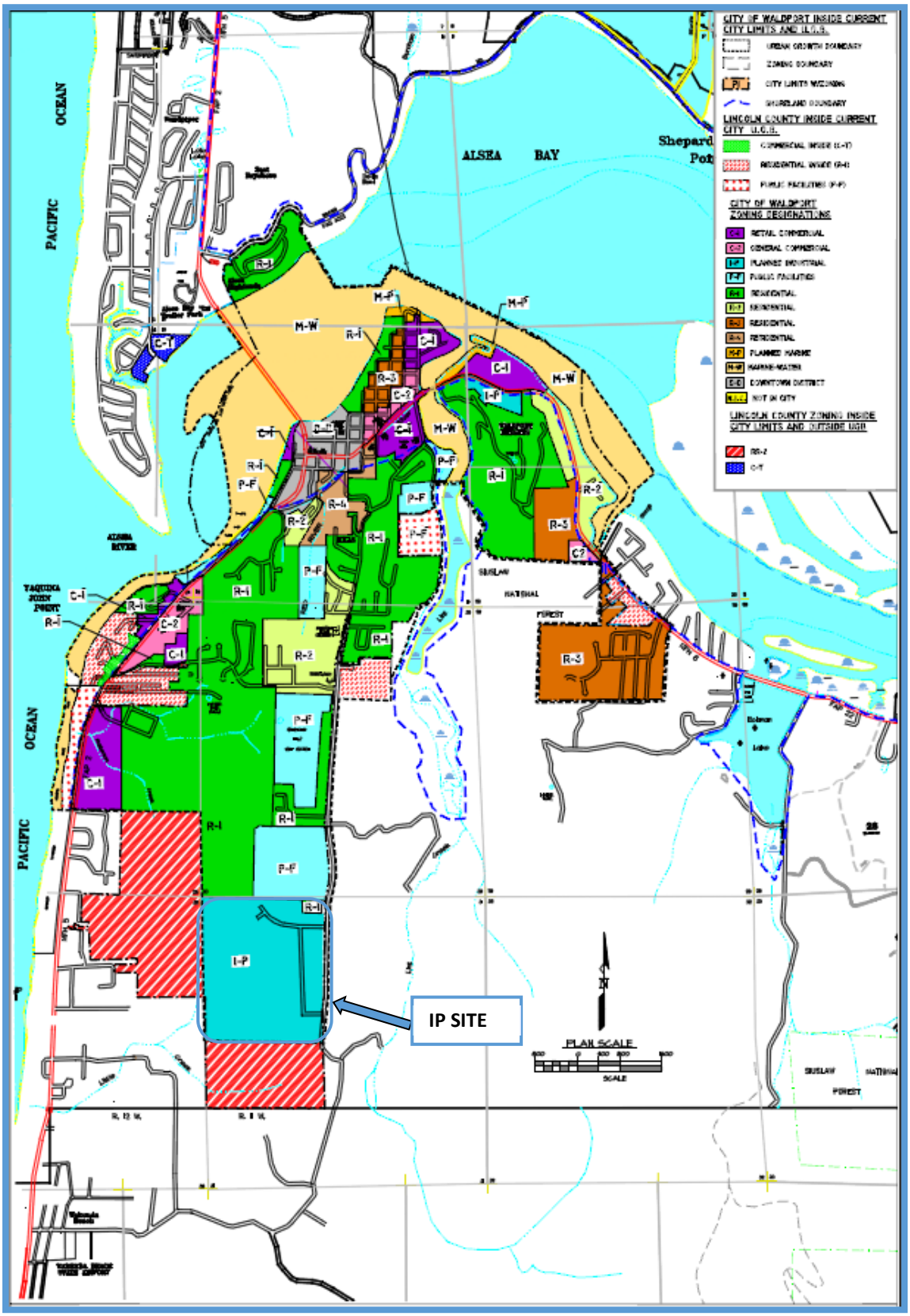


Figure 2.3: City of Waldport Land Use and Zone Map (October 2011)

2.5.3 Climate

The climate of Waldport is indicative of Lincoln County, which is greatly influenced by the Pacific Ocean. The coastal marine climate is characterized by moderate temperatures and high amounts of precipitation. Most precipitation comes from winter storms, some lasting several days. The average annual rainfall varies from 60 to 100 inches. Precipitation normals, shown in Figure 2.4, were obtained from the National Centers for Environmental Information (NCEI) (NCEI, 2012). The normals represent the mean precipitation for each month from 1981 to 2010 at Newport, the nearest weather recording station to Waldport. The plot shows the bulk of precipitation for the Waldport area comes during the fall, winter, and spring months, October to May. Little precipitation comes during the summer months. The City of Waldport also collects rainfall data at the Water Treatment Plant, which will be utilized during the design phase. This information is critical to understand as we evaluate site Sewer and Storm Drainage Systems.

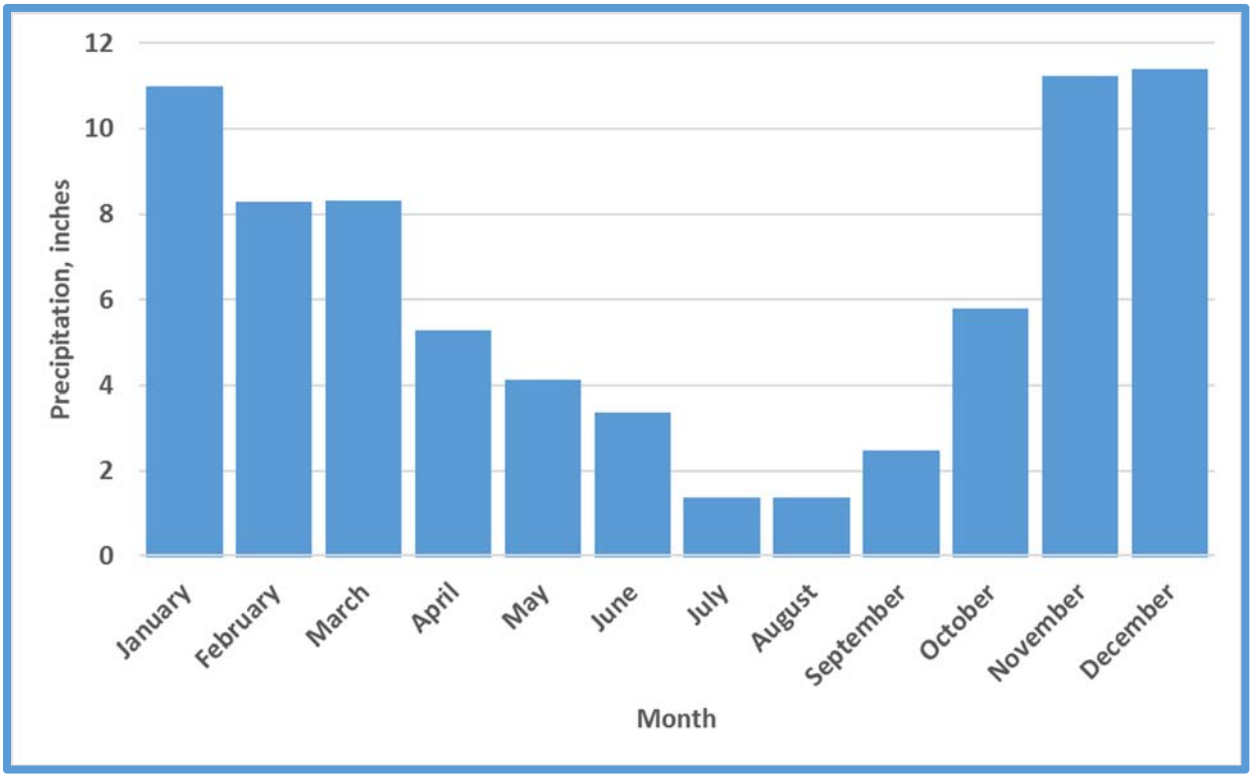


Figure 2.4: Precipitation Normals, NCEI 1981-2010

Figure 2.5 shows the temperature normals for Newport (NCEI, 2012). The mean maximum temperature varies from 66°F along the coast to 80°F farther inland during the summer months. Temperature during the summer months is largely moderated by a marine fog layer. The mean minimum temperature during the winter months varies from 40°F along the coast and cooler inland.

2.5.4 Flood Plains

With over 60 miles of ocean shore and several major rivers, extensive areas of Lincoln County, including Waldport, are subject to periodic flooding. Lincoln County participates in the National Flood Insurance Program (NFIP), which makes flood insurance available to all property owners in the county. To maintain eligibility for the NFIP, Lincoln County has adopted and enforces special building and development restrictions for lands that are subject to flooding.

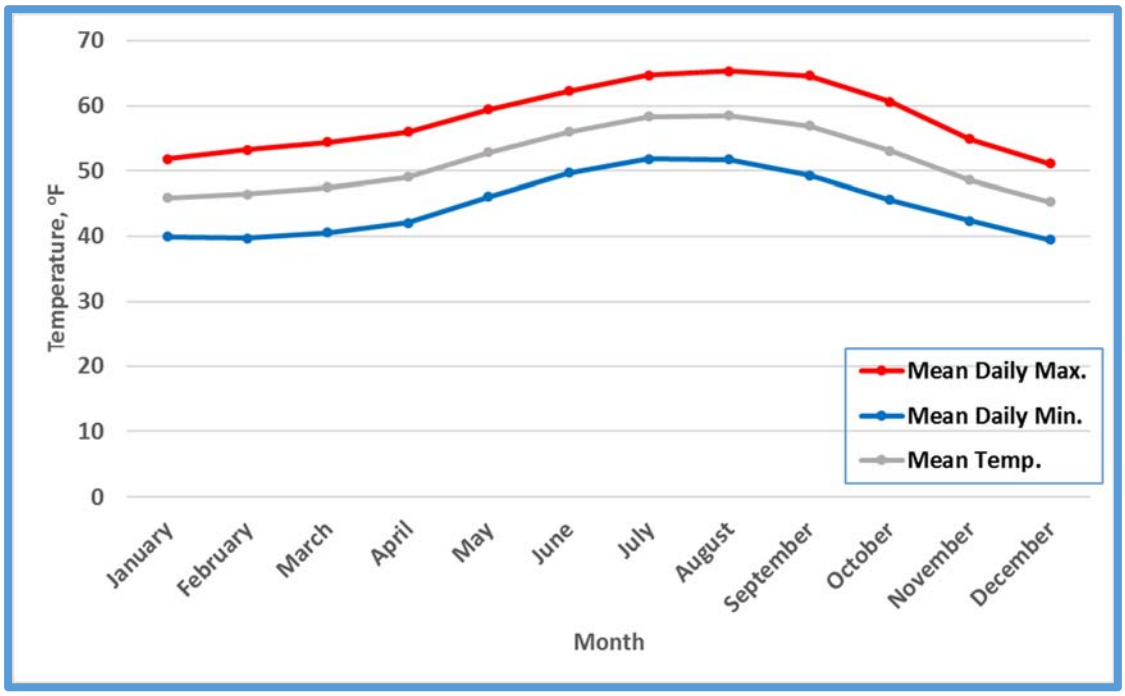


Figure 2.5: Temperature Normals, NCEI 1981-2010

The City of Waldport currently utilizes the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) effective December 18, 2009, as shown in Figure 2.6 (FEMA, 2009). The IP project site lies entirely outside of the FEMA base flood area as defined by Zone A. Access road intersections along Highway 101 also lie outside of the FEMA base flood area.

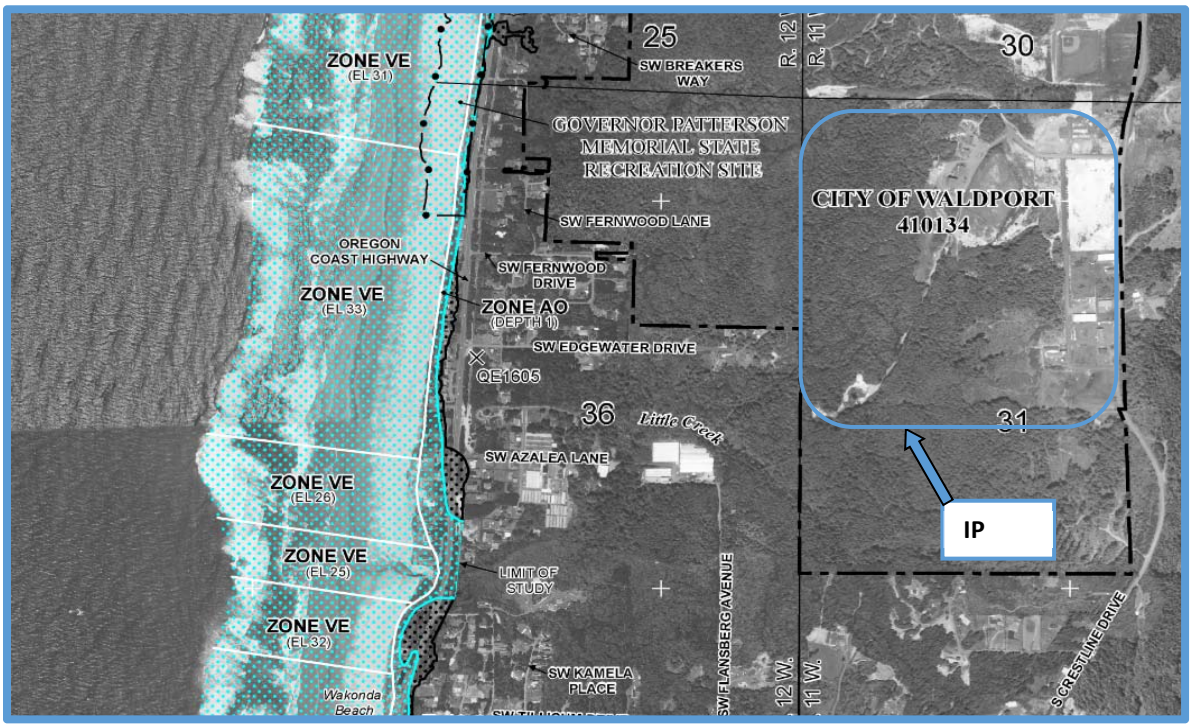


Figure 2.6: FIRM, effective December 18, 2009

The entire coastal zone is highly vulnerable to tsunami impact. Distant tsunamis caused by earthquakes on the Pacific Rim strike the Oregon coast frequently but most are barely noticed and only a few of them have caused significant damage or loss of life.

Local tsunamis caused by earthquakes on the Cascadia Subduction Zone (CSZ) happen rarely, but may cause catastrophic damage and, without effective mitigation actions, great loss of life. Most locally-generated tsunamis will be higher and travel farther inland (overland and up river) than distant tsunamis. Figure 2.7 depicts a zoomed in look at the Local Source (Cascadia Subduction Zone) Tsunami Inundation Map for Waldport, Oregon.

All 3 Access Road options will run through the L, XL and/or XXL events. However, the Industrial Park area site is well above the inundation zone.

In April of 2008 the USGS wrote that for the next 30 years there is a 10% probability of a magnitude 8 to 9 quake somewhere along the 750-mile-long Cascadia Subduction Zone. The tsunami inundation limit has been highlighted in this study due to a potential local tsunami generated by a CSZ earthquake that could affect the Access Roads only. With the IP site located well above the tsunami inundation zone, a new access road leading directly from Highway 101 to the elevated industrial site can offer an additional, safe evacuation route out of the evacuation zone as depicted on Figure 2.7.

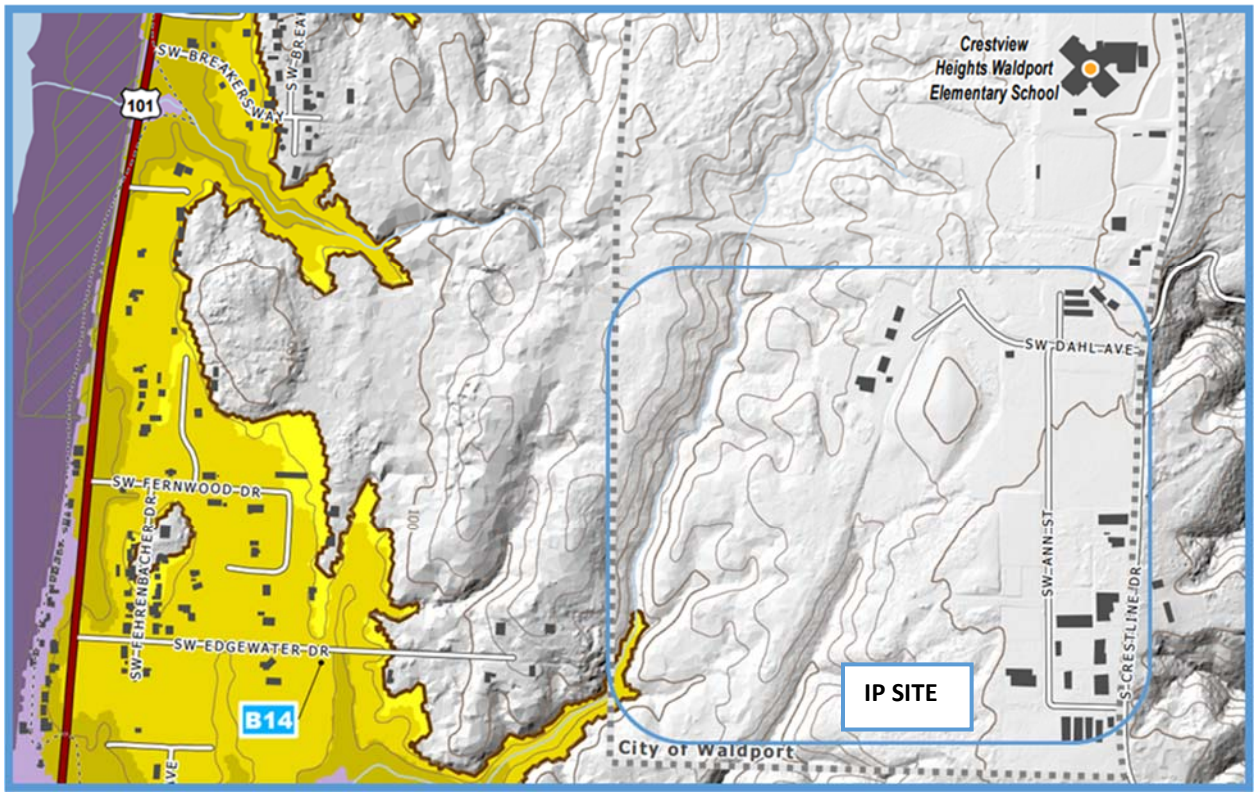


Figure 2.7: CSZ Tsunami Inundation Map for Industrial Park Area (2013)

Site Planning and Development

Section 3

3.1 Site Layout

3.1.1 Existing Lots

The Industrial Park site is an existing 161.2 gross acre industrially-zoned area that is located along Crestline Drive in the southern part of the City. There are currently a total of 35 lots, 13 of which have been improved, as shown in Figure 3.1, on page 3-3. Additional information on that figure also outlines 10 of the lots that are currently anticipated to be subdivided, with respect to owner information, lot size, acreage, and proposed lot lines.

3.1.2 Proposed Lots

This study assumes ultimate, full build-out capacity of the land, not necessarily limited by the 20-year planning period. Figure 3.2, on page 3-4 shows a layout of 75 possible lots, and Table 3.1 in Attachment A offers information on the current property owners, lot size, existing building and proposed building areas.

The total gross acreage for the Industrial Site is 161.24 acres. Setting aside 15.18 acres for existing and proposed right-of-way (ROW) areas, as well as approximately 48 acres of property less readily buildable, the net area of developable land is about 100 acres. Using a building coverage of 50% of the lot size, as per City of Waldport zoning regulations for industrial property, the calculated proposed building size is 2,147,480 square feet.

The industrial park site plan takes adjacent land uses into consideration. Development along the project perimeter adequately mitigates any potentially adverse influences, including but not limited to flooding, erosion, subsidence, sloping of the soil or other dangers and nuisances.

The various improvements recommended in the Master Plan are prioritized and separated into 4 zones of development (W, X, Y and Z), as shown in Figure 1.3 on page 1-6. The zones have been grouped based on utility development sequencing, ease of construction cost and existing conditions that prepares and organizes the site for short-term development, while providing options for future development.

3.2 Other Utilities

Central Lincoln PUD provides power to the Industrial Park area via overhead power lines as shown on Image 3.1. Currently, there is underground 3-phase power serving the existing developed lots in the IP area. Pioneer Telephone Cooperative provides both phone service and DSL service, and currently occupies two lots (#28 & #29) in the Industrial area. Installation of additional power and communications services from these providers is anticipated to be done in conjunction with the development of new streets in this area.

Image 3.1: Three Phase Power Running Along East Edge of Site

CITY OF WALDPORT ZONE R-1

CITY OF WALDPORT ZONE P-F

CITY OF WALDPORT ZONE I-P

LINCOLN COUNTY ZONE RR-2

EXISTING BUILDING

DAHL PROPERTIES

SOUTH LINCOLN LANDFILL PROPERTIES

EXISTING PROPERTY LINE

(#) PARCEL NUMBER

NOTES:
1. EXISTING PROPERTY LINES ARE APPROXIMATE ONLY.

SUBDIVIDED LOTS

Lot	Owner	Existing Acres	Proposed Lots	Notes
A	Gene R. Dahl & Shirlee M Dahl	20.45	10*,63,64,65,66*,68*,69,70,71, 60' ROW	New Lots: 6 Partial new lots: 68,66,10
B	Gene R. Dahl, & Shirlee M Dahl	55.07	10*,37,38,39,40,41,45,46,48,49,56,57,58,59,60,61,62,66*,67,68*,72,73,74,75, 60' ROW's	New Lots: 24 Partial new lots: 10,48,49,66,68,
C	Dahl & Dahl Inc.	8.28	7,8	New Lots: 2
D	Lee Arce Development Co.	6.22	14,16,19	New Lots: 3
E	Leone N. Dahl, Gene R. Dahl & Shirlee M. Dahl	2.30	18,20, 60' ROW	New Lots: 2
F	Gene R. Dahl, Leone R. Dahl & Shirlee M Dahl	2.57	42,50,51, 60' ROW	New Lots: 3
G	Leone R. Dahl, Gene R. Dahl & Shirlee M Dahl	8.00	43,44,52,53,54,55, 60' ROW	New Lots: 6
H	South Lincoln Landfill	8.39	10*	Parcel to include parts of A & B and to be expanded into Lot 10

51.52 ACRES
ZONE R-1 39.74 ACRES
LINCOLN COUNTY SCHOOL DISTRICT ZONE P-F
OREGON COAST COMMUNITY COLLEGE ZONE P-F
ZONE R-1 0.52 ACRES
ZONE I-P 20.45 ACRES
A
C 8.28 ACRES
EXISTING 9,230 SF
EXISTING 5,100 SF
EXISTING 12,300 SF
60' R-O-W
DAHL AVE
H 8.39 ACRES
0.35 ACRES
0.34 ACRES
0.68 ACRES
0.68 ACRES
6.22 ACRES
D
CRESTLINE DRIVE
ZONE RR-2 40 ACRES
ZONE I-P 24.91 ACRES
9
E 2.30 ACRES
ANN STREET
0.92 ACRES
EXISTING 10,375 SF
ZONE RR-2 21.31 ACRES
0.58 ACRES
0.34 ACRES
0.34 ACRES
1.84 ACRES
0.92 ACRES
0.72 ACRES
0.92 ACRES
EXISTING 12,200 SF
0.68 ACRES
0.64 ACRES
EXISTING 8,900 SF
0.92 ACRES
0.67 ACRES
IMPROVED RESIDENTIAL 2.18 ACRES
ZONE I-P 39.37 ACRES
B
F ZONE I-P 2.57 ACRES
EXISTING 7,200 SF
0.35 ACRES
EXISTING 2,550 SF
IMPROVED RESIDENTIAL 2.15 ACRES
0.67 ACRES
0.45 ACRES EXISTING 7,500 SF
60' R-O-W
KATHLEEN STREET
0.35 ACRES EXISTING 3,800 SF
G ZONE I-P 8.00 ACRES
EXISTING 10,525 SF
EXISTING 16,000 SF
SPECIAL ASSESSED VACANT FOREST LAND 17.45 ACRES
SPECIAL ASSESSED VACANT FOREST LAND 11.28 ACRES
36 ZONE I-P 4.3 ACRES
ZONE RR-2 79.22 ACRES

Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

WALDPORT INDUSTRIAL PARK

EXISTING CONDITIONS

1" = 300'

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE 3.1

EXISTING PARCEL
PROPOSED PARCEL
EXISTING ROAD
PROPOSED ROAD
ACCESS ROAD #3
ACCESS ROAD #2
ACCESS ROAD #1
EXISTING BUILDING
EXISTING LOT LINE
(#) PARCEL NUMBER

N

NOTES:
1. ALL PROPOSED RIGHT OF WAYS ARE 60' IN WIDTH TOTAL.
2. EXISTING PROPERTY LINES ARE APPROXIMATE ONLY.

TSUNAMI INUNDATION LIMIT

DAHL AVE
ANN STREET
CRESTLINE DRIVE
KATHLEEN STREET

Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

WALDPORT INDUSTRIAL PARK

PROPOSED LAYOUT

0 1" = 300'

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE
3.2

The overall objectives of this section are to:

- Describe the existing water system condition and capacity for both the city and SWLCWD;
- Estimate current and projected water demands for both the city and SWLCWD;
- Estimate projected water demands in the Industrial Park (IP);
- Develop potential water system improvements to serve the IP site;
- Develop recommended improvements necessary for the existing water systems to serve the demands from the IP; and
- Provide cost estimates and phasing recommendations for the recommended improvements.

The City of Waldport water system serves the majority of the Waldport city limits, however a large portion of the south/southwest part of the city is under the jurisdiction of the Southwest Lincoln County Water District (SWLCWD). Currently, domestic water service to several lots on the project site is provided by SWLCWD. The closest portion of the city's water infrastructure is located at Crestview Middle School, where an 8" water main serves fire protection water service for the school campus.

4.1 City of Waldport

The City of Waldport adopted a Water Master Plan (2002), which has been incorporated into the Waldport Comprehensive Plan and is used as a reference for this Master Plan. In addition, a Water Management and Conservation Plan (WMCP) was updated in 2012. An extension application to the Water Resources Department has been made to increase the authorized diversion from its current rate of 0.649 million gallons per day (MGD) to a 20-year rate of 0.802 MGD.

4.1.1 Water Supply

The natural drainage courses of North and South Weist Creeks and Eckman Creek constitute the primary surface water around the study area. Presently, the city removes raw water from both the Weist and Eckman Creeks. The city has been granted water rights to 6.73 cubic feet per second (cfs) or 4.34 million gallons per day (MGD).

Waldport currently has sufficient year-round raw water for its needs. While the available raw water can be significantly less in the summer months due to low stream flows in the Weist Creeks, the city uses the Eckman Creek source to supplement the system during this time period. The city also holds a water right on Southworth Creek, though it is not currently utilized as an active water source.

The City's WMCP found that the city withdrew for use about 0.260 MGD on an average annual day, with a peak day demand of about 0.649 MGD. According to previous studies, the city is projected to need only a limited increase of water over the next 20 years, based on a 0.7% growth rate in additional services (Waldport WCMP, 2012).

4.1.2 Design Capacity of Existing Infrastructure

The city's Water Treatment Plant (WTP) is located on Nelson Wayside Drive, 3 miles east of Waldport off of Highway 34. The City currently has three treated water reservoirs that can accommodate a maximum of 2.325 million gallons of water. The first reservoir is a 2-million-gallon steel tank built in 1983 at the WTP. The second is a 300,000-gallon steel reservoir built in 1964, which is approximately 900 feet downstream of the first tank. The third reservoir is a 25,000-gallon tank constructed in 2002 and located about 725 feet south of the WTP.

Operational treatment capacity of the water plant filters currently limits production to approximately 0.504 MGD. However, planned improvements to increase the filter capacity to 506 gallons per minute (gpm) will allow the production to reach 0.802 MGD. The WCMP (2012) found that by 2031, the average daily demand was projected to increase to 0.321 MGD total, with a peak day demand of 0.802 MGD. These projections appear to be consistent with city planning data for increases in population and employment as well as second homes

As of June 2011, the City of Waldport provided drinking water to about 1,282 customers. Inside city limits, there were 1,063 customers, whereas outside city limit customers numbered 219. The total service area is estimated to be 2.1 square miles. A map of the city's water service area is shown in Figure 4.2, on page 4-4.

A duplex pump station for fire flow service was installed for the Crestview Heights school campus when it was built in 2012. Though it was never put into service, this pump station, owned by the Lincoln County School District, may be able to provide the required minimum flow rates for fire service to the Industrial Park, with upgrades to the pumps. Preliminary analysis finds that even the highest lots would have around 53 psi of static water pressure.

4.2 Southwest Lincoln County Water District

Information about the Southwest Lincoln County Water District (SWLCWD) has been obtained from the *Southwest Lincoln County Water District Water Management and Conservation Plan* (WMCP), adopted in April 2014. SWLCWD is a municipal Water District located within a ½-mile to 1-mile wide by 8-mile long strip of land between the City of Waldport on the North and the City of Yachats on the South along Highway 101.

4.2.1 Water Supply

The Southwest Lincoln County Water District has permits or certificates to divert water from the creeks totaling 2.30 cubic feet per second (cfs) (1.94 MGD), of which 0.4 cfs cannot be diverted in the month of July. The four raw water sources the District utilizes are located on Big Creek, Starr Creek, Vingie Creek and Dicks Fork Creek. Each source is the culmination of surface waters within separate watersheds. Big Creek, Starr Creek and Vingie Creek supply water to the Blodgett Water Treatment Facility, which supplies water to approximately 90% of the District's customers, while Dicks Fork supplies the remaining 10%, which includes the existing Industrial Park area and several of its current residents.

The District has two water treatment plants, the Blodgett Water Treatment Facility and the Dicks Fork Treatment Facility. Operational constraints limit normal production of combined treated water capacity to between 0.79 and 0.87 MGD.

According to the SWLCWD WMCP (2014), the two different service elevations from each treatment plant are inter connected. Pressure reducing valves at two locations allow water from the Dicks Fork reservoir to feed into the lower system if needed. Alternatively, the Seabrook pump station is capable of supplying water from the lower Blodgett system to the higher Dicks Fork system from the 100,000 gallon Seabrook Reservoir. This pump station, located at the east end of SW Seabrook Lane, has a total capacity of 600 gpm, with a domestic pump rated at 150 gpm and a fire pump rated at 450 gpm that can be run simultaneously.

Southwest Lincoln County Water District currently has 1,250 active water services ranging in size from 3/4-inch to 6-inch. This represents an estimated permanent population of 2,250 people (1.8 people per service connection). The population figures rise to approximately 6,000 people at times during the summer months. Except for some portions of the Water District within the city limits of Waldport (including the IP site), the entire Water District is zoned as residential use. Of the 1,250 total water services, 313 are currently served by the Dicks Fork WTP. An aerial image of the District's water infrastructure is shown in Figure 4.1, on page 4-3 and a map of the District's water service area is shown on Figure 4.3, on page 4-5.

Currently, domestic water service to the southeast portion of the Industrial Park project site is serviced by SWLCWD through an 8" PVC water line that reduces down to a 6" line at the IP site. This line, which runs down Crestline Drive and along Kathleen Street, Anne Street and a portion of Dahl Street, includes two fire hydrants on the IP site. However, this water line, which is tied in to the Dick's Fork treatment plant, does not appear to have the capacity to meet the current fire code for emergency water requirements.

The Water District's water distribution system is connected to the City of Waldport and to the City of Yachats. There are intergovernmental agreements relating to the use of these interties, but the use of has been limited. The city is physically connected with the SWLCWD system through a single 8 inch PVC pipe with valve isolation that may be opened under emergency situations. A single valve opening allows the Water District to get water from the City of Waldport, however, feeding water in the opposite direction will require some valve replacements by the Water District.

4.2.2 Design Capacity of Existing Infrastructure

Currently, the Dick's Fork treatment plant services the area near the Industrial Park site. The Water District has had a permit to divert water from Dick's Fork totaling 0.40 cfs (0.215 MGD) since 1994. The Dick's Fork facility has a rated treatment capacity of 200 gpm (0.288 MGD). After treatment, the water is pumped to the 100,000 gallon Dicks Fork reservoir at elevation 330 feet. The highest lots on the Industrial Park site would have 56 psi of static pressure from this reservoir.

The five-year average, ending in 2013, for total water production/annual water use for the Dicks Fork plant was 0.018 MGD. Using a peaking factor of 2.23 (as used in the 2014 WMCP), the average maximum day demand (MDD) was 0.040 MGD. Recent data from the Water District corroborates this usage, with peak flows showing 32 gpm or 0.05MGD.

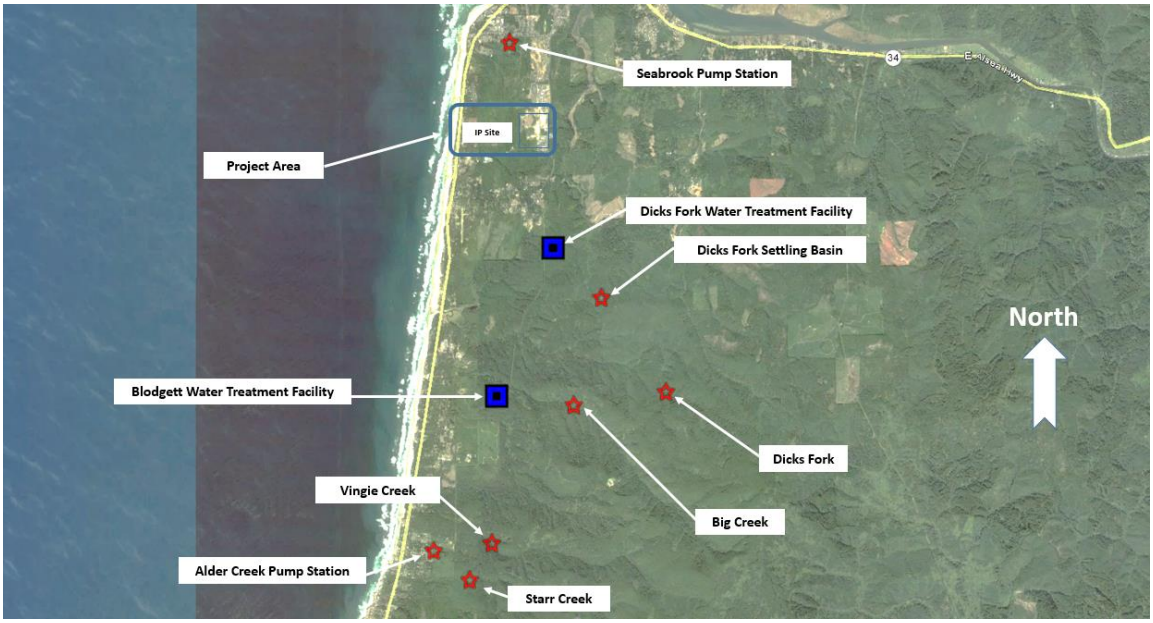


Figure 4.1: Aerial Map of SWLCWD Infrastructure

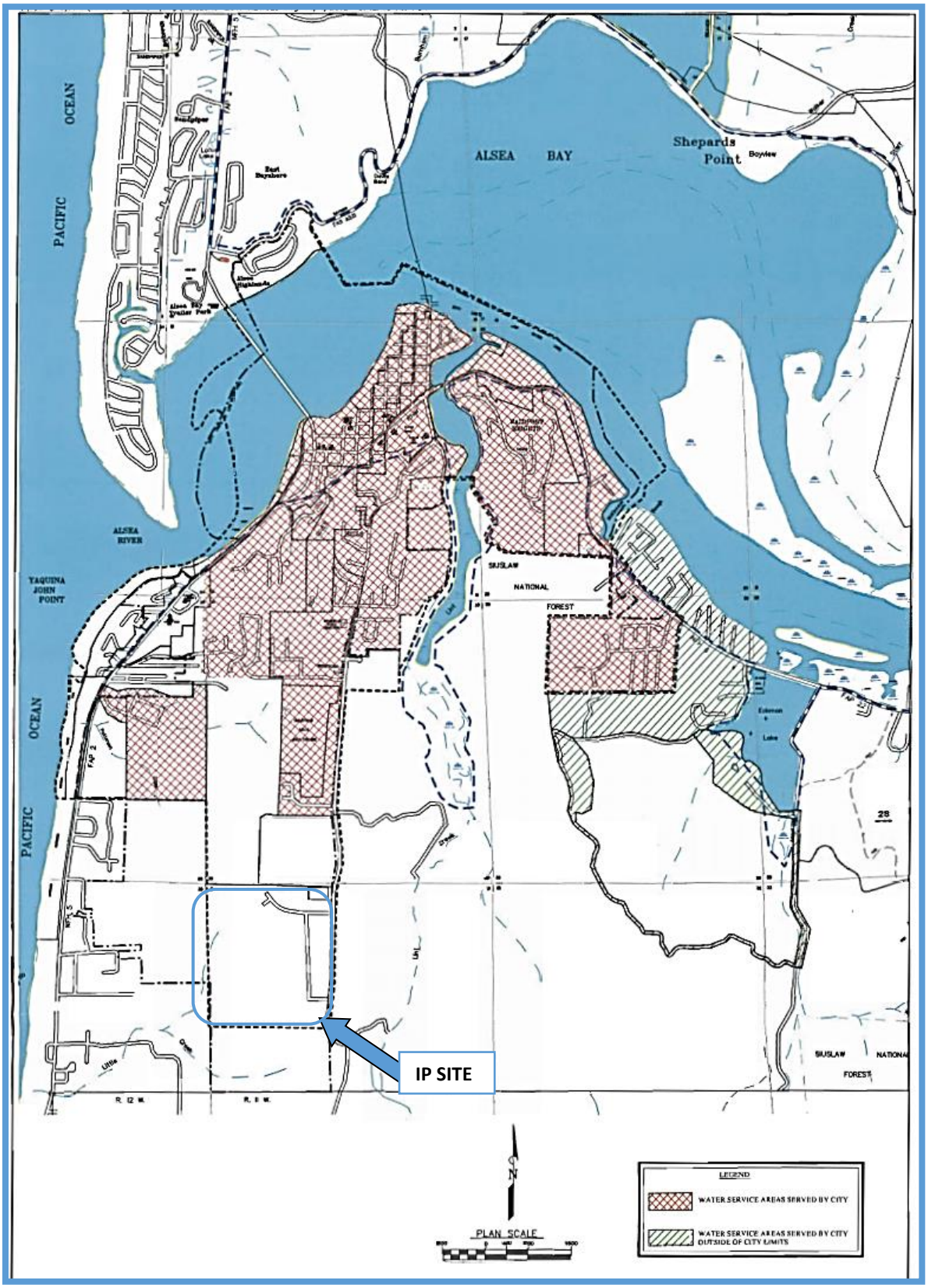


Figure 4.2: City of Waldport Water Service Area

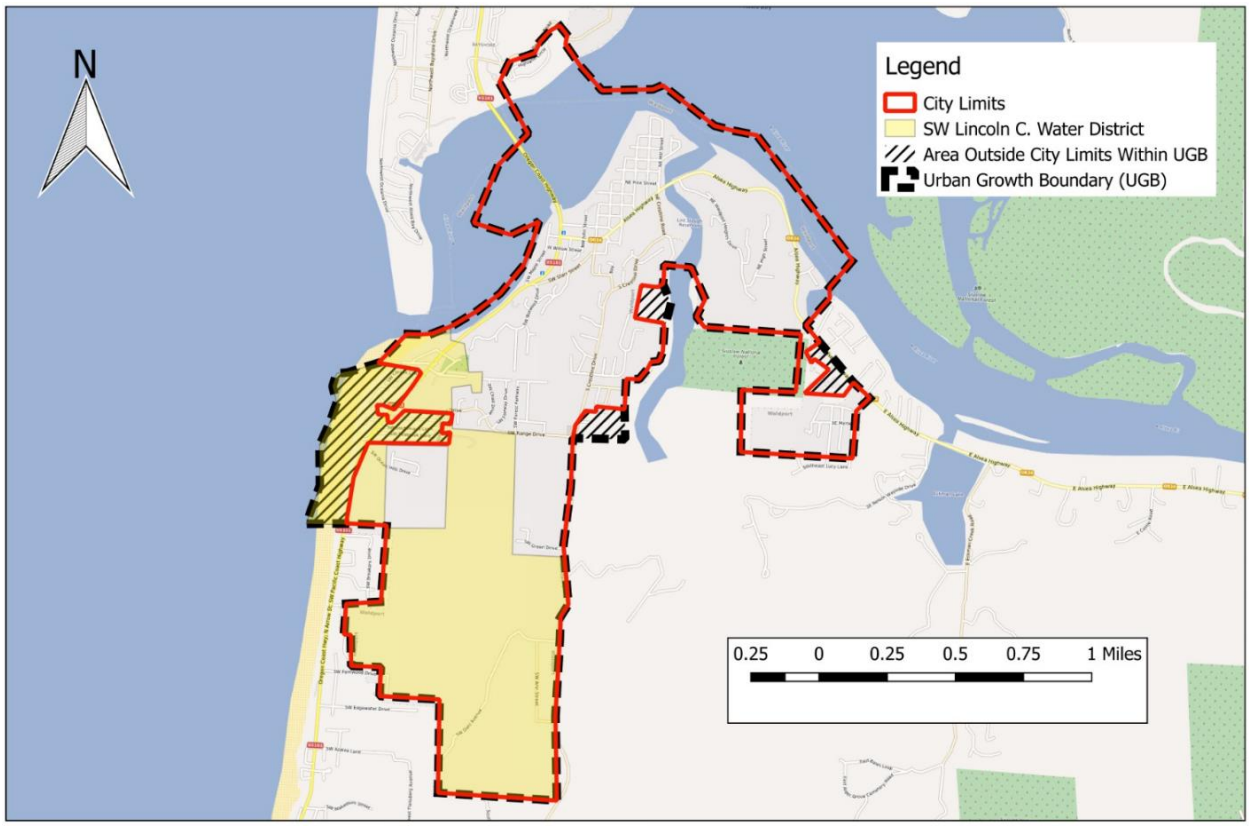


Figure 4.3: SWLCWD Water Service Area (Lincoln County GIS, 2014)

4.3 Projected Domestic Water Demand

Water demand can be evaluated using several different metrics. In the context of the City of Waldport and the District, water demand is evaluated in terms of the equivalent dwelling unit (EDU). Use of EDUs permit the delineation of water load from multiple user types in terms of normalized EDUs. These unit demands can be multiplied by future population projections or EDU projections to estimate future water demands for planning purposes.

For industrial uses, such as in the IP, water demand is evaluated in terms of land-use based water demand projections.

Water demand is described in the following terms:

Average Daily Demand (ADD) - The total volume of water delivered to the system over a year divided by 365 days. The average use in a single day expressed in gallons per day.

Maximum Month Demand (MMD) - The gallons per day average during the month with the highest water demand. The highest monthly usage typically occurs during a summer month.

Demands described above, expressed in gallons per day (gpd), can be divided by the population or Equivalent Dwelling Units (EDUs) served to come up with a demand per person or per capita which is expressed in gallons per capita per day (gpcd), or demand per EDU (gpd/EDU).

4.3.1 Industrial Park Demands

According to the *Land Use/Water Supply Guidebook* (Tully and Young, 2007), "Land use based water demand projections are derived by applying either a per-acre water demand factor or a per-dwelling unit water demand factor to either the number of acres slated for development or the number of dwelling units. The per-acre demand factor is expressed as a projected volume per acre of land with a specific land use classification and conservative density assumption." The per-acre method is deemed to be more appropriate in this instance, as the exact type of use and building footprints are currently unknown. Table 4.1 below provides some data describing per-acre typical demands for non-residential land uses from the above-cited guidebook.

Table 4.1: Typical Indoor/Outdoor Percentages for Non-Residential Land Uses

Classification	Use Type	% acreage	Demands (af/acre)
Light Industrial Office	Indoor Hardscape Landscape	60 35 5	2 n/a 4
Light Industrial	Indoor Hardscape Landscape	60 35 5	2 n/a 4
Heavy Industrial	Indoor Hardscape Landscape	45 45 10	3 n/a 4

Note that the Industrial Park area is zoned as "Planned Industrial", so heavy industrial uses would not be applicable. The data is included to provide parameters so that demands for a medium industrial use can be approximated.

We are assuming that the total developable land is approximately 100 acres as discussed in section 3.1. With a full build-out and minimized landscape water use, preliminary analysis estimates a total demand of 0.059 MGD average daily demand (ADD) for the Industrial Park. Using a maximum day demand (MDD) peaking factor of 2.5 (as established in the 2012 Waldport WMCP), this corresponds to a total peak flow of 0.149 MGD.

The projected water demands for the IP site shown in Table 4.2 are divided into the subsequent zones of development: Zone W will be built out by 2020, Zone X will be built out by 2023, Zone Y will be built out by 2030, and Zone Z will be built out by 2037.

Table 4.2: Projected Water Demand - IP Site

Zone	W		X		Y		Z	
Year	**2020**		**2023**		**2030**		**2037**	
Unit (MGD)	**ADD**	**MDD**	**ADD**	**MDD**	**ADD**	**MDD**	**ADD**	**MDD**
Demand	0.031	0.077	0.017	0.042	0.005	0.014	0.006	0.016
Cumulative IP Demand	0.031	0.077	0.048	0.119	0.053	0.133	0.059	0.149

4.3.2 City Demands

Projected demands for the city water system will use the following assumptions, which are based on the 2012 Waldport Water Management and Conservation Plan:

- Average Day Demand (ADD) = 128 gallons per capita per day (gpcd)
- Maximum Day Demand (MDD) peaking factor = 2.5
- EDU demands = 170 gallons per day
- Annual Growth Rate = 0.7%

Water demand estimates for future years are determined by multiplying the current unit demand values (gallons per person or per EDU) by the projected number of future users in the water system. It is assumed new users added to the system will consume water at the same rate as current users. Population projections for the City of Waldport are presented in section 5.3 on page 5-4. The projections are based on an average annual growth rate of 0.7% in the City of Waldport.

The maximum daily demand (MDD) is used to size facilities based on periods of maximum water demand. The ADD and MDD for the City of Waldport is summarized in Table 4.3. The per capita ADD includes all commercial and residential water consumption, as well as system losses, leakage, meter inaccuracies, unmetered use, and all other lost water.

Table 4.3: Projected Water Demand - City of Waldport

Zone	**W**		**X**		**Y**		**Z**	
Year	2020		2023		2030		2037	
EDUs	1,614		1,648		1,730		1,817	
Flow	ADD	MDD	ADD	MDD	ADD	MDD	ADD	MDD
Total, MGD	0.274	0.670	0.280	0.699	0.294	0.734	0.308	0.771

4.3.3 SWLCWD Demands

Projected demands for the SWLCWD water system will use the following assumptions, which are based on the 2014 SWLCWD Water Management and Conservation Plan:

- Average Day Demand (ADD) = 71 gallons per capita per day (gpcd)
- Maximum Day Demand (MDD) peaking factor = 2.23
- EDU demands = 154 gallons per day
- Annual Growth Rate = 0.5%

The projected ADD and MDD for the SWLCWD is summarized in Table 4.4, based on the 5-year average from 2008 to 2013. It is also assumed that there will be additional EDUs added in 2020 and 2030 from undeveloped properties both inside and outside of the City of Waldport limits (SWLCWD, 2014). The per capita ADD includes all commercial and residential water consumption, as well as system losses, leakage, meter inaccuracies, unmetered use, and all other lost water.

The 2014 SWLCWD WMCP assumed a growth rate of 0.05% even though the historical population growth was 1% between 2008 and 2013. For purposes of this master plan, a 0.5% average annual growth rate is assumed for the District, which is more consistent with Lincoln County and the City of Waldport anticipated growth rates.

Table 4.4: Projected Water Demand - SWLCWD

Zone	W		X		Y		Z	
Year	**2020**		**2023**		**2030**		**2037**	
EDUs	1,685		1,711		1,972		2,042	
Flow	ADD	MDD	ADD	MDD	ADD	MDD	ADD	MDD
Total (MGD)	0.196	0.489	0.198	0.496	0.229	0.572	0.237	0.592

4.4 Projected Fire Protection Demand

4.4.1 Industrial Park Demands

Fire protection water service demand will vary, depending on the size and type of buildings that are constructed on the Industrial Park site. Minimum requirements, per the 2010 Oregon Fire Code could range from a minimum of 1,500 gpm for 2 hours to a maximum of 3,750 gpm for 3 hours, measured at 20 psi residual pressure. For buildings larger than 128,700 ft^2, sprinkler systems may need to be required to offset fire flow requirements of more than 3,750 gpm.

Storage requirements for fire reserve storage amount to 180,000 gallons for 1,500 gpm flows and 675,000 gallons for 3,750 pgm flows.

4.5 Industrial Park Alternatives

4.5.1 Site Water System

The proposed water system for the IP site is composed of predominantly 8" PVC water piping providing a looped network to serve both domestic and fire protection demands. The preliminary proposed system for the full build-out of the project includes approximately 7,620 lineal feet of 8" water piping and 20 fire hydrants, with associated appurtenances. Currently there are 2,400 lineal feet of 6" PVC running down Anne Street and 2 fire hydrants, which conveys water from the SWLCWD system to approximately 13 lots on the IP site.

A preliminary layout of the IP site water system has been prepared on the same drawing as the sewer system (Figure 5.3 on page 5-8), in order to develop preliminary construction costs. A cost estimate for construction of the water system for each of the development zones on the IP site is provided below in Table 4.5.

Table 4.5: IP Site Water System Cost Estimate

Zone W					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (15%)	ls	1	$5,000	$5,000
2	Construction Facilities & Temporary Controls (6%)	ls	1	$2,000	$2,000
3	Fire Hydrant Assemblies	ea	5	$4,750	$23,750
4	Landscape/Pavement Restoration	ls	1	$5,000	$5,000
Construction Cost Total					$35,750
Contingency (20%)					$7,150
Engineering (20%)					$7,150
Project Management and Legal (5%)					$1,788
Water System Zone W Budget Estimate					**$51,833**

Zone X					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (15%)	ls	1	$40,000	$40,000
2	Construction Facilities & Temporary Controls (6%)	ls	1	$16,000	$16,000
3	8" PVC C-900 Pipe w/ Class 'B' Backfill	lf	3,700	$55	$203,500
4	PVC Fittings	ls	1	$20,000	$20,000
5	Fire Hydrant Assemblies	ea	8	$4,750	$38,000
6	Landscape Restoration	ls	1	$10,000	$10,000
Construction Cost Total					$327,500
Contingency (20%)					$65,500
Engineering (20%)					$65,500
Project Management and Legal (5%)					$16,375
Water System Zone X Budget Estimate					**$474,875**

Zone Y					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit	ls	1	$25,000	$25,000
2	Construction Facilities & Temporary Controls	ls	1	$6,000	$6,000
3	8" PVC C-900 Pipe w/ Class 'B' Backfill	lf	2,400	$55	$132,000
4	PVC Fittings	ls	1	$13,000	$13,000
5	Fire Hydrant Assemblies	ea	6	$4,750	$28,500
Construction Cost Total					$204,500
Contingency (20%)					$40,900
Engineering (20%)					$40,900
Project Management and Legal (5%)					$10,225
Water System Zone Y Budget Estimate					**$296,525**

Zone Z					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (15%)	ls	1	$16,000	$16,000
2	Construction Facilities & Temporary Controls (6%)	ls	1	$6,000	$6,000
3	8" PVC C-900 Water Main	lf	1,520	$55	$83,600
4	PVC Fittings	ls	1	$11,400	$11,400
5	Fire Hydrant Assemblies	ea	1	$4,750	$4,750
Construction Cost Total					$121,750
Contingency (20%)					$24,350
Engineering (20%)					$24,350
Project Management and Legal (5%)					$6,088
Water System Zone Z Budget Estimate					**$176,538**
		Total Water Budget Estimate			**$999,775**

The City of Waldport and SWLCWD have been working together for the past several decades to serve the areas to the south of the main town of Waldport. The Industrial Park site is within the City of Waldport limits and the Urban Growth Boundary, but is currently served by the Water District.

There are three options for bringing water infrastructure to the IP site:

1. The District provides domestic and fire protection water services
2. The District provides domestic and the City provides fire protection water services
3. The City provides domestic and fire protection water services

There are several constraints and/or questions regarding each of these options that will need to be clarified to fully service the IP site. There are questions about the overlapping of systems. If one agency is providing domestic water and the other is providing water for fire protection, development may be discouraged if added infrastructure costs are required to serve both systems. In addition, there could be problems with detecting the source of leaks due to the unconnected pipe systems. Also, if one agency is providing water (both domestic and fire) and the other sewer, then there is an additional public health risk due to the potential for cross-connection between potable and waste water.

In addition, both agencies will need to look at infrastructure expansion in the future to service the full build out of the IP site and also keep up with other growth in the area. The flowing sections discuss the options of each agency supplying water to the IP site.

4.5.2 SWLCWD Supply

The impact of the build-out of the Industrial Park on the existing SWLCWD water system is evaluated in this section to determine the need for and extent of future upgrades to the existing system, should the District serve the site. When appropriate, cost estimates will be provided for specific alternative improvements. The estimates presented herein are preliminary and are based on the level and detail of planning presented in this Plan.

The SWLCWD is currently serving water to the west side of the IP site, along Crestline Drive and Anne Street, through the Dicks Fork system. Flow rates and pressures for this existing infrastructure are not available. Preliminary water modeling estimates that the fire hydrants in this area should have flows of approximately 500 gpm to 660 gpm at 20 psi residual pressure when served by the Dicks Fork water reservoir. Domestic water pressures should be approximately 56 psi at the highest lots on the site.

In addition, according to the SWLCWD, when the Crestview Middle School was built in 2012, the Seabrook pump station piping was reconfigured to pump water to Crestline Drive from the 100,000 gallon Seabrook reservoir (on the Blodgett system) in order to meet required fire code. This could potentially add an additional 600 gpm to the IP site water system, for a total of 1,100 gpm to 1,260 gpm.

The Dick's Fork facility has a rated treatment capacity of 200 gpm (0.288 MGD). The five-year average, ending in 2013, for total water production/annual water use for the Dicks Fork plant was 0.018 MGD. Using a peaking factor of 2.23 (as used in the 2014 WMCP), the average maximum day demand (MDD) was 0.040 MGD. The projected water demands for both the Dicks Fork system and the IP site shown in Table 4.6.

Table 4.6: Projected Water Demand – IP Site and SWLCWD Dicks Fork System

Zone	**W**		**X**		**Y**		**Z**	
Year	2020		2023		2030		2037	
Flow	ADD	MDD	ADD	MDD	ADD	MDD	ADD	MDD
Dick's Fork (MGD)	0.026	0.058	0.026	0.058	0.030	0.067	0.031	0.070
IP (MGD)	0.031	0.077	0.048	0.119	0.053	0.133	0.059	0.149
Total (MGD)	0.057	0.135	0.074	0.177	0.083	0.200	0.09	0.219

As shown in the results of Table 4.6, the Dicks Fork system can produce adequate domestic water to serve both the projected demands from the existing service area and the full build out of the IP site. However, as discussed previously, the maximum amount of water that can be supplied to the IP site is between 1,100 gpm and 1,260 gpm, which does not meet current fire code requirements.

In the 2014 WMCP, SWLCWD identified the addition of a 500,000 gallon water reservoir adjacent to the existing 100,000 gallon Dicks Fork tank to their future capital improvement projects. This storage tank will be required to serve the IP site in terms of fire reserve storage plus the required equalization and emergency storage reserves for domestic use. In addition to volume requirements, a booster pump station will need to be constructed to serve the IP site and the surrounding area in order to boost the flow rates to the minimum required flow of 1,500 gpm.

A cost estimate for construction of required infrastructure to provide both domestic and fire protection water to the IP site by SWLCWD is provided below in Table 4.7.

Table 4.7: Cost Estimate for SWLCWD Water Infrastructure Upgrades

Southwest Lincoln County Water District					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (15%)	ls	1	$172,500	$172,500
2	Construction Facilities & Temporary Controls (6%)	ls	1	$70,000	$70,000
3	Booster Station (1,500 gpm Duplex Fire Pumps)	ls	1	$600,000	$600,000
4	Storage tank 0.5 MG	ls	1	$550,000	$550,000
Construction Cost Total					$1,392,500
Contingency (20%)					$278,500
Engineering (20%)					$278,500
Project Management and Legal (5%)					$69,625
Southwest Lincoln County Water District Budget Estimate					**$2,019,125**

4.5.3 City of Waldport Supply

The impact of the build-out of the Industrial Park on the existing City of Waldport water system is evaluated in this section to determine the need for and extent of future upgrades to the existing system, should the city serve the site.

Operational treatment capacity of the water plant filters currently limits production to approximately 0.504 MGD. However, planned improvements to increase the filter capacity to 506 gallons per minute (gpm) will allow the production to reach 0.802 MGD.

Based on the projections shown in Table 4.8, the city would need to look at expansion of the water treatment facility, as already planned, in order to meet the projected demands of the IP site.

Table 4.8: Projected Water Demand – IP Site and City of Waldport System

Zone	**W**		**X**		**Y**		**Z**	
Year	2020		2023		2030		2037	
Flow	ADD	MDD	ADD	MDD	ADD	MDD	ADD	MDD
Waldport, MGD	0.274	0.670	0.280	0.699	0.294	0.734	0.308	0.771
IP, MGD	0.031	0.077	0.048	0.119	0.053	0.133	0.059	0.149
Total, MGD	0.305	0.747	0.328	0.818	0.347	0.867	0.367	0.920

Based on the previous analysis, it appears that the SWLCWD could supply the Industrial Park Site with both domestic and fire protection water service. However, it will be incumbent upon the District to commit to constructing the required infrastructure to meet the fire protection requirements, as detailed in Section 4.5.2.

Sanitary Sewer System

Section 5

The overall objectives of this section are to:

- Describe the existing sanitary sewer collection system condition and capacity;
- Estimate current and projected wastewater flows in the existing Urban Growth Boundary (UGB);
- Estimate projected wastewater flows in the Industrial Park (IP);
- Develop potential wastewater collection improvements to serve the IP and convey the flows to the Wastewater Treatment Plant (WWTP);
- Develop recommended improvements necessary for the existing collection system to handle the added flows from the IP; and
- Provide cost estimates and phasing recommendations for the recommended improvements.

The City of Waldport has adopted a Wastewater Collection System Master Plan (May 2000) which has been incorporated into the Waldport Comprehensive Plan and is used as a reference for this Master Plan. The Wastewater Master Plan evaluated the existing system, identified current deficiencies, estimated current and projected flows, and recommended improvements. The City of Waldport is planning on updating the wastewater master plan in the near future, which will allow for a more current and detailed analysis of the wastewater system components and the capacity of the plant to handle both future City flows as well as flows from the IP site.

5.1 Existing System

The current Waldport wastewater system consists of approximately 51,310 feet of mainline gravity pipe, 16,800 feet of pressurized pipe, 9 lift stations, 200 manholes, 26 main cleanouts and the Wastewater treatment plant (WWTP).

The City wastewater system serves the majority of the city. Those areas within the city currently not served by the wastewater system include the area east of Lint Slough, the Alsea Highlands and Hotel developments located north of the Highway 101 bridge.

Also, the City wastewater system currently does not serve the industrial park area. The closest portion of the Sewer system is located near the intersection of Green and Crestline Drives, part of Sub-Basin F, as shown on Figure 5.1.

5.1.1 Wastewater Treatment Plant

The original wastewater treatment plant (WWTP) was built in 1951 and upgraded in 1973 to accommodate a design flow of 0.3 millions of gallons per day (MGD). The 1973 treatment plant was replaced in 1993 with the current treatment facility, a sequencing batch reactor (SBR) capable of handling a design flow of 0.7 MGD and a peak instantaneous flow of 2.0 MGD.

The current WWTP is located on the west side of Lint Slough south of the Alsea River. The plant was designed to serve an equivalent population of 3,294 people.

5.1.2 Existing Wastewater Collection System

The current city wide wastewater collection system consists of approximately 51,310 feet of mainline gravity pipe, 16,800 feet of pressurized pipe, 9 lift stations, 200 manholes, and 26 main cleanouts

The same sub-basins that were used in the Wastewater Collection System Master Plan (City of Waldport, 2000) are used in this report for delineating uses of and loads on specific parts of Waldport's wastewater treatment system that may be affected by the build-out of the Industrial Park. Figure 5.1 shows a map of the 12 sub-basins for Waldport. The sub-basins that could potentially be impacted by the Industrial Park include sub-basins D, E, F, and N. They all drain into the 8" gravity main that runs along Crestline Dr. and into the Grade School lift station. The elementary and high school and the golf course all drain via force mains into the 8" gravity main at a manhole located on the corner of Salmon Street. Numerous residential units along Crestline Drive are also serviced by the 8" gravity main via lateral gravity lines. The IP site is south of sub-basin N, as shown on Figure 5.1.

A Crestline Drive bypass was designed in 2008 and partially constructed in order to modify the existing system to handle the anticipated flows generated by adding Bayshore and South Waldport to the system. As part of this construction, the Ocean Hills lift station was upgraded and an 8" force main was installed up Range Drive and down Crestline Drive to the WWTP. However, due to the configuration of the infrastructure, this bypass is currently not functional during heavy rain and Infiltration/Inflow events and will need to be rehabilitated and/or reconfigured.

5.1.3 Existing Lift Stations and Force Mains

There are currently nine raw sewage lift stations which are required to provide service to the residential and commercial customers within the City's Urban Growth Boundary (UGB). Three of these stations provide input into the Crestline Drive 8" gravity main, which include the Elementary School pump station, the Range Drive pump station, and the Golf Course pump station. The Ocean Hills pump station, built in 1993 and upgraded in 2008, lifts sewage from Bayshore and South Waldport via an 8" force main up Range Drive and down Crestline Drive to the WWTP.

5.2 Existing System Capacity

5.2.1 Treatment System

The current wastewater treatment plant, constructed in 1993, is a sequencing batch reactor (SBR) capable of handling a maximum month wet weather flow of 0.70 MGD and a peak hydraulic flow of 2.0 MGD. The plant capacity can be increased up to a peak flow of approximately 5.0 MGD by the installation of additional sequencing batch reactors (SBR) tanks along with new headworks and other plant mofifications.

The City of Waldport's WWTP is unique in that nearly all of the influent flow is directed from one lift station. Therefore, the maximum flow into the plant is currently limited to the maximum firm pumping capacity of the Grade School lift station, which is 1,230 gpm or 1.77 MGD. However, the South Waldport Sewer Improvement project, which rehabilitated the Ocean Hills lift station and installed an 8" force main running directly to the WWTP adds additional influent to the plant. Currently, this regional system is not operational and the flows from South Waldport are directed through the Grade School lift station.

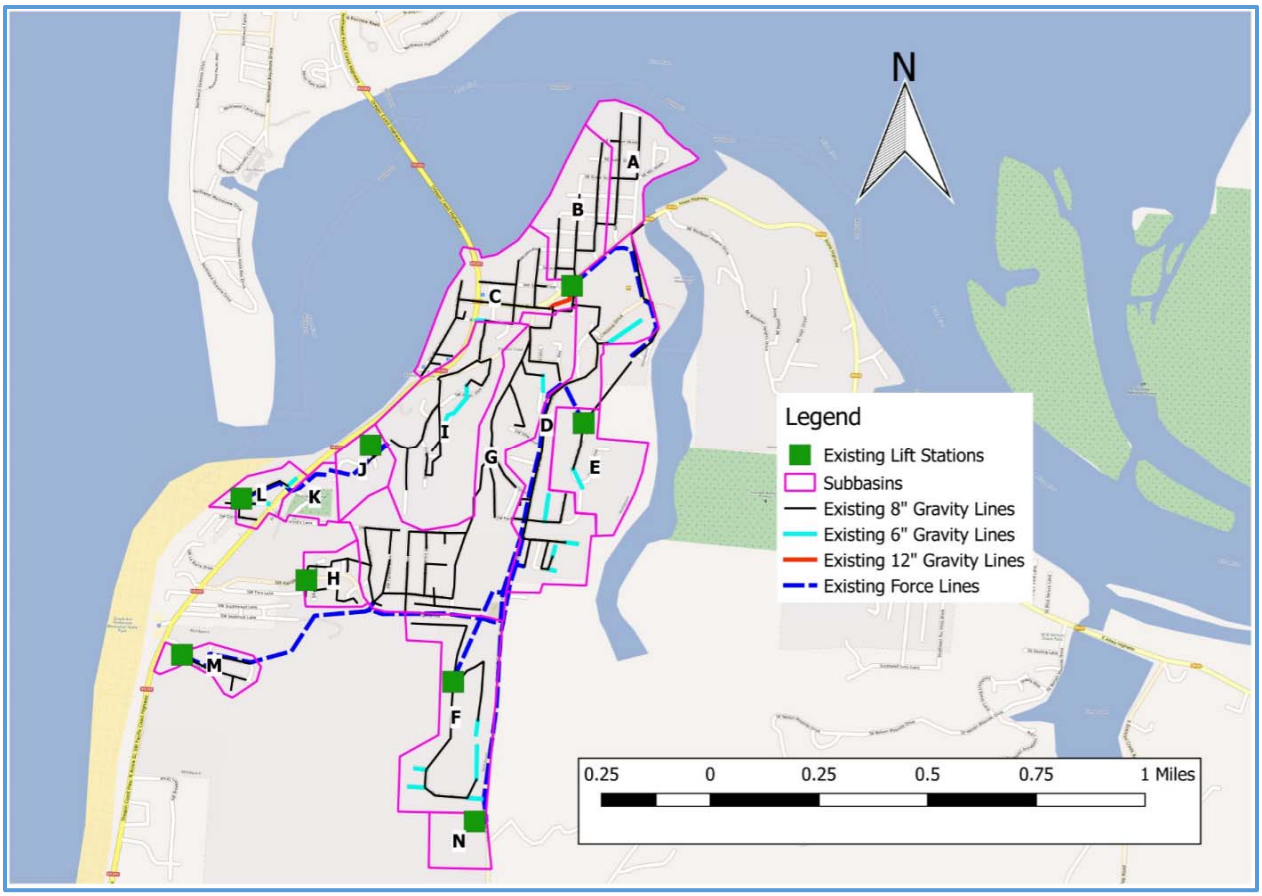


Figure 5.1: Sub-basin Map of Waldport's Storm Sewer Pipe System

5.2.2 Collection System

One limitation of the existing city conveyance system is the capacity of the Grade School Pump Station, which is located next to City Hall. This station currently receives all sewage generated within the collection system and conveys the incoming flow to the WWTP via 3,200 feet of 10" force main. Discharge capacity of this station is approximately 1.77 MGD.

The Ocean Hills upgrade and force main construction completed in 2008 was designed to reduce the amount of sewage entering the Grade School pump station by creating a regional system to convey sewage generated from the South Waldport area directly to the WWTP. The flows from this station are lifted via an 8" force main up Range Drive and down Crestline Drive to the WWTP. The hydraulic capacity of this pump station was sized to handle a peak instantaneous flow of 480 gpm (0.69 MGD), which was the projected 20-year flow (2022) for South Waldport, excluding the Industrial Park area. A Local Improvement District (LID) was created to fund this project by the residents of South Waldport that tie into this system.

Currently, there is an 8" gravity main that runs down Crestline Drive and eventually conveys the flows into the Grade School pump station. The elementary school, the high school and the golf course all drain via force mains into the 8" gravity main at a manhole located on the corner of Salmon Street. Numerous residential units along Crestline Drive are also serviced by the 8" gravity main via lateral gravity lines. The current capacity of the 8" Crestline gravity main is 0.933 MGD or 648 gpm, flowing full. Although functioning within the confines of its operating capacity for average flows, this gravity main is currently at the limits of its capacity to handle peak flows during heavy I/I periods.

5.3 Projected Wastewater Flows

Projected wastewater flows are developed based on the assumption that flow per capita will hold constant. This results in the increase in projected flows being proportional to the population growth. Projecting peak flows at the same rate of community growth results in the assumption of I/I flows increasing at a similar rate. The City is currently addressing I/I issues and has a plan in place to continue monitoring and repairing the worst areas, which will likely lead to less I/I. However, assuming a population based increase in I/I flows will lead to conservative design flows and is therefore the approach taken to project future flows.

Projected flows for the City sewage system will use the following assumptions, which are based on the 2000 Wastewater Collection System Master Plan:

- Average per capita domestic sewage contribution = 100 gallons per capita per day (gpcd)
- Average single household sewage contribution = 200 gallons per day (gpd)
- Base Infiltration rate = 20 gallons per capita per day (gpcd)
- Residential peaking factor = 3.0
- Population, density, land use based on the current comprehensive plan and zoning regulations

The 2015 certified population of Waldport was 2,075 in 2015 and 2,080 in 2016 (PSU, 2016). Based on a growth rate of 0.7%, representative of past population growth rates for Lincoln County, the projected population in 20 years (2037) is 2,408 residents. Figure 5.2 shows the historic population trend for Waldport as blue dots and the projected population growth as a yellow line.

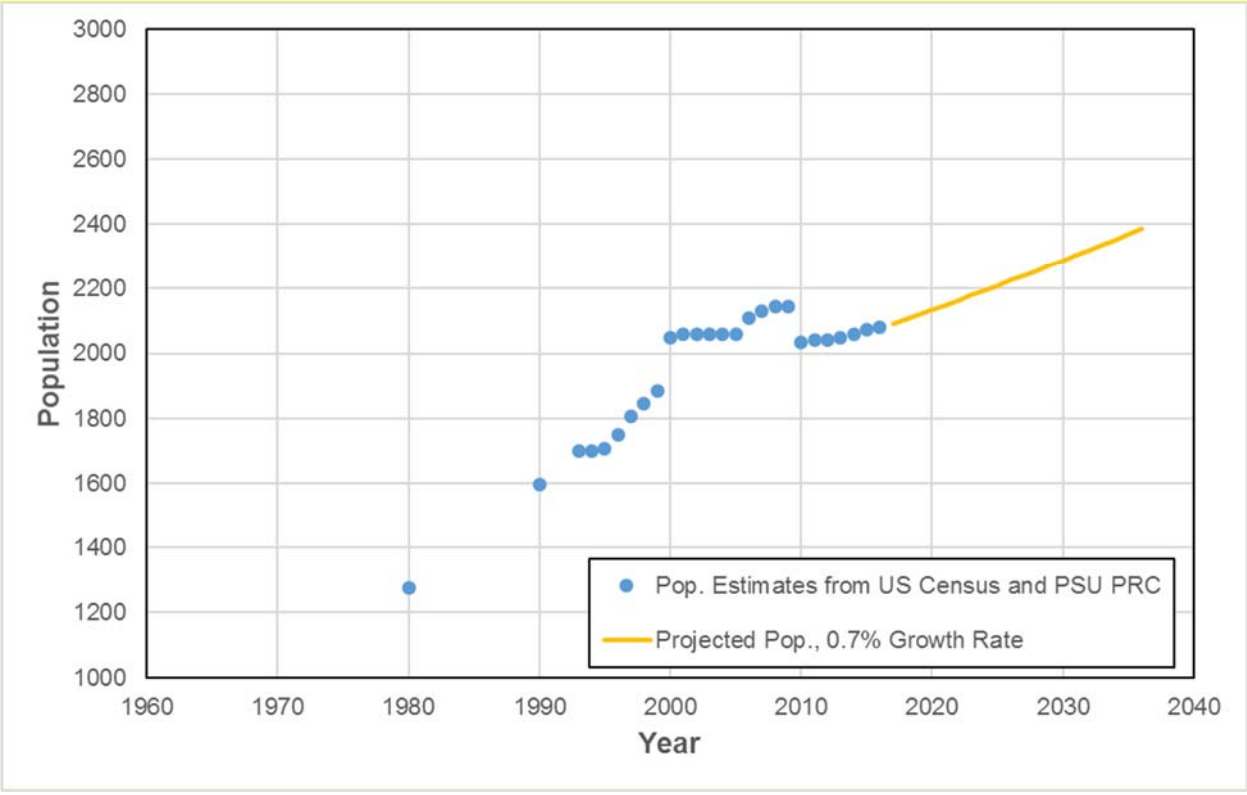


Figure 5.2: City of Waldport Population Projections

5.3.1 Industrial Park Flows

Assuming wastewater flows of 1,850 gals per net acre per day, which is based on a study done in Albany, Oregon by CH2MHill (1985), preliminary dry weather average wastewater flows from the full Industrial Park build-out are estimated to be 0.18 MGD. Using a peak factor of 1.8, dry weather peak flows are assumed to be approximately 0.32 MGD. In addition, a base infiltration rate of 20 gallons per capita per day (gpcd), as recommended by the 2000 Wastewater Collection System Master Plan will be added to account for I/I.

For planning purposes, the full build-out of the sewage system was divided into four zones. Table 5.1 shows a preliminary timeline for the four zones, as well as a description of the sewer conveyance for each zone.

Table 5.1: Industrial Park Zone Timeline and Description

Zone	W	X	Y	Z
Year Complete	2020	2023	2030	2037
Description	•Three gravity fed pipe networks along Ann St. & Crestline Drive (3,340 ft) •Two force mains (1,300 ft) & two lift stations •Two E1 type lift stations •Main lift station at intersection of Kathleen & Ann St.	•Gravity pipe network along A St, 1st St & West B St. Southwest along Kathleen St. (3150 ft). •Lift station on west Kathleen St. •Force main along Kathleen St. (1,500 ft) •Gravity Pipe on Kathleen to Ann St. (350 ft)	•Gravity pipe network along Dahl Ave. (1450 ft) •One lift station and force main on Dahl Ave. (1640 ft)	•Two gravity pipe networks along B St., 2nd St. & 3rd St.

Storm and Sanitary Analysis (SSA), a software package that integrates seamlessly with AutoCAD Civil 3D, was used to analyze the wastewater collection system of the proposed build-out of the IP. The program can be used to model and analyze sanitary sewer systems, pump lift stations, and force mains, as well as storm-water systems. The model was setup to output sanitary flow results on an hourly basis, which were summed to produce daily average flows. Based on the results of the analysis, a maximum peak factor of 1.8 was applied to estimate peak daily flows.

The results of the analyses are shown in Table 5.2. The projected sanitary flows for the IP site shown in the Table are divided into the subsequent zones of development: Zone W will be built out by 2020, Zone X will be built out by 2023, Zone Y will be built out by 2030, and Zone Z will be built out by 2037.

Table 5.2: SSA Results for Phased Build-out of the Industrial Park

Zone	W		X		Y		Z	
Year	2020		2023		2030		2037	
Flow	Avg. MGD	Peak MGD	Avg. MGD	Peak MGD	Avg. MGD	Peak MGD	Avg. MGD	Peak MGD
I/I	0.009	0.016	0.013	0.024	0.016	0.028	0.018	0.032
Cumulative IP	0.046	0.083	0.066	0.119	0.078	0.140	0.089	0.159
Total	0.055	0.099	0.079	0.143	0.094	0.168	0.107	0.191

5.3.2 City Flows

Previous projections for the total equivalent population, the population that includes domestic, commercial, and industrial demands, serviced by the wastewater treatment facility put the number at 4,278 persons (City of Waldport, 2000) in 2020. It should be noted that the total equivalent population is larger than the human population given domestic, commercial, and industrial demands. Equivalent Dwelling Units (EDU's) are units of measure that standardize all land use categories (housing, retail, office, food service, etc.) to the level of demand created by one

single-family dwelling unit. EDU's are computed in accordance with the probable demand that a user places on the wastewater treatment system by assignment of an equivalency factor. Given a projected human population of 2,139 in 2020 and a projected EDU estimate of 4,278 in 2020, the EDU factor for Waldport is 2.0, according to the 2000 Wastewater Collection System Master Plan estimates. A population growth rate of 0.7% is applied to the equivalent population in 2020 to estimate the equivalent populations for the zoned build-outs in 2023, 2030, and 2037. Per the 2000 Wastewater Collection System Master Plan, projections beyond 2022 also include an additional 200 EDUs in the SWLCWD, which corresponds to an additional population increase of 400 persons (2 persons per EDU).

The results of the analysis for the entire existing system are shown in Table 5.3. These results do not include projected sanitary flows from the Industrial Park.

Table 5.3: Present and Future Loading Conditions for Waldport's Wastewater System

Year	**2020**		**2023**		**2030**		**2037**	
Equivalent Pop.	4,278		4,731		4,968		5,216	
Flow	Avg. MGD	Peak MGD	Avg. MGD	Peak MGD	Avg. MGD	Peak MGD	Avg. MGD	Peak MGD
Total	0.428	1.283	0.473	1.419	0.497	1.490	0.522	1.565

5.3.3 Infiltration and Inflow

Nearly all coastal communities in Oregon struggle with the issue of inflow and infiltration (I/I) within their wastewater collection systems. Inflow and infiltration are defined as follows:

Infiltration: Flows that enter the collection system through underground paths. Infiltration can be caused by high groundwater levels, rain-induced groundwater, and other sources. Infiltration flows make their way into the collection system through cracks in pipe, open or offset pipe joints, broken piping sections, leaks in manholes, and other below-grade openings in the collection system.

Inflow: Flows that enter the collection system through above ground paths. Inflow is often related to building downspouts being connected to sanitary sewer service laterals, cross connections with storm drain systems that have not been separated, water flowing over manholes and entering in through the openings in the lids, catch basins, or area drains being connected to the sewer system, and other surface water sources.

When combined, Infiltration and Inflow (I/I) can result in tremendous increase in flows during the winter, particularly during prolonged storm events.

Wet-weather flow mapping of infiltration and inflow (I/I) in Waldport in 1992 indicated a peak I/I of 0.567 MGD in the system. Observed manhole surcharging along Hwy 34 indicated that the collection system was inadequate to accommodate the design collection along with I/I. Dry-weather mapping in the same year found 0.155 MGD of infiltration to the system. Some efforts, particularly in the Urban Renewal Area (URA), have been made to reduce I/I. The Waldport Urban Renewal Agency conducted an infrastructure improvement project to mitigate some of the negative findings found in prior studies. They replaced 1,123 feet of sewer line, installed 1,913 feet of sewer lining, and replaced 775 feet of new service lateral. Subsequent wet- and dry-weather mapping of the area showed a 50% decrease in I/I originating from the URA. Problems with I/I remain in the system, however. The golf course on Crestline Drive, for example, is known to have a lot of I/I, as well as the rest of Crestline Drive. Consideration of these problems must be addressed in the analysis of system capabilities and future potential loads.

The peak I/I flow rates will need to be added to this flow to properly size the wastewater system and assess the capacity of the City distribution system and wastewater plant to accommodate future flows from both the City and the IP site. In order to project future I/I, we assume that I/I grows at the same rate as the population, 0.7% per year – this allows for some I/I being fixed and the development of new I/I. Table 5.4 shows the projected I/I for the system based on the values measured in 1992.

Table 5.4: Observed and Projected I/I for the Waldport Waste Water System

Year	1992	2020	2023	2030	2037
Wet-weather, MGD	0.567	0.689	0.704	0.739	0.776
Dry-weather, MGD	0.155	0.188	0.192	0.202	0.212

5.4 Industrial Park Alternatives

The impact of the build-out of the Industrial Park on the existing sanitary system was evaluated in this section to determine the need for and extent of future upgrades to the existing sanitary system. When appropriate, cost estimates will be provided for specific alternative improvements.

The cost estimates presented in this report will typically include four components: construction cost, engineering cost, contingency, and legal and administrative costs. The estimates presented herein are preliminary and are based on the level and detail of planning presented in this Study. The goal of these planning level cost estimates is to establish a reasonably conservative budget and to allow fair cost-comparisons of alternatives. As projects proceed and more detailed, site-specific information becomes available, the estimates will require updating.

A preliminary layout of the IP site sewer conveyance system has been prepared in order to develop preliminary construction costs, as shown in Figure 5.3. Figure 5.3a shows a deep manhole alternative, as discussed in Section 5.4.1.

5.4.1 Site Collection

It is not uncommon for low-density rural areas to employ a pressurized sewage collection system to convey sewage over long distances with minimal flows. The proposed sewage conveyance system for the IP site is composed of gravity sewer piping and manholes, in conjunction with wastewater lift stations and their associated force mains. The preliminary proposed system for the full build-out of the project includes approximately 10,940 lineal feet of gravity sewer piping, 38 manholes, 5 lift stations and 5,220 lineal feet of force main.

The majority of the sanitary sewer pipe flows by gravity to move waste water through the system. Minimum slopes have been determined by setting the flow velocity criteria to be at least two feet per second. At this velocity, suspended solids in the sewage will tend to remain suspended and be carried through the pipe.

However, due to the topography of the site, the low density in terms of sewage flow per lineal foot of property line and the desire to keep manhole depths to a maximum of 12', intermediary pumping stations will be required to lift sewage to high points where it can resume gravity-driven flow to its destination. The pump station installation must be able to handle the peak flows and should be designed so they don't increase the total sulfide gas generation potential of the collection system. To minimize sulfide generation, wetwells should be as small as possible while still allowing for future growth. Packaged lift stations, with an emphasis placed on ease of maintenance and cleaning of the stations, are recommended.

The following lift stations have been identified for each Zone of development on the IP site:

- Zone W: 2 intermediary lift stations
- Zone X: 1 intermediary lift station
- Zone Y: 1 intermediary lift station
- Zone Z: No stations

Preliminary plan and profiles of the sewer system can be found in Appendix B.

In addition, since the elevation of the IP site is lower than higher elevations of Crestline Drive, a main pump station and force main will convey flows from the site to the City system, as discussed in Section 5.4.2.

A cost estimate for construction of the sewer system for each of the development zones on the IP site is provided in Table 5.5. Costs for the Force main from the site to the WWTP are discussed in Section 5.4.2.

In the interest of cost comparison between shallow and deep manholes, an alternative preliminary layout of the sewer system has been analyzed with manholes up to 24 feet deep. Ann Street is the main area where deeper manholes could be installed in order to reduce the number of intermediary lift stations. With this design, there would be 2 intermediary lift stations instead of 4. This alternative is shown in Figure 5.3a and a cost estimate can be found in Table 5.6. In addition, Figure 5.1a in Appendix B has a plan and profile showing this alternative.

Table 5.5: Sanitary Sewer Cost Estimate (Shallow Manholes)

Zone W					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (15%)	ls	1	$124,000	$124,000
2	Construction Facilities & Temporary Controls (15%)	ls	1	$124,000	$124,000
3	8" PVC D3034 Pipe w/ Class 'B' Backfill	lf	3,800	$60	$228,000
4	48" SS Manhole	ea	14	$3,500	$49,000
5	4" PVC C900 Force Main w/ Class 'B' Backfill	lf	1,930	$45	$86,850
6	Main Lift Station	ls	1	$400,000	$400,000
7	Intermediary Lift Station	ea	2	$30,000	$60,000
Construction Cost Total					$1,071,850
Contingency (20%)					$214,370
Engineering (20%)					$214,370
Project Management and Legal (5%)					$53,593
Sanitary Sewer Budget Estimate					**$1,554,183**
Zone X					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (15%)	ls	1	$44,000	$44,000
2	Construction Facilities & Temporary Controls (15%)	ls	1	$44,000	$44,000
3	4" HDPE Force Main w/ Class 'B' Backfill	lf	1,510	$45	$67,950
4	8" PVC D3034 Pipe w/ Class 'B' Backfill	lf	3,160	$60	$189,600
5	48" SS Manhole	ea	11	$3,500	$38,500
6	Intermediary Lift Station	ea	1	$30,000	$30,000
Construction Cost Total					$384,050
Contingency (20%)					$76,810
Engineering (20%)					$76,810
Project Management and Legal (5%)					$19,203
Sanitary Sewer Budget Estimate					**$556,873**

USGS SEASONAL STREAMS
W — WATER PIPE NETWORK
SD — DRAINAGE CROSS CULVERT
SS — SANITARY SEWER PIPE NETWORK
SS — SANITARY SEWER FORCED MAIN
PROPERTY LINES
FIRE HYDRANT
IPSS-# — MANHOLE LABEL

N

EXISTING DRAINAGE CROSS CULVERT
SS LIFT STATION ZONE Y
DAHL AVE
IPSS-30
IPSS-29
IPSS-28
IPSS-27
IPSS-26
IPSS-25
IPSS-4
IPSS-2
IPSS-1
IPSS-41
IPSS-42
IPSS-31
IPSS-32
LOT 10 E1 TYPE LIFT STATION ZONE W
SS FORCE MAIN TO IPSS-2
SS LIFT STATION ZONE W
LOT 13 E1 TYPE LIFT STATION ZONE W
IPSS-5
SS FORCE MAIN TO IPSS-7
SS FORCE MAIN FROM MAIN LIFT STATION TO CITY SYSTEM
IPSS-21
A STREET
IPSS-6
IPSS-7
IPSS-39
IPSS-13
MAIN STREET
IPSS-33
IPSS-40
SS FORCE MAIN
IPSS-12
IPSS-14
IPSS-11
SS LIFT STATION ZONE W
IPSS-8
SD DETENTION POND
IPSS-36
IPSS-34
B STREET
IPSS-23
IPSS-35
DRAINAGE CROSS CULVERT, TYP.
3RD STREET
2ND STREET
1ST STREET
IPSS-24
IPSS-37
IPSS-18
IPSS-20
IPSS-19
KATHLEEN STREET
IPSS-22
IPSS-9
IPSS-10
SS FORCE MAIN
DRAINAGE CROSS CULVERT, TYP.
IPSS-17
IPSS-15
SS LIFT STATION ZONE X
SS FORCE MAIN TO IPSS-22
MAIN SS LIFT STATION ZONE W

Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

WALDPORT INDUSTRIAL PARK

UTILITY NETWORK PLAN

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE
5.3

USGS SEASONAL STREAMS
W — WATER PIPE NETWORK
SD — DRAINAGE CROSS CULVERT
SS — SANITARY SEWER PIPE NETWORK
SS — SANITARY SEWER FORCED MAIN
PROPERTY LINES
FIRE HYDRANT
IPSS-# — MANHOLE LABEL

N

EXISTING DRAINAGE CROSS CULVERT
LIFT STATION ZONE Y
DAHL AVE
SS FORCE MAIN FROM MAIN LIFT STATION TO CITY SYSTEM
IPSS-30
IPSS-29
IPSS-28
IPSS-27
IPSS-26
IPSS-25
IPSS-4
MH70
IPSS-31
IPSS-32
LOT #10 E1 TYPE LIFT STATION ZONE W
LOT 13 EI TYPE LIFT STATION ZONE W
IPSS-2
IPSS-1
IPSS-42
IPSS-5
IPSS-22
A STREET
IPSS-6
IPSS-12
IPSS-13
IPSS-23
IPSS-7
ANN STREET
B STREET
IPSS-36
SD DETENTION POND
3RD STREET
IPSS-34
IPSS-33
MH72
MH73
IPSS-8
IPSS-11
IPSS-37
IPSS-35
IPSS-24
2ND STREET
1ST STREET
DRAINAGE CROSS CULVERT, TYP.
IPSS-18
IPSS-19
KATHLEEN STREET
SS FORCE MAIN
IPSS-17
IPSS-15
MH68
IPSS-9
IPSS-10
IPSS-20
LIFT STATION ZONE X
DRAINAGE CROSS CULVERT, TYP.
MAIN SS LIFT STATION ZONE W

Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

WALDPORT INDUSTRIAL PARK

UTILITY NETWORK PLAN

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE
5.3a

Zone Y					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (15%)	ls	1	$41,000	$41,000
2	Construction Facilities & Temporary Controls (15%)	ls	1	$41,000	$41,000
3	8" PVC D3034 Pipe w/ Class 'B' Backfill	lf	2,335	$60	$140,100
4	48" SS Manhole	ea	9	$3,500	$31,500
5	4" HDPE Force Main w/ Class 'B' Backfill	lf	1,637	$45	$73,665
6	Intermediary Lift Station	ea	1	$30,000	$30,000
Construction Cost Total					$357,265
Contingency (20%)					$71,453
Engineering (20%)					$71,453
Project Management and Legal (5%)					$17,863
Sanitary Sewer Budget Estimate					**$518,034**
Zone Z					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (15%)	ls	1	$23,000	$23,000
2	Construction Facilities & Temporary Controls (15%)	ls	1	$23,000	$23,000
3	8" PVC D3034 Pipe w/ Class 'B' Backfill	lf	2,290	$60	$137,400
4	48" SS Manhole	ea	4	$3,500	$14,000
Construction Cost Total					$197,400
Contingency (20%)					$39,480
Engineering (20%)					$39,480
Project Management and Legal (5%)					$9,870
Sanitary Sewer Budget Estimate					**$286,230**
		Total Sanitary Sewer Budget – Shallow Manholes			**$2,915,319**

Table 5.6: Sanitary Sewer Cost Estimate (Deep Manholes)

Zone W					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (15%)	ls	1	$109,000	$109,000
2	Construction Facilities & Temporary Controls (15%)	ls	1	$109,000	$109,000
3	8" PVC D3034 Pipe w/ Class 'B' Backfill	lf	2,400	$60	$144,000
4	8" PVC D3034 Pipe w/ Class 'B' Backfill (> 10')	lf	1,400	$90	$126,000
5	48" SS Manhole	ea	8	$3,500	$28,000
6	48" SS Manhole (>10')	ea	5	$6,000	$30,000
7	Main Lift Station	ls	1	$400,000	$400,000
Construction Cost Total					$946,000
Contingency (20%)					$189,200
Engineering (20%)					$89,200
Project Management and Legal (5%)					$47,300
Sanitary Sewer Budget Estimate					**$1,371,700**

Zone X					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit	ls	1	$44,000	$44,000
2	Construction Facilities & Temporary Controls	ls	1	$44,000	$44,000
3	4" HDPE Force Main w/ Class 'B' Backfill	lf	1,510	$45	$67,950
4	8" PVC D3034 Pipe w/ Class 'B' Backfill	lf	3,160	$60	$189,600
5	48" SS Manhole	ea	11	$3,500	$38,500
6	Intermediary Lift Station	ea	1	$30,000	$30,000
Construction Cost Total					$384,050
Contingency (20%)					$76,810
Engineering (20%)					$76,810
Project Management and Legal (5%)					$19,203
Sanitary Sewer Budget Estimate					**$556,873**

Zone Y					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (15%)	ls	1	$40,000	$40,000
2	Construction Facilities & Temporary Controls (15%)	ls	1	$40,000	$40,000
3	8" PVC D3034 Pipe w/ Class 'B' Backfill	lf	2,335	$55	$128,425
4	48" SS Manhole	ea	9	$3,500	$31,500
5	4" HDPE Force Main w/ Class 'B' Backfill	lf	1,637	$45	$73,665
6	Intermediary Lift Station	ea	1	$30,000	$30,000
Construction Cost Total					$343,590
Contingency (20%)					$68,718
Engineering (20%)					$68,718
Project Management and Legal (5%)					$17,180
Sanitary Sewer Budget Estimate					**$498,206**

Zone Z					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit	ls	1	$21,000	$21,000
2	Construction Facilities & Temporary Controls	ls	1	$21,000	$21,000
3	8" PVC D3034 Pipe w/ Class 'B' Backfill	lf	2,290	$55	$125,950
4	48" SS Manhole	ea	4	$3,500	$14,000
Construction Cost Total					$181,950
Contingency (20%)					$36,390
Engineering (20%)					$36,390
Project Management and Legal (5%)					$9,098
Sanitary Sewer Budget Estimate					**$263,828**

Total Sanitary Sewer Budget – Deep Manholes	**$2,690,606**

5.4.2 City Infrastructure

Several alternatives to convey the IP sewage flows through the existing city infrastructure are analyzed in this section. The alternatives include the following infrastructure:

- Existing 8" gravity main down Crestline Drive
- Existing 8" force main down Crestline Drive
- Proposed force main down Crestline Drive to the WWTP

Existing 8" Gravity Main on Crestline Drive

The 8" gravity main running down Crestline Drive collects flows from the area and down into the Grade School pump station. The elementary school, the high school and the golf course all drain via force mains into this main at a manhole located on the corner of Salmon Street. Numerous residential units along Crestline Drive are also serviced by the 8" gravity main via lateral gravity lines. The current capacity of the 8" Crestline gravity main is 0.933 MGD or 648 gpm. Projected future loading on the gravity main is estimated from future projections of residential population growth, historic I/I, and projections of student population growth at Crestview Heights Elementary School and Waldport High School.

The land to the east of the project site falls outside the UGB and consists almost entirely of timber land. It is assumed, therefore, that the land to the east of the IP site will not be developed and will not contribute to future loading on the wastewater system. A review of tax lots (Lincoln County, 2016) indicates that 236 homes are currently serviced by the 8" Crestline main. With an average of 2.0 persons per household in Waldport, the total number of residents serviced by the 8" Crestline main is approximately 472.

The projected future load on the 8" gravity pipe from the schools was evaluated based on the student populations of the schools. The current population of the Waldport High School is 185 students (Waldport High School, n.d.). The current population of the Crestview Heights Elementary School is 393 students (Crestview Heights Elementary School, n.d.), which results in a total student population of 578 current students. With an assumed growth rate of 0.7%, the projected student population by 2037 is 665 students. The average student uses 21 GPD (Tchobanoglous and Schroeder, 1987).

A conservative estimate for maximum I/I for the portion of the system that is serviced by the 8-inch Crestline gravity main was developed from wet-weather mapping conducted in 1992 as shown in Table 5.4 of this report. The proportion of the entire mainline gravity pipe system that drains into the 8" Crestline main is 28.5%. The proportion of the waste water system that consists of the 8" Crestline main is used to scale the total I/I to estimate I/I in the 8" Crestline main portion of the system. The projected dry-weather I/I is used as a proxy for the average I/I, which is also scaled using the proportion of the system that consists of the 8" Crestline main system. Table 5.7 shows the present and future loading on the system.

Table 5.7: Projected Loading Conditions for the 8" Crestline Gravity Main

Year	**2020**		**2023**		**2030**		**2037**	
Equivalent Pop.	482		492		517		543	
Flow	Avg. MGD	Peak MGD	Avg. MGD	Peak MGD	Avg. MGD	Peak MGD	Avg. MGD	Peak MGD
Residential	0.048	0.144	0.049	0.147	0.052	0.156	0.054	0.162
I/I	0.054	0.196	0.055	0.201	0.058	0.211	0.060	0.221
Schools	0.012	0.025	0.013	0.025	0.013	0.027	0.014	0.028
Total	0.114	0.365	0.117	0.373	0.123	0.394	0.128	0.411

As shown in the results of Table 5.7, the existing 8" gravity main is capable of handling the flows from future City growth, I/I and the projected IP site flows. However, since this 8" main flows down to the Grade School Pump Station, which is currently operating at close to full capacity, running the IP site flows through this pipe is not recommended.

Existing 8" Force Main on Crestline Drive

The flows from the Ocean Hills pump station are lifted via an 8" force main up Range Drive and down Crestline Drive to the WWTP. The hydraulic capacity of this pump station was sized to handle a peak instantaneous flow of 480 gpm (0.69 MGD), which was the projected 20-year flow (2022) for South Waldport, excluding the Industrial Park area. Since a Local Improvement District (LID) was created to fund this project by the residents of South Waldport and the system was designed to handle the projected future flows only for this area, it is recommended that this force main not be used to convey the IP projected sewage flows to the WWTP.

Proposed Force Main on Crestline Drive

The preferred alternative for conveying the projected IP sewage flows is to install a separate force main that would run from the IP lift station at the Ann/Kathleen Street intersection, down Crestline Drive and directly to the WWTP. Because of the topography, a gravity sewer service cannot be extended along this route. This alternative would include the installation of approximately 10,500 lineal feet of force main and associated appurtenances. Preliminary analysis with the SSA software indicates that a 4" force main is recommended to accommodate the accumulative flows from the different zones in the IP site while maintaining efficient hydraulic capacity.

A cost estimate for construction of the force main from the IP site to the WWTP is provided below in Table 5.8.

Table 5.8: Cost Estimate for the Force Main from the IP Site to the WWTP

City Infastructure - Forcemain to WWTP					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (15%)	ls	1	$99,375	$99,375
2	Construction Facilities & Temporary Controls (15%)	ls	1	$99,375	$99,375
3	Pavement and Patching	ls	1	$100,000	$100,000
4	4" HDPE Interim Force Main w/ Class 'B' Backfill	lf	10,500	$45	$472,500
5	Force Main Fittings & Appurtenances	ls	1	$80,000	$80,000
6	Landscape Restoration	ls	1	$10,000	$10,000
Construction Cost Total					$861,250
Contingency (20%)					$172,250
Engineering (20%)					$172,250
Project Management and Legal (5%)					$43,063
Budget Estimate					**$1,248,813**

5.4.3 Wastewater Treatment Plant Upgrades

The wastewater treatment plant is currently configured for a maximum month wet weather flow of 0.70 MGD and a peak hydraulic flow of 2.0 MGD. The plant capacity can be increased up to a peak flow of approximately 5.0 MGD by the installation of additional sequencing batch reactors (SBR) tanks along with new headworks and other plant mofifications.

Projected future loading on the wastewater treatment facility is estimated using values from the 2000 Wastewater Collection System Masterplan and the following assumptions:

- Average per capita domestic sewage contribution = 100 gallons per capita per day
- Base Infiltration rate = 20 gallons per capita per day
- Average number of people per household = 2.0
- Average single household sewage contribution = 200 gallons per day
- Residential peaking factor = 3.0

The results of the analyses are shown in Table 5.9. The existing and projected sanitary flows for both the entire system (everything that goes to the wastewater treatment facility) and the IP site are shown in the Table, with total projected sanitary flows tabulated at the bottom of the table.

Table 5.9: SSA Results for Phased Build-out of the Industrial Park

Zone	**W**		**X**		**Y**		**Z**	
Year	2020		2023		2030		2037	
Flow	Avg. MGD	Peak MGD	Avg. MGD	Peak MGD	Avg. MGD	Peak MGD	Avg. MGD	Peak MGD
Entire System	0.428	1.283	0.473	1.419	0.497	1.490	0.522	1.565
Cumulative IP	0.046	0.083	0.066	0.119	0.078	0.140	0.089	0.159
I/I	0.197	0.705	0.205	0.728	0.218	0.767	0.230	0.808
Total – Entire System	0.671	2.071	0.744	2.266	0.793	2.397	0.841	2.532

Projected loading on the WWTP is based on data from the 2000 Wastewater Collection System Masterplan. The City of Waldport is planning on updating the wastewater master plan in the near future, which will allow for a more current and detailed analysis of the wastewater system components and the capacity of the plant to handle both future City flows as well as flows from the IP site. The 2000 Wastewater Collection System Masterplan estimated a cost of approximately $6.5 million for WWTP upgrades to handle future projected flows. Using an average annual construction cost increase of 2.68% per year, costs in 2017 are approximately $9.4 million.

6.1 Federal Regulations

The Environmental Protection Agency requires permits for significant storm water discharges in the National Pollutant Discharge Elimination System (NPDES) program. The Phase I rule pertains to medium and large municipal separate storm sewer systems (MS4's) serving a population larger than 100,000, while Phase 2 regulations were developed for small municipalities in urbanized areas serving populations between 10,000 and 50,000. The Phase II regulations can also apply to populations of 1,000 or more if it is determined by the Department of Environmental Quality (DEQ) that storm run-off discharges could pollute the receiving waters. Due to the population, the City of Waldport storm drain system is not regulated or required to operate under either a Phase I or Phase II MS4 system.

6.2 Existing Conditions

A Storm Water Master Plan was completed for the City in 1999, which addresses storm water facilities and needs in the lowland areas of Waldport, but the City system does not currently serve the Industrial Park area. The surficial soils of the site are sandy and could mobilize easily during winter storm events. Conceptual project improvements include additional impervious surfaces such as buildings and paving. An increase in impervious surface would likely lead to an increase in peak storm water flows from the site and into nearby tributaries of Little and Patterson Creeks, as well as increasing the potential for pollutants to reach the creeks and ultimately the Pacific Ocean. Therefore, some form of storm water treatment may become necessary, and storm water mitigation techniques should be explored in conjunction with future development of the Industrial Park area.

6.3 Projected Storm Drainage

New storm drainage systems within the study area have been modeled to determine the capacity of various new system components and the future storm-water discharges that are likely to occur from each modeled sub-basin. Numerous factors affect the analysis including but not limited to land use, soil type, and both surface conditions and vegetation in undeveloped areas. Each storm drain component identified in this section has been modeled based on the estimated area drained, ground surface slopes and the presence of existing development, as determined from aerial topographic mapping.

Our models used the SCS (TR-20) Method to calculate storm-water discharge volumes from the identified basins and sub-basins. The SCS Method utilizes curve numbers to rate the runoff potential of an area based on the land use, cover condition, and soil type. Table 6.1 below presents curve numbers for various land use classifications that were identified within the study area. Areas identified for future development were assigned curve numbers representative of the development expected to occur. The hydrologic soil groups describe the relative capacity of a given soil type to infiltrate water when thoroughly wet, with Group A providing the most infiltration and Group C providing the least.

Preliminary surface water modeling using a 25-yr, 24-hr storm event on the site indicate that approximately 76.2 cubic feet per second (CFS) storm flows will be generated.

Table 6.1: SCS Curve Numbers for Identified Land Uses

Cover Type and Hydrologic Condition	Hydrologic Soil Group		
	A	B	C
Open Space (lawns, parks, cemeteries, etc.) – fair condition	49	69	79
Paved Streets w/ curbs and storm drains	98	98	98
Paved Streets w/ open ditches	83	89	92
Commercial and business districts	89	92	94
Industrial areas	81	88	91
Residential with 1/8 acre or smaller lots, town houses	77	85	90
Residential with 1/4 acre lots	61	75	83
Residential with 1/3 acre lots	57	72	81
Woods (Forestland) – Grass combination – fair condition	43	65	76
Woods (Forestland) – Grass combination – good condition	32	58	72
Brush – brush-weed-grass mixture – poor condition	48	67	77
Brush – brush-weed-grass mixture – fair condition	35	56	70

6.4 Design Capacity of Proposed Infrastructure

The 1999 Storm Water Master Plan emphasizes the use of centralized storm sewer systems to manage stormwater. However, low impact development (LID) mitigation strategies can alleviate or lighten the burden to a jurisdiction's storm sewer system by allowing water to percolate through soil onsite or detaining water so water enters the storm sewer system at lower volumes, at lower speed, and at lower temperatures. Utilizing decentralized LID stormwater management strategies could help reduce the burden of the Industrial Park development on the lower elevation storm sewer systems.

Lot 58 on the southwest corner of the Industrial Park has a natural low spot that can be utilized for storm water management and therefore has not been included in the total developable land acreage. The lot sits in a natural low-lying area that could support stormwater drainage from the Industrial Park. It naturally drains to a small creek that flows into Little Creek to the south of the Industrial Park.

The full build-out of the Industrial Park will see the development of several new roads and the transition of undeveloped land to developed industrial use land. In order to assess the design capacity of proposed stormwater management infrastructure, we made several assumptions about the build-out itself and about the design storm event.

We assumed that the full build-out will cover 50% of the available lots with impermeable materials such as building roofs and pavement. We also assumed that all proposed new roads in the development will be 100% impermeable. The 25-yr, 24-hr storm event was used for modeling stormwater runoff from the site, which was then used to determine the design capacity of the stormwater management facilities.

There are two primary sub-basins that comprise the areas around the existing IP site, both of which flow into Little Creek downstream of the site, as shown on Figure 6.1. The east sub-basin is in green and the west sub-basin is in blue. Most of the Industrial Park lies in the east sub-basin. Shown on the map also are the sub-basins associated with the buildout of the Industrial Park, outlined in red.

The sub-basin drainage channels shown in Figure 6.1 were delineated from existing topography. The development of the Industrial Park, however, will change the topography. Roads will force the channelization of surface water flow and more impervious surfaces (e.g., roads and roofs) will result in more concentrated flows. For the east sub-basin where most of the industrial development will take place, a detention pond will need to be built to handle approximately 76.2 cubic feet per second (CFS) storm flows. The detention pond will capture extra flows and meter the flows to the existing downstream sub-basin drainage at a rate that is less than or equal to the current rate.

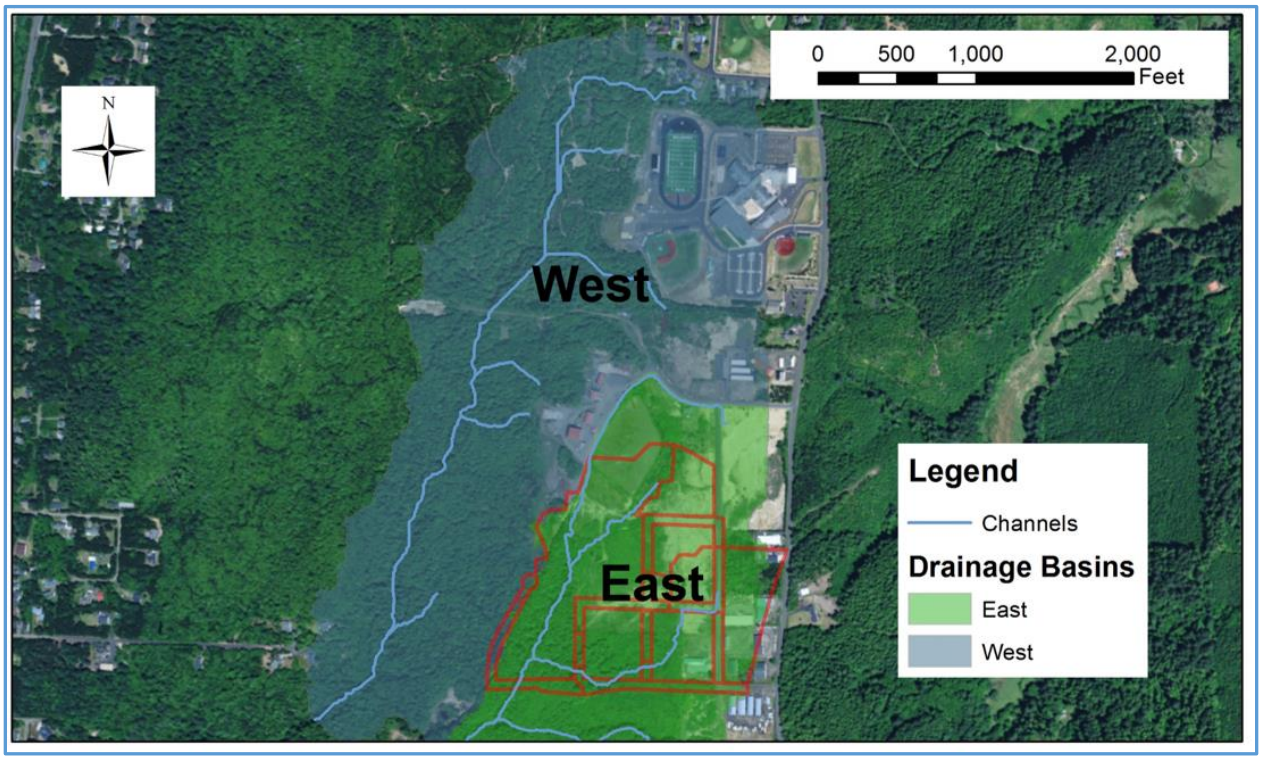


Figure 6.1: SCS Primary Sub-basins

Figure 6.2 shows a close-up view of the Industrial Park that is drained by the east sub-basin. Given the presence of proposed roads for the full buildout, the east sub-basin was divided as shown in the figure. The arrows show the surface water flow paths for the sub-sub-basins used to model surface water flows to the proposed detention pond. Surface water modeling given a 25-yr, 24-hr storm event for the site indicated that the detention pond will need to be sized to accommodate 76.2 cfs.

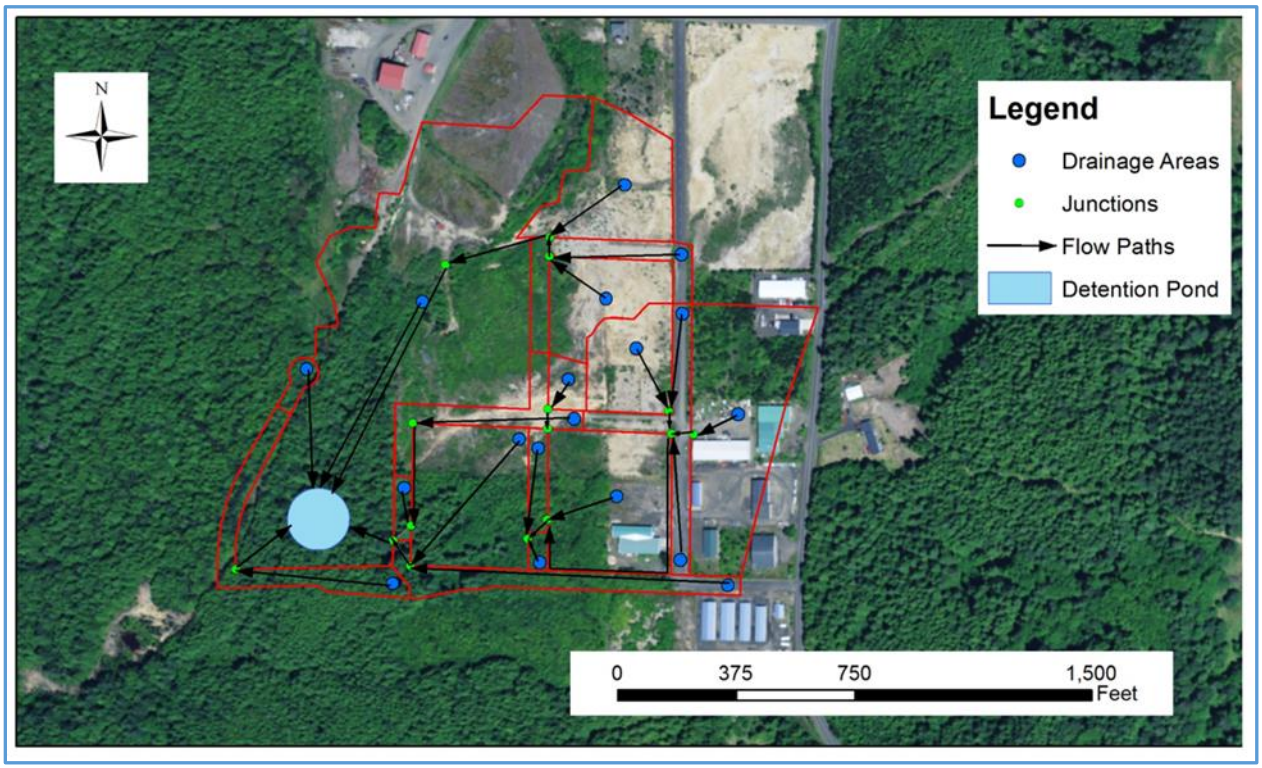


Figure 6.2: SCS Industrial Park Storm Drainage Flow Paths

The cost estimates for the proposed new roads on the IP site already have costs built in to handle the storm water flows in the road side ditches. A cost estimate for construction of the proposed detention area is provided below in Table 6.2. It is anticipated that this infrastructure will be constructed in Zone Z.

Table 6.2: IP Site Storm Drainage Cost Estimate

Storm Drainage					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (12%)	ls	1	$5,000	$5,000
2	Construction Facilities & Temporary Controls (6%)	ls	1	$2,400	$2,400
3	Detention Pond (Earthwork, Landscaping, Geotextile)	ls	1	$40,000	$40,000
Construction Cost Total					$47,400
Contingency (20%)					$9,480
Engineering (20%)					$9,480
Project Management and Legal (5%)					$2,370
Storm Drainage Budget Estimate					**$68,730**

7.1 Local Roads

Local street design is regulated by the 1999/2009 City TSP, the 2009 Updated Comprehensive Plan and the City Development Code. The Industrial Park site currently has 3,065 lineal feet of local roads running through the area; Dahl Avenue, Ann Street and Kathleen Street, as shown on Figure 7.2 and Images 7.1 through 7.3. These recently constructed streets are strip paved, asphalt concrete roads approximately 30 feet wide.

Dahl Avenue intersects Crestline Drive at the northeast end of the site, running 951 lineal feet generally to the west, ending at the Dahl Transfer Station. Kathleen Street intersects Crestline Drive, at the southeast boundary of the site, running 381 lineal feet to the intersection with Ann Street. Ann Street connects Dahl Avenue and Kathleen Street, traveling 1,733 lineal feet in a north-south direction. See Figure 7.2 for the existing street layout.

Proposed improvements to these existing local roads would add 5-foot wide gravel footpaths to each side, widening it by approximately 10 feet. This would allow for two 15-foot travel lanes Existing streets are proposed to be improved with the addition of culverts for drainage and gravel footpaths for pedestrian circulation and lot access. New streets will be installed to the same standards, and will also be centered on 60-foot rights-of-way.

Roughly 7,535 lineal feet of new roads will serve the remaining areas of the Industrial Park, for a total of 10,600 lineal feet for the new and improved road network.

New local roads in the project area will have the same cross section as the existing road improvements, as shown in Figure 7.1. See Figure 7.2. for plan view layout of the existing and proposed local roads. Both new and improved existing roads will be centered in 60-foot wide right of ways (ROW), as per City code.

Image 7.1: Ann Street

Image 7.2: Crestline Drive – Dahl Avenue Intersection

Image 7.3: Kathleen and Ann Street Intersection

EXISTING ROAD
PROPOSED ROAD
CITY LIMITS
(UGB) URBAN GROWTH BOUNDARY
WALDPORT INDUSTRIAL SITE
PROPERTY LINE
(#) PARCEL NUMBER

N

ACCESS ROAD #3
ACCESS ROAD #2
ACCESS ROAD #1
PROPOSED 2,280' LOCAL ROAD
PROPOSED 3,400' LOCAL ROADS
PROPOSED 1,853' LOCAL ROAD
EXISTING 951' LOCAL ROAD
EXISTING 1,733' LOCAL ROAD
EXISTING 381' LOCAL ROAD
DAHL TRANSFER STATION
DAHL AVE
A STREET
B STREET
1ST STREET
2ND STREET
3RD STREET
ANN STREET
CRESTLINE DRIVE
KATHLEEN STREET

Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

WALDPORT INDUSTRIAL PARK

LOCAL ROAD LAYOUT

0 1" = 400'

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE
7.2

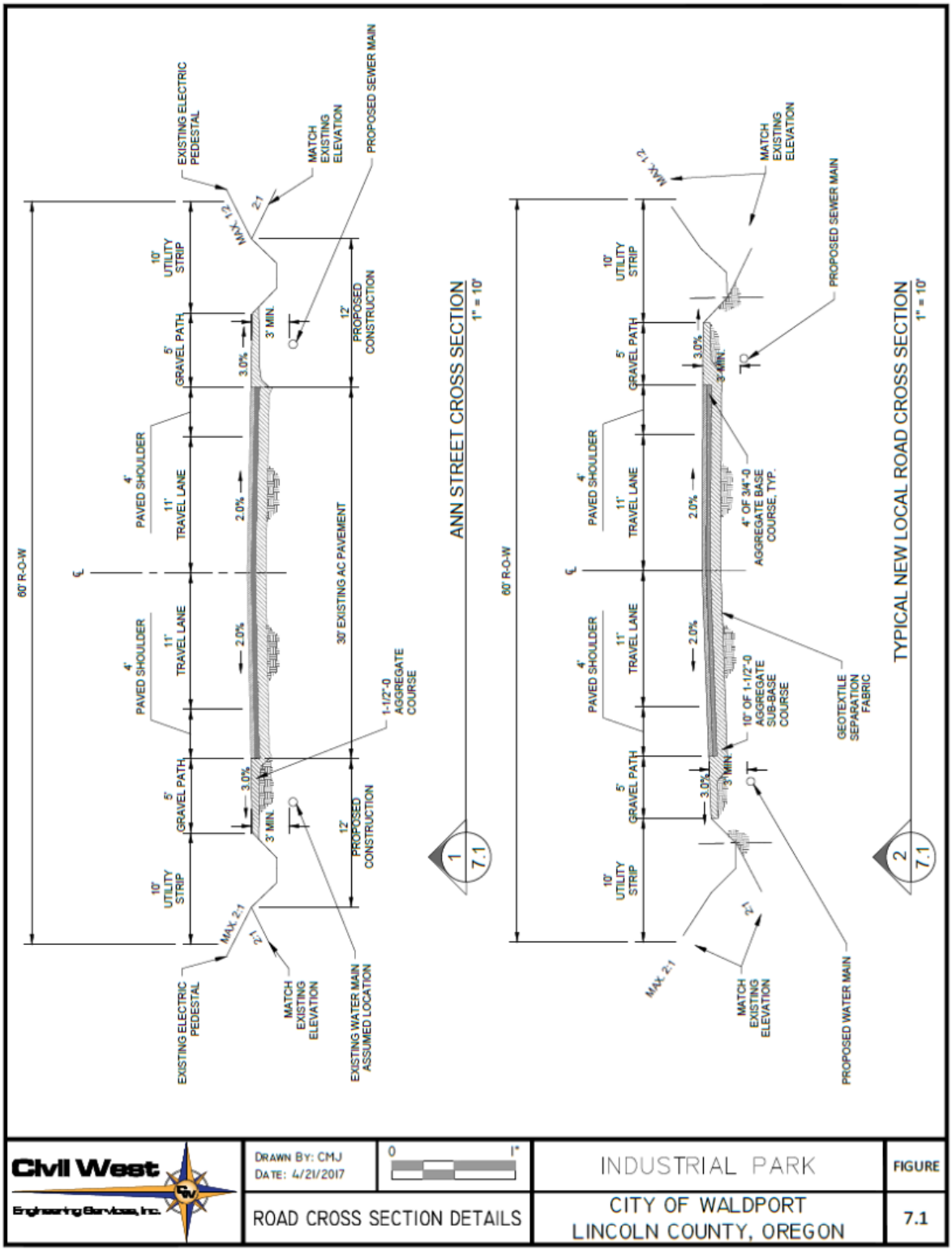


Figure 7.1 Local Road Cross Sections

7.2 Access Roads

The Feasibility Study researched and analyzed available State, County and City of Waldport guidelines and regulations and provided an overview of the parameters that are further detailed in this Master Planning effort. Four alternative collector roads were analyzed in the Feasibility Study and narrowed down to three options, as shown on Figure 7.4. and will be evaluated in this study.

These alternatives should be screened against the following considerations: 1) ability to meet the project objectives, 2) technical feasibility, and 3) cost. Additionally, other factors such as environmental permitting and public support should be taken into consideration.

The lead agency for transportation project review in Waldport shall be:

a. The City of Waldport for projects within the city limits (i.e. local roads on project site);

b. The City of Waldport and Lincoln County for projects within the city limits but outside the UGB on projects involving county-owned facilities (i.e. Access Road Options 1 and 2);

c. Lincoln County, in close conjunction with the City of Waldport, for projects outside of the UGB and the City limits (i.e. Access Road Options 3 and 4); and

d. The State of Oregon, the City of Waldport and Lincoln County on projects involving state owned facilities (i.e. Highway 101 ROW interface).

7.2.1 Existing Access Roads

Currently, Range Drive, Wakonda Beach Drive and Crestline Drive provide access to the limited commercial and industrial development in the project area. Within Waldport there are three designated collector streets; Crestline Drive, Range Drive and Cedar Street.

Crestline Drive, just to the east of the Industrial Park, is currently the primary major collector street accessing residential, public and industrial uses in the upland area. Crestline Drive is a north-south oriented street from Highway 34 south to the city limits. South of Waldport, Crestline Drive becomes Wakonda Beach Road which connects to Highway 101. South of Salmon Street, Crestline Drive is a Lincoln County maintained road consisting of two 12’ travel lanes and 5’ shoulder bicycle lanes.

Range Drive is an east-west oriented street in the south part of Waldport that provides a major street connection between Highway 101 and Crestline Drive. Though designated as a collector street, Range Drive is currently not built to City or County standards and is in need for an upgrade.

The remaining current access to Crestline Drive, Cedar Street, is a winding steep-graded street that terminates in a single-stop “Y” intersection with Crestline Drive. Though this street has been improved with the installation of a pedestrian sidewalk on the southwest side, it should not be considered for industrial traffic.

The City of Waldport, organized as Waldport District #3, has the responsibility for maintenance of streets within the City limits which are dedicated for public use and which are constructed to City standards.

The Oregon Department of Transportation (ODOT) recently published a 2015 updated map of the functional classifications of roads in and around Waldport. The Industrial Park area is shown in Figure 7.3.

U.S. Highway 101 (Pacific Coast Highway), to the west of the Industrial Park area, is designated as a Principal Arterial, and is under the jurisdiction of the Oregon Department of Transportation (ODOT).

LINCOLN COUNTY ZONING

LINCOLN COUNTY ZONE R-1

LINCOLN COUNTY ZONE RR-2

TSUNAMI INUNDATION LIMIT

CITY OF WALDPORT

CITY LIMITS

(UGB) URBAN GROWTH BOUNDARY

(#) LOT NUMBER

N

ACCESS ROAD #3 4,790'

WHITECAP DRIVE

MP 158.00 ±

ACCESS ROAD #2 2,950'

HIGHWAY 101

PROPOSED 1,853' LOCAL ROAD

ACCESS ROAD #1 3,237'

PROPOSED 2,280' LOCAL ROAD

EXISTING 951' LOCAL ROAD

DAHL TRANSFER STATION

DAHL AVE

EXISTING 1,733' LOCAL ROAD

ANN STREET

CRESTLINE DRIVE

PROPOSED 3,400' LOCAL ROADS

A STREET

1ST STREET

B STREET

3RD STREET

2ND STREET

KATHLEEN STREET

EXISTING 381' LOCAL ROAD

INDUSTRIAL PARK SITE

Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

WALDPORT INDUSTRIAL PARK

ACCESS ROAD LAYOUT

0 1" = 400'

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE
7.4

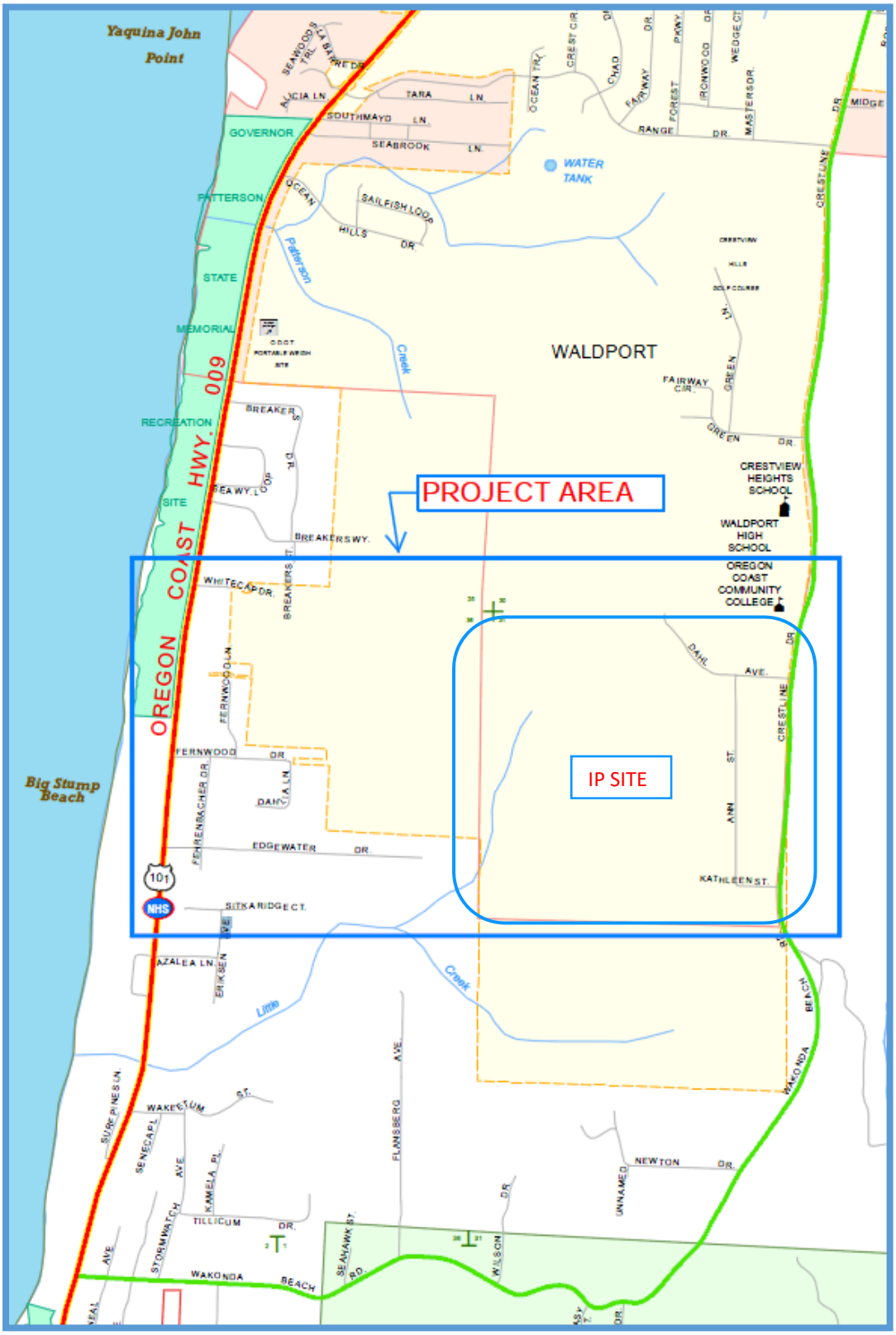


Figure 7.3: ODOT Federal Functional Classification of Roads (2015)

7.2.2 Access Road Framework

One of the major constraints for development of the Waldport Industrial area has been the lack of adequate and direct access to the site, particularly since this activity will potentially generate an increase in truck and passenger car traffic in this area. Currently, Highway 101 and Highway 34 serve a majority of the truck traffic in Waldport, but Range Drive and Crestline Drive provide truck access to the limited commercial and industrial development in the upland area.

The City of Waldport understands that as the industrial zoned area continues to develop, Range Drive and Crestline Drive will experience additional truck and residential traffic. These two Collector streets are currently marginally adequate for this type of functionality, however, Crestline Drive/Wakonda Beach Road could serve as access to the Industrial Park for an interim period until trip generation from the site develops to a point where the Level of Service of this route becomes more than a Level E, as recommended in the City TSP.

Four Access Road alternatives to the site were reviewed and selected in conjunction with the City of Waldport for consideration and evaluation in the Feasibility Study (CWE, August 2016). The development of the alternatives was focused on providing a safe, cost-effective and functional solution to the Industrial Park access. The study considered safety, traffic operations, access management, land use, and environmental impacts.

While all 4 alternatives were found to be feasible, each option presented a number of challenges. Cost considerations include length of the option, number and extent of drainage and retaining wall structures, ROW acquisition, etc. Environmental constraints were addressed for all 4 options. Highway 101 intersection considerations were taken into account with respect to ODOT input, safety, traffic operations, exceptions to the regulations and public involvement issues, etc.

Findings from the Feasibility Study along with discussions between representatives from the City of Waldport, Lincoln County and the Oregon Dept. of Land Conservation and Development led to some preliminary recommendations.

- Old Access Road #1 will continue to be assessed in this Master Planning phase.
- Old Access Road Option #2 is no longer being considered for future analysis due to an excessive number of constraints in terms of cost, topography and the impact on numerous residential lots.
- Old Access Roads #3 and #4 will be combined and further analyzed to offer a single southern alternative that captures some of the benefits of each of the options and minimizes undesirable impacts.
- An additional Access Road connecting with Highway 101 north of SW Breakers Drive will be assessed for viability as an alternative.
- The continued use of Crestline Drive/Wakonda Beach Road will be discussed in this Master Plan to serve as an Access Alternative for an interim period until trip generation from the site develops to a point where the functionality, safety and level of service of this route and the intersection at Highway 101 can no longer meet local and state regulations.

See Figure 7.4 for layout of Access Road Options. In addition, Table 7.1 in Appendix C contains information on property owners along the Access Road alternatives.

Close collaboration between the City of Waldport, Lincoln County representatives and the ODOT District Manager and/or the Regional Access Management Engineer will ensure that a safe, cost-effective and functional solution is chosen from the 4 alternatives. This in turn, will increase the safety, capacity, mobility, accessibility and connectivity of the transportation system in this area for all concerned.

Policy Framework

Recommended street projects included in the Lincoln County Transportation Master Plan (1999/2009 include medium priority rated project K - a new East-West Road in South Waldport Connecting Hwy. 101 and Crestline Drive. Potential locations that were identified included:

- West from Crestline Drive through the industrial zoned land and through land currently located outside the Urban Growth Boundary. This would necessitate an exception to the statewide goal of prohibiting development of new roads outside urban growth boundaries
- Extend Seabrook Lane east and south, connecting to Crestline Drive south of the Golf Course, i.e. Green Dr.
- East from Highway 101 near the existing weigh station connecting to Crestline Drive south of the Golf Course.

The Waldport Comprehensive Plan Transportation Goal 12, Policy 5 discusses that for future development, the City of Waldport shall consider new or improved east-west oriented collector streets, i.e. south of Range Drive connecting Highway 101 to Crestline Drive. A new Highway 101 - Crestline Drive connection will provide a more convenient access to the industrial development in order to alleviate truck traffic on Range Drive and Crestline Drive and could potentially allow for future restrictions on truck traffic on these streets, per Policy 6, below, of the Waldport TSP.

Truck Route Plan Policies
Policy 6. If, in the future, a new collector road is constructed in south Waldport from Highway 101 to the industrial zoned land, the City shall consider restricting truck access on Range Drive and Crestline Drive.

The Transportation System Plan (TSP) for Lincoln County considers transportation issues and guides transportation policy choices and system development for a 20-year planning period between 2007 and 2027.

In addition, State transportation policies, including Strategies 1.2.2, 1.3.2, and 2.1.4 of the 2006 OTP and Action 1B.5 of the OHP, support the development of connected networks of local, arterial, and collector streets to improve local traffic movements and preserve state highways for intercity transportation.

Trip Generation

The full build-out of the Industrial Park assumes that, per Waldport Comprehensive policy, each site can have 50% maximum lot coverage. This figure has been used to approximate the most conservative analysis. As shown in Appendix A - Table 3.1, the full building coverage may be up to 2,147,480 square feet. The ITE Common Trip Generation Rates Table (PM peak hour) assumes that per 1,000 ft2 of building space, 0.85 trips are generated at the PM peak hour. For the Industrial Site full build-out, preliminary estimates assume a peak hour traffic rate of approximately 2,147 trips per hour.

Collector Street Design Standards

Figure 7.5 on page 7-10 shows the typical access road cross section. These streets are considered as Major Collector Streets. All three Access Road options will need to run through Lincoln County property, zoned R-1 and/or RR-2. As such, street design standards for the construction of various classifications of roads as identified in the Lincoln County Comprehensive Plan and zoning regulations shall be adhered to.

All three of the alternatives will require access to Highway 101, which is regulated by the ODOT and the Oregon State Highway Design Manual.

With a 60-foot ROW, two 16-foot travel ways, 2-foot curb and gutter, 5-foot sidewalks and 7-foot utility strips, all Access Road options will meet both County and City requirements. Waldport Development Code and the TSP, updated 2010, road design standards are shown in Table 7.1. Where topographical requirements necessitate either cuts or fills for the proper grading of roads, additional right-of-way or slope easements may be required.

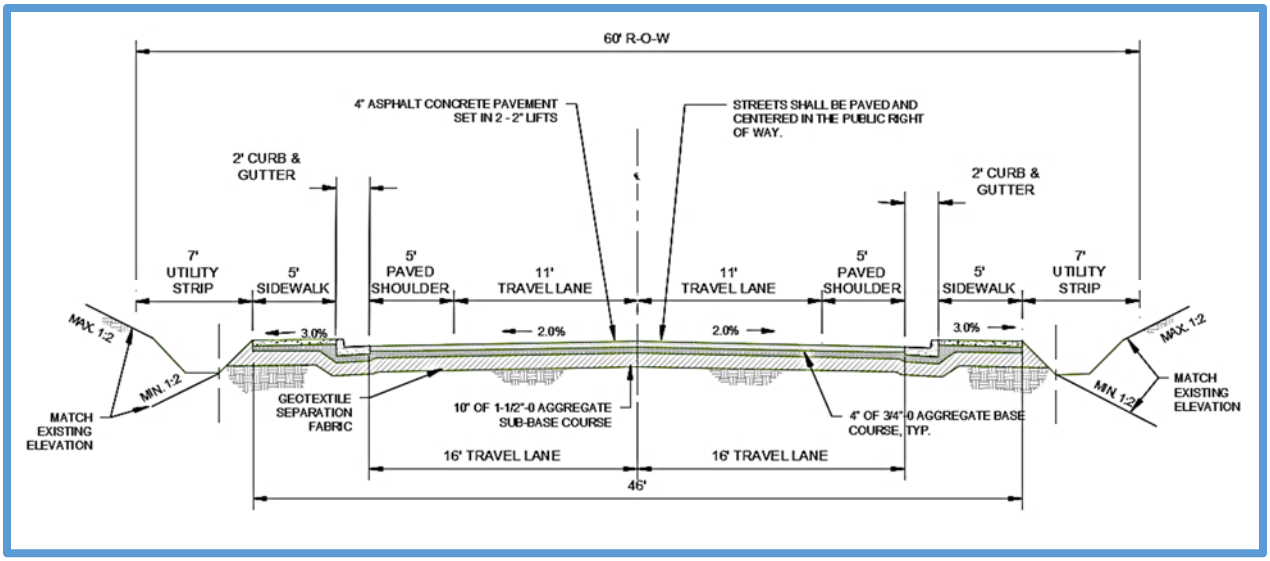


Figure 7.5 Access Road Cross Section

Lincoln County Code stipulates that road grades shall not exceed 12 percent, except that a maximum of 15 percent may be permitted on pitches less than 200 feet long. Variations from these standards may be granted by the fire service having responsibility for the area when topographic conditions make these standards impractical and where the local fire protection district states that their fire-fighting equipment can negotiate the proposed road grades. Code also requires that curve centerline radii shall be not less than 225 feet.

Type of Street	Right-of-Way Width	Surface Width
1. Collector streets and all business streets other than arterials:	60' - 80' +	36' - 48' +
2. Local streets in residential areas:	56' ++	28' ++
3. Cul-de-sacs:	50'	28'
4. Circular ends of cul-de-sacs:	90' +++	70' +++
5. Hammerheads:	++++	++++

Notes:

\+ The City may require a width within the limits shown based upon adjacent physical conditions, safety of the public and the traffic needs of the community. The standard street section for collector and business streets is two 16-22' travel lanes, 2' curb and gutter, 5' sidewalk and 7' utility strip. This may be altered upon approval by the Waldport Public Works Department, utility companies, and the Planning Commission.

++ The standard street section for local streets is two 14' travel lanes, 2' curb and gutter, 5' sidewalk, and 7' utility strip. This may be altered upon approval by the Waldport Public Works Department, utility companies, and the Planning Commission.

+++ Measured by diameter of circle constituting circular end.

++++ Hammerheads will be of such width and length as to allow for adequate turn-a-round of all emergency vehicles as determined by the Public Works Director and in consultation with the Central Oregon Coast Fire and Rescue District.

Table 7.1 Waldport Street Design Standards (2010

Highway 101

US 101 is designated as the Oregon Coast Highway No. 9, as it serves the Oregon Coast region. Much of the highway runs between the Pacific Ocean and the Oregon Coast Range, thus US 101 is frequently mountainous in character. In the project area, it is a two-lane undivided highway approximately 40-feet in width, with a posted speed limit of 55 MPH. The speed limit changes to 45 mph 0.6-mile north of Access Road #1.

The Oregon Highway Plan (OHP) identifies US 101 in the Study Area as a Statewide Highway, not a freight route, and a Non-Designated Urban Highway (meaning that it runs through an urban area and does not carry any special land use designations).

All three of the alternatives will require access to Highway 101, which is regulated by the ODOT and the Oregon State Highway Design Manual. This Master Plan identifies conceptual layouts for these intersections. Close collaboration with the District Manager and Regional Access Management Engineer and/or Access Management sub-team will ensure a safe, cost-effective and functional solution, intended to increase the safety, capacity, mobility, and connectivity of the transportation system.

Should the conceptual designs be deemed non-standard by ODOT, there is a process for applying for a design exception to these standards for stretches of roadway where other designs may be more appropriate.

Traffic Volumes:

The peak travel period in the study area is during the summer months. During times of heavy traffic on state highways, drivers on county roads at intersections with state highways must wait for opportunities to enter or cross the highway. Sight distance is also a safety concern at some county road intersections with state highways. See Table 7.2 for traffic volumes captured by ODOT in 2014.

2014 TRAFFIC VOLUMES ON STATE HIGHWAYS

Milepoint	2014 AADT All Vehicles	ATR AVC	Location Description
			OREGON COAST HIGHWAY NO. 9 (Continued)
140.95	17600		0.02 mile south of Abbey Street
141.37	17200		0.02 mile south of S.W. Waterline Drive
142.16	14400		0.05 mile south of S.E. Pacific Way
142.28	13100		0.06 mile north of Ferry Slip Road
142.45	12500		0.05 mile south of Ferry Slip Road
144.40	9800		0.10 mile south of Airport Road
145.74	9100		0.10 mile south of S.E. 98th Street
146.46	9200		South city limits of Newport, 0.04 mile north of S.E. 116th Street
148.98	9500		0.02 mile south of Beaver Creek Road
154.05	9400		0.02 mile south of Legion Road
155.07	9800		0.02 mile south of Bayview Road
155.92	9900		0.02 mile south of Alsea Highway (OR34)
156.36	8400		South city limits of Waldport
157.24	7200		On Patterson Creek Bridge
158.99	6400		0.02 mile south of Wakonda Beach Road
162.24	5400		On Vingie Creek Bridge
163.41	5700		North city limits of Yachats
164.10	5800		0.02 mile north of 7th Street
164.45	4700		0.01 mile northwest of Yachats River Road
164.48	4500		0.02 mile southeast of Yachats River Road
165.48	3700		South city limits of Yachats

Table 7.2 ODOT 2014 Traffic Volumes on Highway 101

The *Waldport Yaquina John Point Land Use and Transportation Final Preferred Plan* (adopted June 14, 2012 into the Waldport Comprehensive Plan) found that the 2035 future traffic operations results are projected to operate acceptably within the standards set by ODOT and the City of Waldport through the year 2035. This analysis took into account new household and employment growth. Results show that the Range Drive – Highway 101 intersection has a projected V/C ratio of 0.42 in 2035, which is well below the suggested V/C ratio of 0.60, per the Lincoln County TSP for intersections in the Urban Growth Boundary.

Various methods of estimating future traffic growth have been developed for planning purposes. The Cumulative Analysis method was selected by the Yaquina John Point Plan, to estimate future traffic volumes in the Waldport subarea. The ODOT Analysis Procedures Manual (APM – Reference 1) identifies the Cumulative Analysis method as appropriate for "small urban areas that are growing at a fairly uniform rate or for areas where only minor changes are expected to take place." Two distinct components comprise the cumulative method:

- Background growth reflecting anticipated increases in through traffic
- Household and employment growth within the subarea that results in new land development

Access Management:

Oregon Administrative Rule (OAR) 734-051, updated December 2011, provides access management standards for state facilities that address when approaches to state roadway facilities are regulated, spacing standards for approaches to state highways, and when and how access management plans should be prepared.

Lincoln County's TSP includes a recommendation to adopt access management standards that reflect state standards into the development code; however, while other recommended text amendments from
the TSP are reflected in the current version of the Lincoln County Code, this section is not included.

The applicable spacing standard is determined based on the classification of the highway segment, its posted speed limit, its location relative to urban areas, and its average daily traffic volume.

The location and spacing of road approaches should be in conformance with the ODOT Access Management Standards and as described in the Oregon Highway Plan (Table 14), shown in Table 7.3.

The decision for placement and design of a road approach must be consistent with the function of the highway and optimize the safety and operational efficiency for vehicles as well as bicyclists and pedestrians. The road approach design will accommodate the turning movements of the appropriate design vehicle. All road approaches, public and private, require a construction permit from the appropriate District Maintenance Office.

As discussed previously, the traffic volume in the project area along Highway 101 is greater than 5,000 vehicles per day.

With a posted speed limit of 55 MPH through this area, the current spacing standards are:

- Rural Area: 1,320 feet

Traffic Operations Standards:

US 101 Mobility Standards - State Highway Mobility Standards were developed for the 1999 Oregon Highway Plan (OHP) as a method to gauge reasonable and consistent standards for traffic flow along state highways. These mobility standards consider the classification (e.g., freeway, district) and location (rural, urban) of each state highway, as shown in Table 7.4. Mobility standards are based on volume-to-capacity (V/C) ratios. V/C ratios are defined as the number of vehicles passing through a roadway segment during the peak hour, divided by the capacity of that roadway segment.

However, County facilities do not fall under the same mobility standards as State facilities unless they are adopted as part of the TSP. The 2007 Lincoln County TSP has identified 20-year design manual mobility standards, as shown in Table 7.5.

Table 14: Access Management Spacing Standards
For Statewide Highways With Annual Average Daily Traffic (AADT) Of More Than 5,000 Vehicles

Posted Speed (mph)*	Rural Expressway **	Rural Areas	Urban Expressway ** ***	Urban Areas ****
	Spacing (ft)			
55 or higher	5,280	1,320	2,640	1,320
50	5,280	1,100	2,640	1,100
40 & 45	5,280	990	2,640	800
30 & 35	-	770	-	500
25 & lower	-	550	-	350

* Posted Speed: Posted speed can only be adjusted (up or down) after a speed study is conducted and that study determines the correct posted speed to be different than the current posted speed. In cases where actual speeds are suspected to be much higher than posted speeds, the Department reserves the right to adjust the access management spacing accordingly. A determination can be made to go to longer access management spacing standards as appropriate for a higher speed. A speed study will need to be conducted to determine the correct speed.

** Spacing for Expressway at-grade intersections only. See Table 12 for interchange spacing.

*** These standards also apply to Commercial Centers.

**** The Urban standard applies in UBAs unless a management plan agreed to by ODOT and the local government(s) establishes a different standard. Spacing standards on access controlled facilities are also guided by those controls.

Table 7.3 ODOT Spacing Standards

Highway	Highway Category	Land Use	Speed Limit	Applicable V/C Ratio
Inside Urban Growth Boundary				
	Statewide (NHS) Freight Routes	Non-MPO	≤35 mph	0.80
	Statewide (NHS) Non-Freight Routes and Regional or District Expressways	Non-MPO	≤35 mph	0.85
	Local Road, Arterial-Collector	Non-MPO	≤35 mph	0.90
Outside Urban Growth Boundary				
	Statewide (NHS) Freight Routes	Rural Lands	N/A	0.70
	Statewide (NHS) Non-Freight Routes and Regional or District Expressways	Rural Lands	N/A	0.70
	Local Road, Arterial-Collector	Rural Lands	N/A	0.75

Source: Adopted Oregon Highway Plan Amendments, August 17, 2005.

Table 7.4 ODOT Mobility Standards Applicable to Operational Analysis

Highway Category	Inside Urban Growth Boundary				Outside Urban Growth Boundary	
	STAs	MPO	Non-MPO Outside of STAs Where Non-freeway Speed Limit <45 mph	Non-MPO Where Non-freeway Speed Limit >= 45 mph	Unincorporated Communities	Rural Lands
Interstate Highways and Statewide (NHS) Expressways	N/A	0.75	0.70	0.65	0.60	0.60
Statewide (NHS) Freight Routes	0.85	0.75	0.70	0.70	0.60	0.60
Statewide (NHS) Non-Freight Routes and Regional or District Expressways	0.90	0.80	0.75	0.70	0.60	0.60
Regional Highways	0.95	0.85	0.75	0.75	0.70	0.65
District/Local Interest Roads	0.95	0.85	0.80	0.75	0.75	0.70

Table 7.5 Lincoln County TSP 20-Year Design Manual Mobility Standards (V/C Ratios)

All the highway intersections in the Study Area are along US 101, a Statewide Non-Freight Route and are considered rural roads outside the Waldport Urban Growth Boundary. The current Lincoln County design mobility standards are 0.60.

Waldport LOS Operations Standards

Level of service (LOS) is a qualitative measure used to relate the quality of traffic service. LOS is used to analyze highways by categorizing traffic flow and assigning quality levels of traffic based on performance measure like speed, density, etc.

The City's TSP notes that: "The City of Waldport does not have specific LOS standards for intersection operations. Typically, local jurisdictions in Oregon consider LOS E or better to be the standard for un-signalized intersections. At signalized intersections, LOS D or better is a typical standard for acceptable operations."

Sight Distance at Access Road – Highway 101 Intersection:

The safe operation at intersections or driveways requires adequate sight distance so drivers can enter the roadway safely. The primary definition for intersection sight distance is provided by the AASHTO Policy on Geometric Design for Streets and Highways, i.e. the Green Book. The methods to determine intersection sight distance are based on models that describe the operation of the entering vehicle and the conflicting vehicle on the major roadway. Access roads onto Highway 101 would be considered Case III - Stop Controlled Intersections.

AASHTO requires that there shall be an unobstructed sight distance along both approaches and both sides at an intersection (within the right-of-way) for distances sufficient to allow the operators of vehicles, approaching simultaneously, to see each other in time to prevent collisions at the intersection. Any object within the sight triangle more than 30 inches high (such objects include: buildings, cut slopes, hedges, trees, bushes, utility cabinets, or tall crops) above the flowline elevation of the adjacent street shall constitute a sight obstruction, and shall be removed or lowered. In no case shall any permanent object encroach into the "line of sight" of any part of the sight-distance triangle.

Trip Generation at Access Road – Highway 101 Intersection:

Trip generation estimates reflecting the anticipated growth in the Industrial Park will need to be prepared based on trip rate data published in the standard reference manual, Trip Generation, 8th Edition, published by the Institute of Transportation Engineers (ITE). Trips will be estimated for all locally-generated trips within the study area.

The cumulative method combines historical growth trends with information about existing and plAnnd land uses to predict total future traffic volumes. The methodology to be employed considers two categories of trips:

- Through trips (External-External): those vehicles that travel through the subarea on US 101 but don't leave the highway

- Locally-generated trips (Internal-External, External-Internal, or Internal-Internal): vehicles that have at least one terminus within the study area

Through Trips

Ideally, through trips would be measured by completing a survey of users on US 101. This type of data collection can be a time and resource intensive endeavor. A simpler method of approximating through traffic can be determined through evaluation of existing turning movements at key intersections on US 101, namely at Range Street and Wakonda Beach Drive.

The State of Oregon Analysis Procedures Manual (APM) method of assessing through trips assumes that all turning movement volumes off the highway are destined to or originate within the subarea. There are no major intersecting roadways with US 101 in the study area that may carry statewide or regional travel. Thus, this assumption is reasonable. It will be assumed as part of this analysis that all turn movements on/off of US 101 within the study area are made to uses within the Industrial Park subarea or are traveling through the study area. Those trips that travel as through movements on US 101 are considered *through trips*.

Locally-Generated Trips

After accounting for through trips, the remaining trips are assumed to be generated by uses within the Industrial Park subarea to locations outside the study area. While it may be an unrealistic assumption that all locally-generated trips will have one trip end outside the study area, this assumption will produce a conservatively high estimate of traffic on streets in the study area. The majority (but not all) of these trips will use US 101 and are assumed to be generated by industrial and household activities within the Industrial Park subarea and traveling to/from uses outside the subarea.

Trips that are locally-generated will be assigned to turning movements into and out of local streets intersecting US 101 proportionate to existing turning movements at these intersections, as previously discussed and referenced. Since the access road will be new, turning movements will be estimated using adjacent local street turning movements, particularly at Range Street and Wakonda Beach Drive.

7.3 Access Road Alternatives

7.3.1 Access Road #1 (AR #1)

Access Road #1 (AR #1) is approximately 3,237 lineal feet in length and would extend from Kathleen Street on the IP site to Highway 101 south of the existing SW Edgewater Drive, as shown on Figure 7.6 on page 7-17. This alignment runs through only 1 existing lot (85), which is zoned RR-2 and is currently vacant. There currently is not a ROW through this lot. See Images 7.4 and 7.5.

As can be seen in Image 7.4, the house on Lot 88 is constructed 20’ from the backyard lot line, so the alignment has been positioned to lessen the impact to this property.

Currently there is 150’ of level topography at the Highway 101 intersection, which allows for a smooth transition to the highway intersection.

The alignment as shown meets all of the Lincoln County requirements in that all horizontal curves are greater than 225’ and vertical slopes range between 0% and 15% (12%-15% max per code).

A 200 lineal box culvert, roughly 10 feet high and 30’ wide, will be required due to the existing topography. In addition, three cross culverts will be required to convey tributary creek water under the road.

The required Access Mobility spacing standard may require an exception. With Option #1, there would be a 780’ spacing to Azalea Lane to the south. Spacing standards require 1,320’ in a rural area.

In addition, directly across the street from this option are two popular tourist based businesses: Edgewater Cottages and Cape Cod Cottages (see Image 7.6). This option may need extensive public involvement and possibly restrictions on truck traffic flow hours at the intersection.

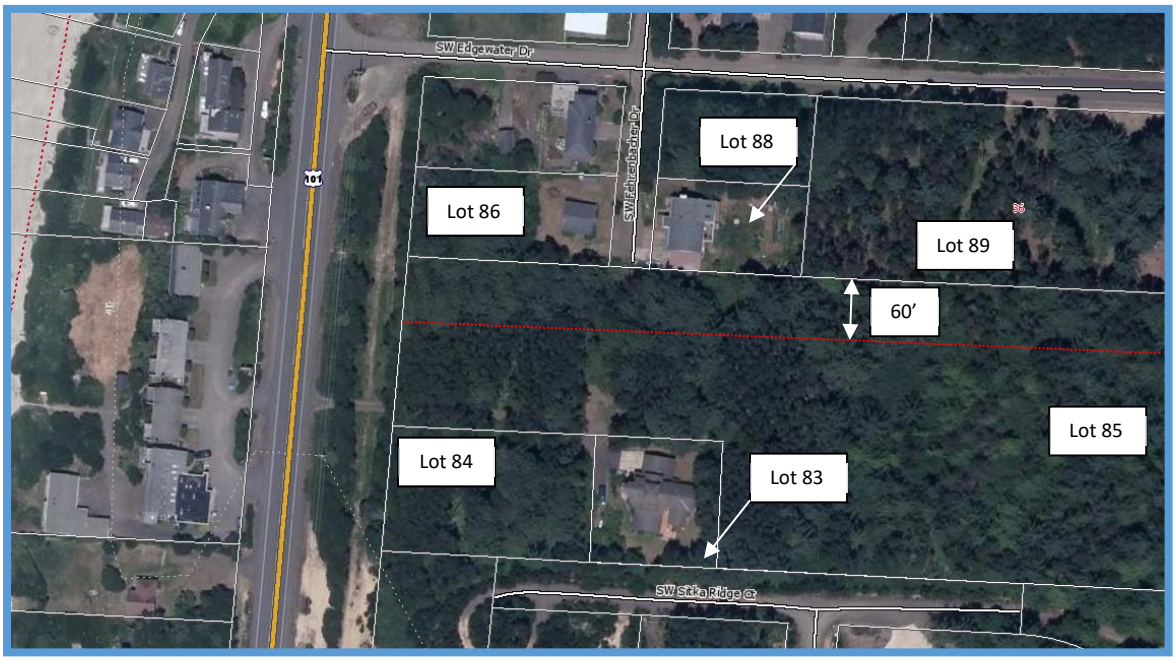
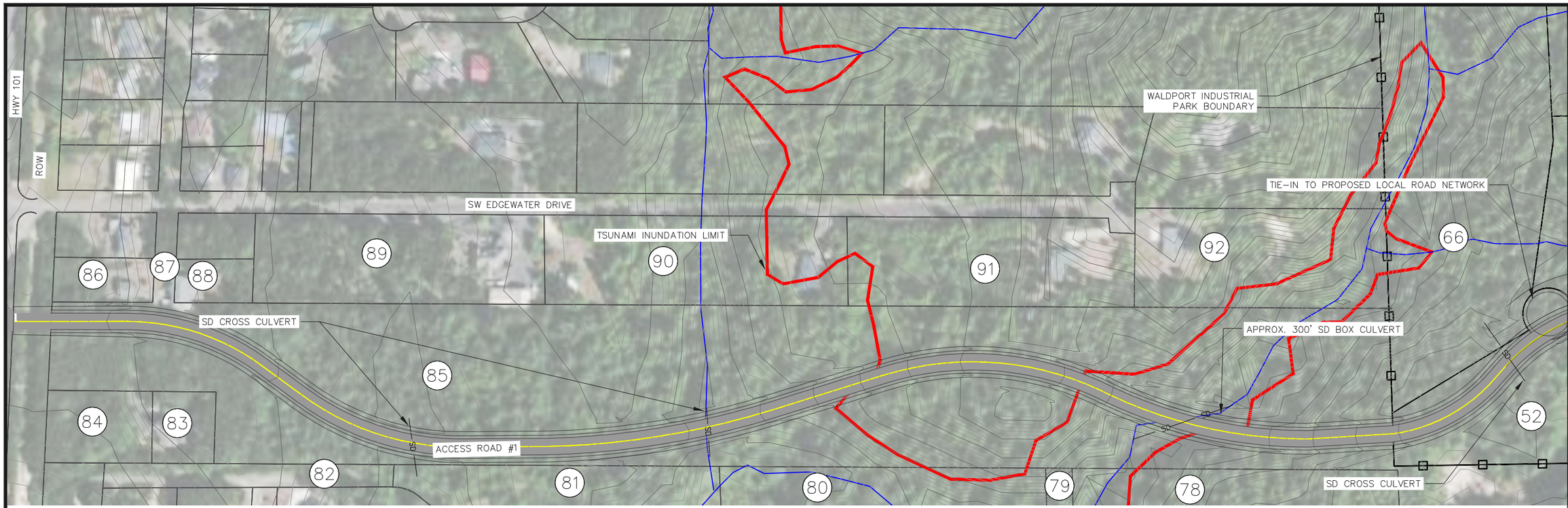


Image 7.4: Plan View of Access Road #1 at Highway 101 Intersection

Image 7.5: Access Road #1 at Highway 101 Intersection

Advantages

- Meets access road goals.
- Provides tsunami evacuation route.
- No ROW acquisition at Highway 101 intersection
- Flat approach to Highway for 150'



1
7.6

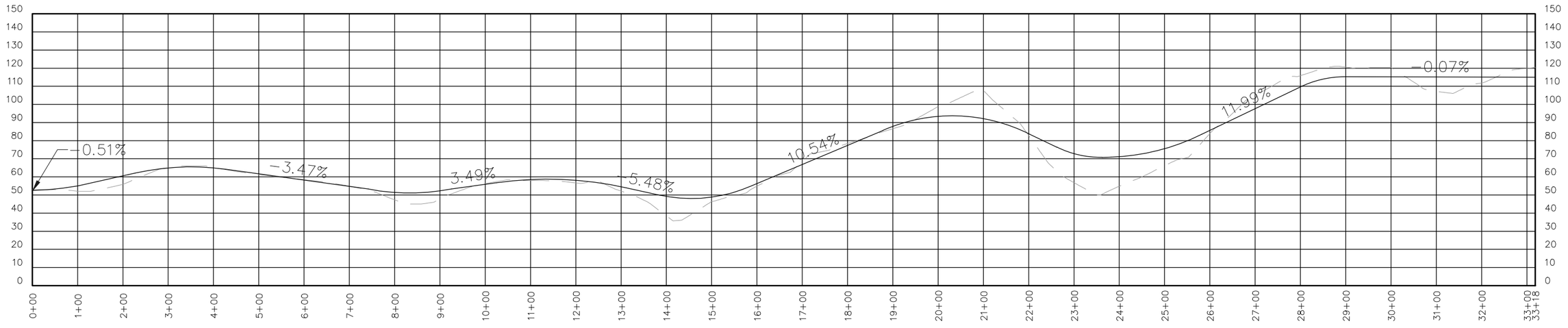
PLAN ACCESS ROAD #1

PLAN SCALE

100 0 50 100 200

1" = 200'

N



2
7.6

PROFILE ACCESS ROAD #1

Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

WALDPORT INDUSTRIAL PARK

ACCESS ROAD #1

1"
0
NTS

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE
7.6

Challenges

- Impacts to one lot near Highway 101.
- Potential negative public involvement feedback due to business proximity across the highway.
- May necessitate an exception to the statewide goal of prohibiting development of new roads outside urban growth boundaries.
- May require an exception to the Access Mobility spacing standard.
- 1,740 lineal feet of alignment lies within the tsunami inundation limit/zone
- Approx. 200' long, 10' high box culvert required.

Image 7.6: Access Road #1 at Highway 101 Intersection – Businesses across Highway

A cost estimate for construction of Access Road #1 is provided below in Table 7.6. Should the decision be made to not include concrete curbs and sidewalks and install gravel footpaths instead, the cost would be $987,000 less. Please note that these costs do not include ROW acquisition.

Table 7.6: Cost Estimate for Access Road #1

Access Road #1					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit	ls	1	$360,000	$360,000
2	Construction Facilities, Temporary Controls	ls	1	$160,000	$160,000
3	Clearing and Grubbing	ls	1	$160,000	$160,000
4	Slope Stabilization - Retaining Walls	ls	1	$80,000	$80,000
5	Earthwork (Est. 23,000 cy Cut + Est. 24,500 cy Fill)	cy	47,500	$20	$950,000
6	Unsuitable Material Disposal	cy	7,400	$50	$370,000
7	Gravel Sub Base	cy	4,748	$39	$185,172
8	Gravel Leveling Coarse	cy	1,279	$48	$61,392
9	Geotextile Separation Fabric	sy	16,545	$3	$41,363
10	HMAC Asphalt, 4"	ton	2,564	$88	$225,632
11	PCC Sidewalk, 4"	sf	32,370	$11	$356,070
12	PCC Curb & Gutter	lf	6,474	$25	$161,850
13	Painted Pavement Striping	lf	12,948	$2	$25,896

14	V-Ditch w/ Filter Fabric & Rock	lf	3,090	$95	$293,550
15	Hydroseeding	sy	6,500	$7	$45,500
16	Drainage Cross Culvert	lf	630	$150	$94,500
17	Landscape Restoration	ls	1	$30,000	$30,000
Construction Cost Total					$3,600,925
Contingency (20%)					$720,185
Engineering (20%)					$720,185
Project Management and Legal (5%)					$180,046
Total Project Budget Estimate					**$5,221,341**

7.3.2 Access Road #2 (AR #2)

Access Road #2 (AR #2) is approximately 2,952 lineal feet in length, as shown on Figure 7.7 (page 7-22) and would extend from Dahl Street on the IP site to Highway 101 at Whitecap Drive. This alignment runs through 3 existing lots (115, 108 & 107).

AR #2 connects to Highway 101 at Whitecap Drive, which is a gravel road approximately 15’ wide, running a length of roughly 300’. Currently, Whitecap Drive has a 50’ wide ROW, 350 feet in length, with a dedicated turnaround on the east end as shown on Image 7.8.

As such, 10’ of ROW will need to be secured on the north edge of Lot 107 for approximately 215 feet (shown as a dashed red line in Image 7.7). The house on Lot 107 is set back roughly 50’ from the current ROW, so an additional 10’ on the ROW would still allow a 40’ separation. See Image 7.7 and Table 7.1 in Attachment C for information on existing lots along the Access Road options.

Image 7.7: Plan View Highway 101 at Access Road #2 Intersection

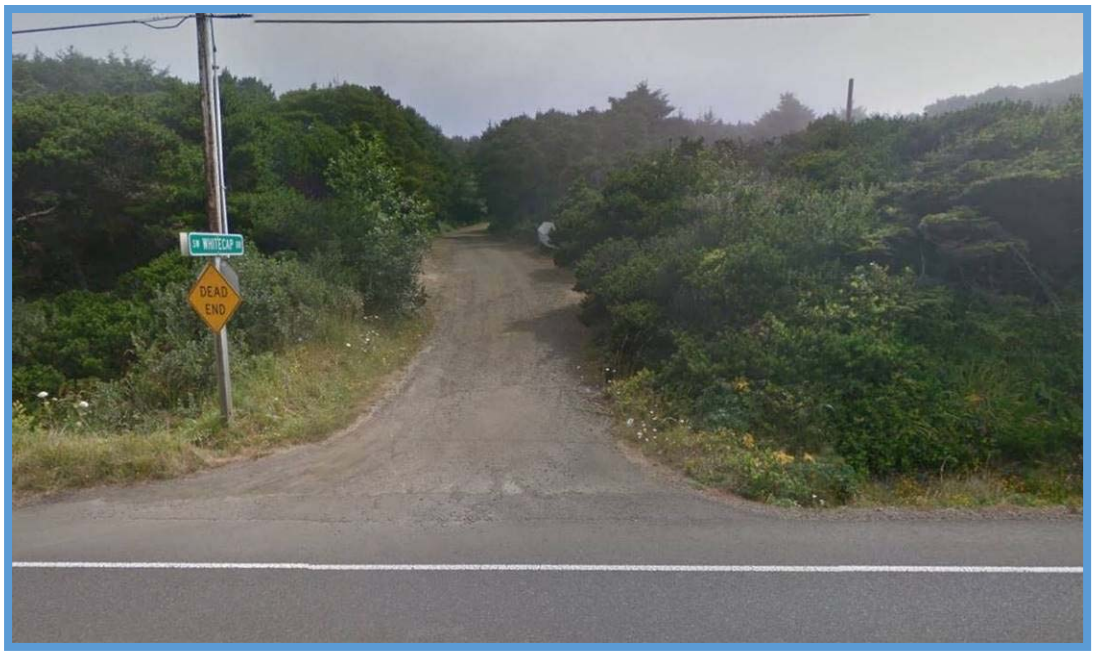


Image 7.8: White Cap Drive at Highway 101 Intersection

Image 7.9: Highway 101 at White Cap Drive Intersection Looking South

There is a possibility that the required AASHTO sight distances at this intersection may be difficult to meet due to Highway 101 vertical grades (Image 7.9), and an in-depth analysis and coordination with ODOT will need to be performed prior to proceeding forward with this option.

It is preferable to have a relatively flat or slightly elevated roadway connecting with a state highway, generally a 2% - 3% landing for 20' is adequate. This helps improve the visibility of the intersecting roadway and can also help control highway drainage.

Currently there is a 7% slope intersecting the highway, which will need to be flattened out to 1.6% to meet ODOT requirements.

The alignment as shown meets all of the Lincoln County requirements in that horizontal curves are no smaller than 485' (225' min per code) and vertical slopes range between 0% and 15% (12%-15% max per code). ODOT Access Mobility spacing standard may require an exception. Spacing between White Cap Drive and SW Breakers Drive to the north is currently approximately 700'. Spacing standards require 1,320' in a rural area. To the south, SW Fernwood Drive is currently about 1,486', which is within the standards.

Advantages

- Meets access road goals.
- Provides tsunami evacuation route.
- Minimum impacts to the residents near Highway 101.

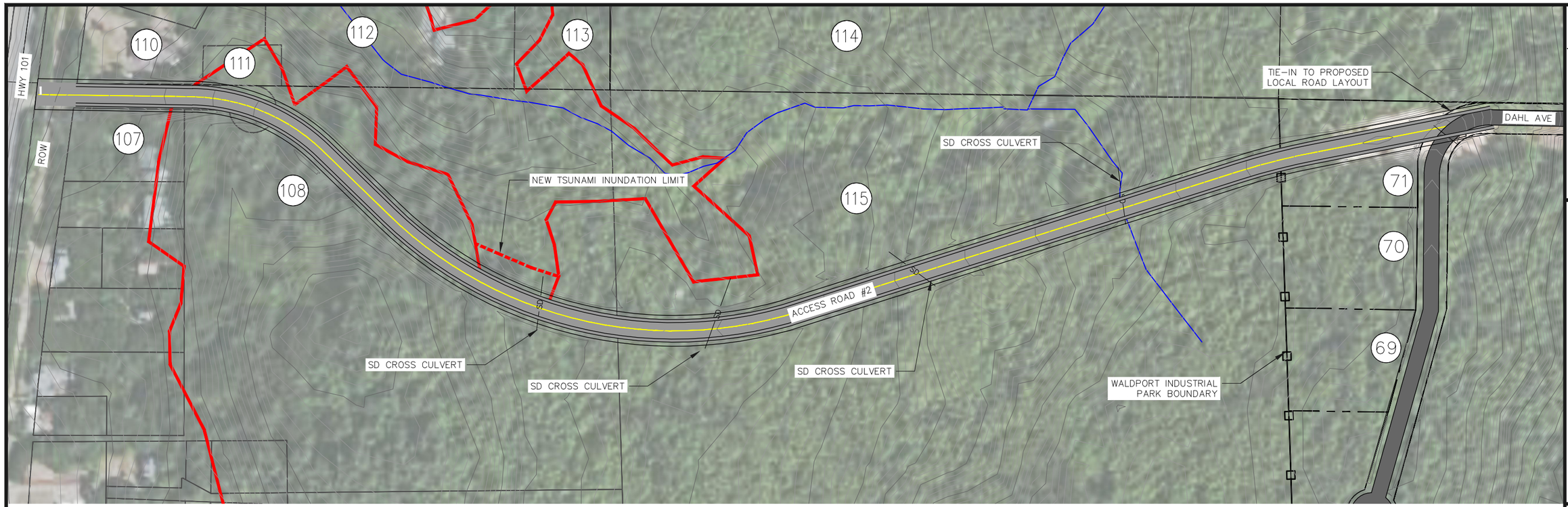
Challenges

- 125 ROW acquisition (10' wide)
- 300 lineal feet of alignment lies within the tsunami inundation limit/zone
- Needs detailed sight distance requirement analysis
- May require Access Mobility spacing standard exception

A cost estimate for construction of Access Road #2 is provided below in Table 7.7. Should the decision be made to not include concrete curbs and sidewalks and install a gravel footpath instead, the cost would be $545,000 less. Please note that these costs do not include ROW acquisition.

Table 7.7: Cost Estimate for Access Road #2

Access Road #2					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit	ls	1	$300,000	$300,000
2	Construction Facilities, Temporary Controls	ls	1	$150,000	$150,000
3	Clearing and Grubbing	ls	1	$150,000	$150,000
4	Slope Stabilization - Retaining Walls	ls	1	$30,000	$30,000
5	Earthwork (Est. 25,000 cy Cut + Est. 20,000 cy Fill)	cy	45,000	$20	$900,000
6	Overburden Disposal	cy	6,000	$50	$300,000
7	Gravel Sub Base	cy	4,329	$39	$168,831
8	Gravel Leveling Coarse	cy	1,166	$48	$55,968
9	Geotextile Separation Fabric	sy	15,087	$3	$37,718
10	HMAC Asphalt, 4"	ton	2,338	$88	$205,744
11	PCC Sidewalk, 4"	sf	29,519	$11	$324,709
12	PCC Curb & Gutter	lf	5,904	$25	$147,600
13	Painted Pavement Striping	lf	11,807	$2	$23,615
14	V-Ditch w/ Filter Fabric & Rock	lf	2,000	$95	$190,000
15	Hydroseeding	sy	4,000	$7	$28,000
16	Drainage Cross Culvert	lf	600	$150	$90,000
17	Landscape Restoration	ls	1	$25,000	$25,000
Construction Cost Total					$3,127,184
Contingency (20%)					$625,437
Engineering (20%)					$625,437
Project Management and Legal (5%)					$156,359
Total Project Budget Estimate					**$4,534,417**



1
7.7

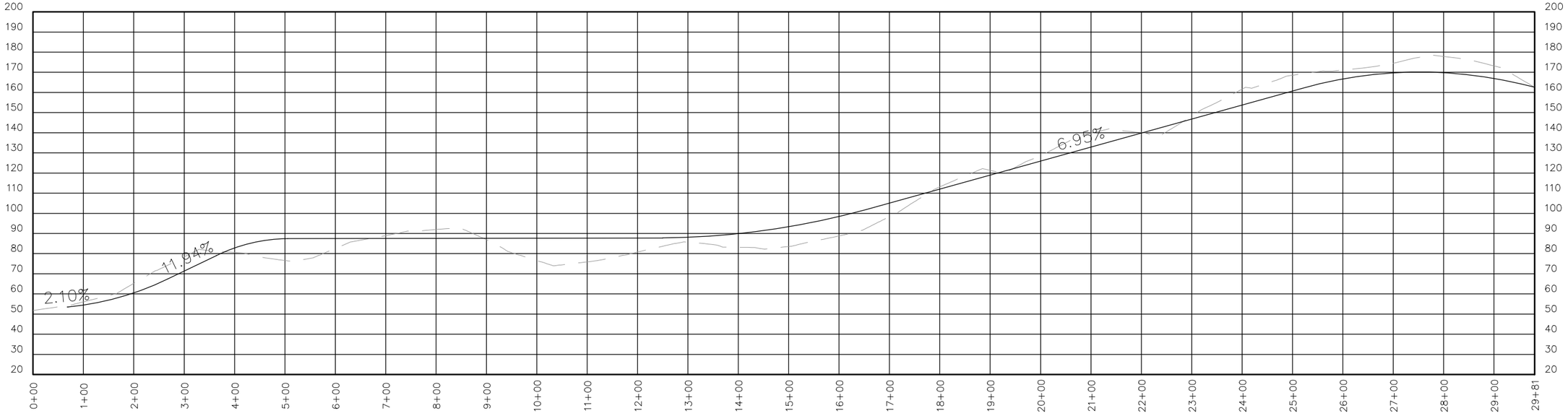
PLAN ACCESS ROAD #2

PLAN SCALE

100 0 50 100 200

1" = 200'

N



2
7.7

PROFILE ACCESS ROAD #2

Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

WALDPORT INDUSTRIAL PARK

ACCESS ROAD #2

1"
0
NTS

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE
7.7

7.3.3 Access Road #3 (AR #3)

Access Road #3 (AR #3) is approximately 4,790 lineal feet in length, as shown on Figures 7.8a and 7.8b (pages 7-25 and 7-26), and would head north from Dahl Avenue. This alternative has been included as an option for the City to coordinate with the Golf Course property owners who own 3 existing lots (120, 121 & 122).

The connection to Highway 101 has been shown with two different options. The first option to the south would connect to Highway 101 at the ODOT weigh station, per Images 7.10 and 7.11. As such, close coordination with the ODOT District Manager and Regional Access Management Engineer and/or Access Management sub-team will be required.

The second highway connection is shown intersecting the highway to the north of the ODOT weigh station and will have similar costs to the southern route. See Image Table 7.1 in Attachment C for information on existing lots along this Access Road option.

The alignment as shown meets all of the Lincoln County requirements in that horizontal curves are no smaller than 225’ and vertical slopes range between 0% and 12.3% (12%-15% max per code). ODOT Access Mobility spacing standard may require an exception, which require 1,320’ in a rural area. Spacing between this Access Road and SW Breakers Drive to the south is approximately 500’. To the north, SW Ocean Hills Drive is currently about 1,500’, which is within the standards. The bypass alternative would have approximately 900’ between the Highway 101 intersection and SW Ocean Hills Drive to the north and 1,150’ to SW Breakers Drive to the south.

Advantages

- Meets access road goals.
- Provides tsunami evacuation route.
- Minimum impacts to the residents near Highway 101.

Challenges

- 125 ROW acquisition (10’ wide)
- 1,780 lineal feet of alignment lies within the tsunami inundation limit/zone
- Needs detailed ODOT coordination
- May require Access Mobility spacing standard exception

A cost estimate for construction of Access Road #3 is provided below in Table 7.8. Should the decision be made to not include concrete curbs and sidewalks and install a gravel footpath instead, the cost would be $980,000 less. Please note that these costs do not include ROW acquisition.

Table 7.8: Cost Estimate for Access Road #3

Access Road #3					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (12%)	ls	1	$560,000	$560,000
2	Construction Facilities, Temporary Controls (6%)	ls	1	$280,000	$280,000
3	Clearing and Grubbing (6%)	ls	1	$280,000	$280,000
4	Slope Stabilization	ls	1	$30,000	$30,000
5	Earthwork (Est. 51,700 cy Cut + Est. 54,400 cy Fill)	cy	106,100	$20	$2,122,000
6	Overburden Disposal	cy	15,404	$50	$770,200
7	Gravel Sub Base	cy	7,025	$39	$273,975
8	Gravel Leveling Coarse	cy	1,892	$48	$90,816
9	Geotextile Separation Fabric	sy	24,482	$3	$61,205
10	HMAC Asphalt, 4"	ton	3,794	$88	$333,872
11	PCC Sidewalk, 4"	sf	32,370	$11	$356,070

12	PCC Curb & Gutter	lf	9,580	$25	$239,500
13	Painted Pavement Striping	lf	19,160	$2	$38,320
14	V-Ditch w/ Filter Fabric & Rock	lf	2,000	$95	$190,000
15	Hydroseeding	sy	7,620	$7	$53,340
16	Drainage Cross Culvert	lf	600	$150	$90,000
17	Landscape Restoration	ls	1	$50,000	$50,000
Construction Cost Total					$5,819,298
Contingency (20%)					$1,163,860
Engineering (20%)					$1,163,860
Project Management and Legal (5%)					$290,965
Total Project Budget Estimate					**$8,437,982**

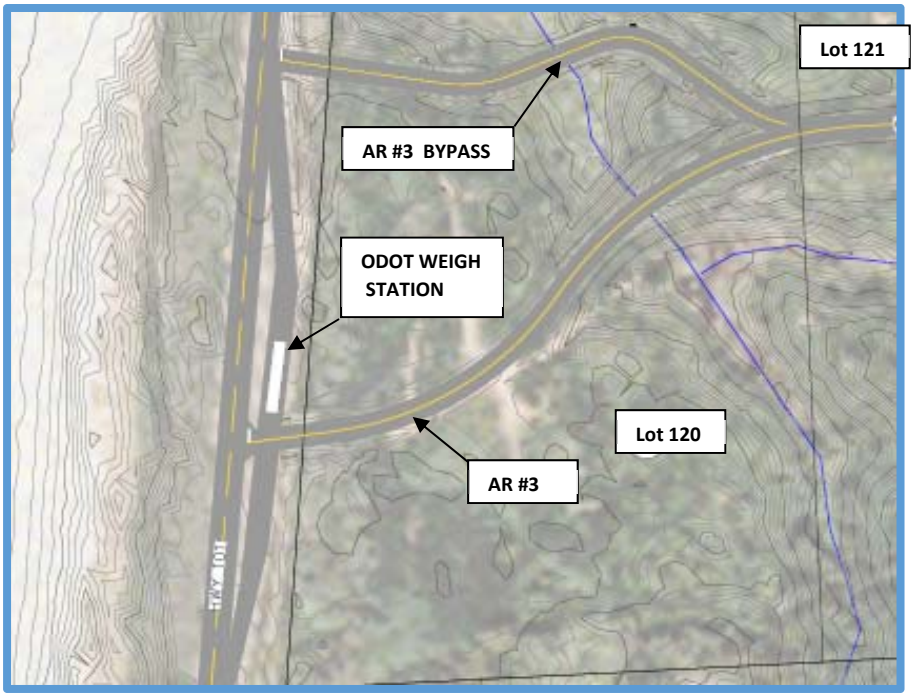
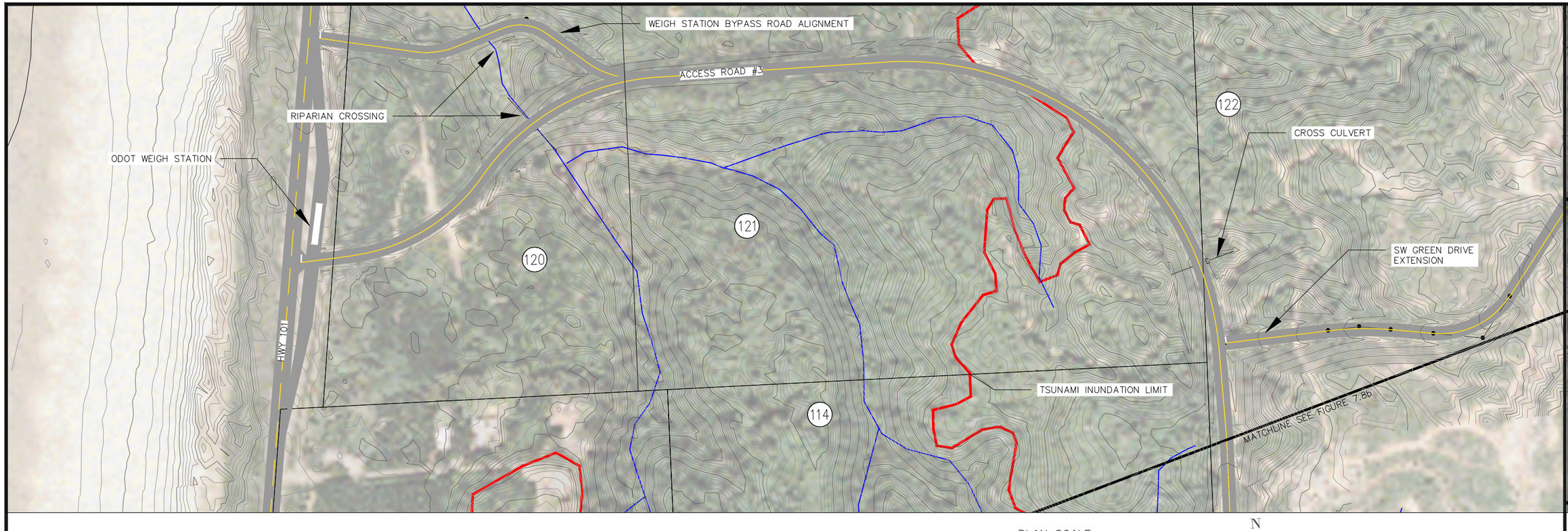


Image 7.10: Plan View Highway 101 at Access Road #3 Intersection

Image 7.11: ODOT Weigh Station at Access Road #3 Intersection

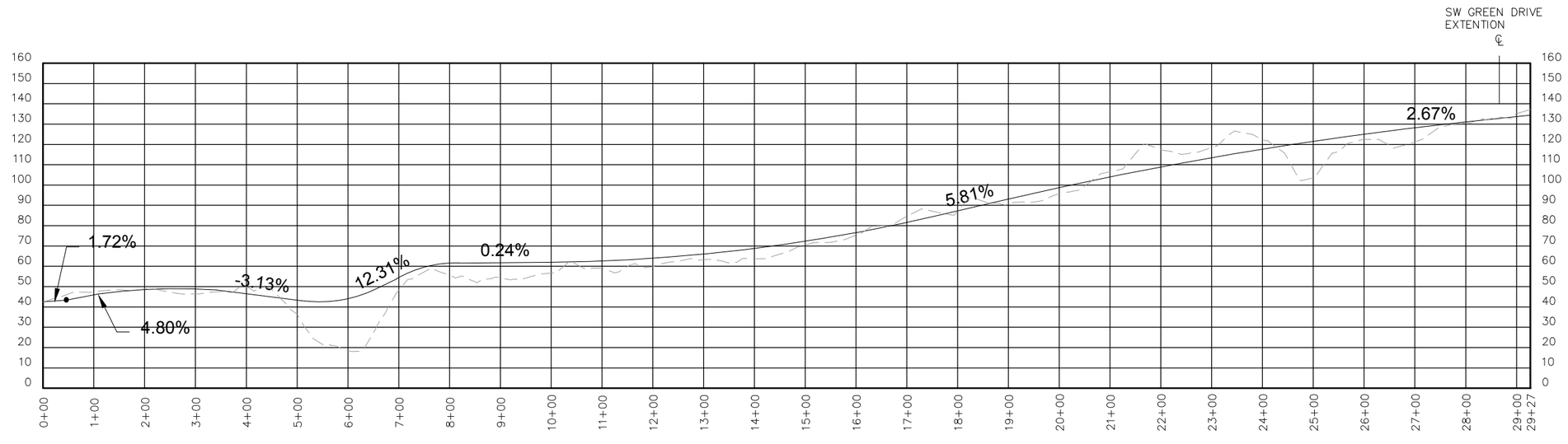


1
7.8a

ACCESS ROAD #3 PLAN

PLAN SCALE
125 0 125 250
1" = 250'

N



2
7.8a

ACCESS ROAD #3 PROFILE

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

WALDPORT INDUSTRIAL PARK

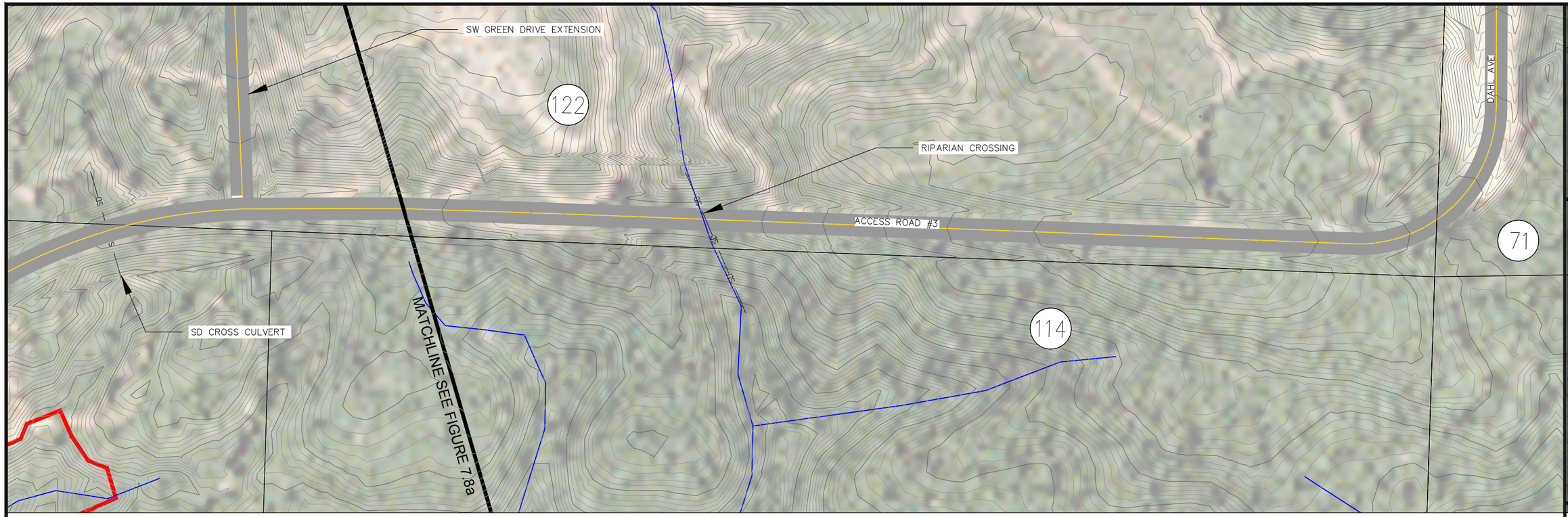
ACCESS ROAD #3A

1" 0 NTS

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE
7.8a

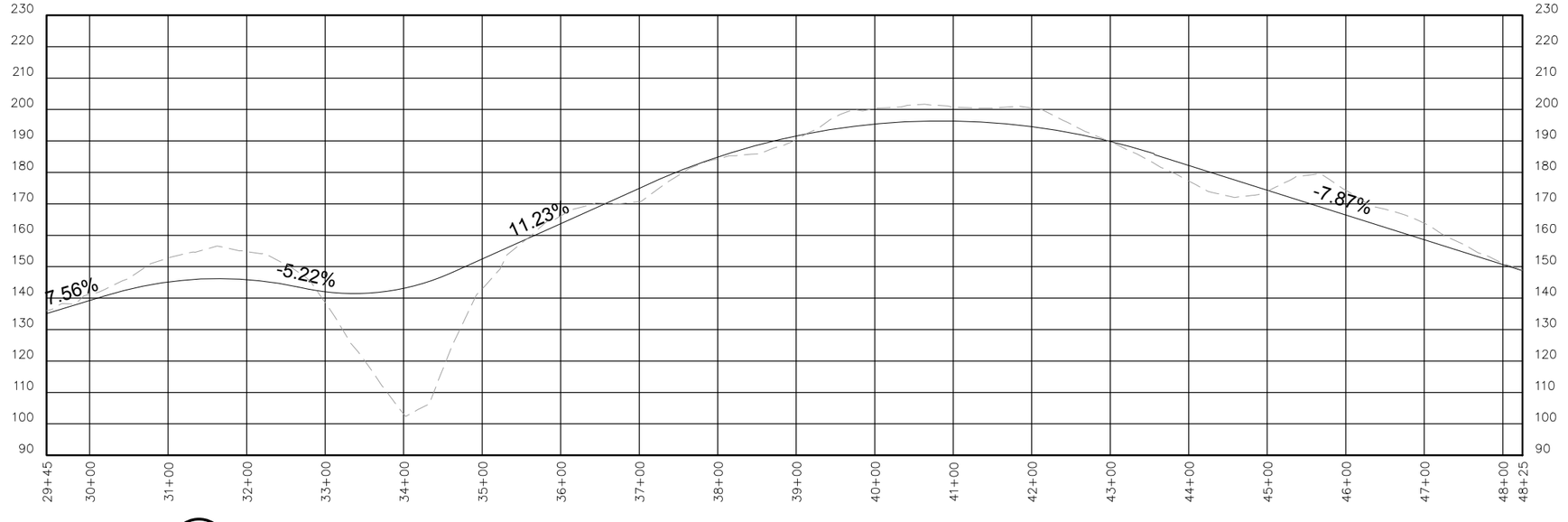
DATE:4/25/17 FILE:O:\CW_Projects\3208 Waldport\3208-005 Industrial MP (Tier2)\Drawings\dwg\DESIGN\THISSELL CORRIDOR.dwg



1 / 7.8b ACCESS ROAD #3 PLAN

PLAN SCALE
100 0 50 100 200
1" = 200'

N



2 / 7.8b ACCESS ROAD #3 PROFILE

Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

WALDPORT INDUSTRIAL PARK

ACCESS ROAD #3B

1" NTS 0

DRAWN BY: CMJ
DATE: 4/13/2017

FIGURE
7.8b

DATE:4/25/17 FILE:O:\CW_Projects\3208 Waldport\3208-005 Industrial MP (Tier2)\Drawings\dwg\DESIGN\THISSELL CORRIDOR.dwg

7.3.4 Wakonda Beach Drive

Crestline Drive/Wakonda Beach Road could serve as access to the Industrial Park for an interim period until trip generation from the site develops to a point where the Level of Service of this route becomes more than a Level E, as recommended in the City TSP as shown in Image 7.12.

The TSP for Lincoln County (2007) conducted an HCM Unsignalized Intersection Capacity Analysis for the Wakonda Beach Rd & US 101 intersection. The intersection is shown in Image 7.13. The plan found that in 2005, the intersection was functioning at 41.8% of its Intersection Capacity Utilization and its LOS was classified as A. When projected out to the year 2027, this intersection was analyzed to function at 57.4% of its capacity and would be classified at an LOS of B, which exceeds OHP mobility standards during the 30th highest hour.

The distance from Highway 101 to Kathleen Street on the IP Site is approximately 1.75 miles.

Image 7.12: Wakonda Beach Road Access

Image 7.13: Wakonda Beach Road and Highway 101 Intersection

The development of the three Access Road alternatives was focused on providing a safe, cost-effective and functional solution to the Industrial Park access. The study considered safety, traffic operations, access management, land use, and environmental impacts.

While all three alternatives are feasible, each option presents a number of challenges. Cost considerations include length of the option, number and extent of drainage structures, ROW acquisition, etc. Environmental constraints will need to be addressed by the chosen option during the design phase. Highway 101 intersection considerations will need to take into account ODOT input, safety, traffic operations, exceptions to the regulations and public involvement issues, etc.

Table 7.9 shows a breakdown of the constraints of the three Access Road alternatives. Close collaboration between the City of Waldport, Lincoln County representatives and the ODOT District Manager and/or the Regional Access Management Engineer will ensure that a safe, cost-effective and functional solution is chosen from the 3 alternatives. This in turn, will increase the safety, capacity, mobility, accessibility and connectivity of the transportation system in this area for all concerned.

Table 7.9: Access Roads Alternatives

Screening Criteria	Access Road #1	Access Road #2	Access Road #3
Engineering and Construction Complexity			
Length	3,237'	2,952'	4,790'
Horizontal Alignment (225' radius min.)	7 Curves All >225'	4 Curves 485' each	4 Curves All > 225'
Vertical Alignment (12% - 15% max.)	0% to 12%	0% to 15%	0% to 12.3%
Drainage Infrastructure	1 Box Culverts & 3 Road Cross Culverts	4 Road Cross Culverts	2 Box Culverts & 2 Road Cross Culverts
Environmental Constraints			
Wetlands Impacts	Possible constraints	Possible constraints	Two Riparian Crossings
Creek Crossings	1 (Tributary to Little Creek)	NA	2 (Tributaries of Patterson Creek)
Flood and Erosion Considerations	X	X	X
Zoning/Land Use			
Existing Zoning	RR-2 I-P	R-1 RR-2 I-P	R-1 C-1 I-P
ROW Constraints	NA	215' ROW acquisition on developed lots	NA
ROW Acquisition	Required	Probable	Possible
Adjacent Land Constraints	Impact to 2 houses	NA	NA
Highway 101 Intersection			
Site View	NA	Possible constraints	NA
Access Management Spacing Standards	Possible exception required	Possible exception required	Possible exception required
Public Involvement Issues	Adjacent business concerns	Impact mostly to residential lots	ODOT concerns with weigh station
Industrial Site Constraints			
Lots	Lot #62 will lose some square footage	Lot #71 will be divided into 2 smaller lots	NA
COST	**$5,221,341**	**$4,534,417**	**$8,437,982**

8.1 Capital Improvement Plan (CIP) Summary

This Section summarizes the capital improvements needed to properly serve the Industrial Park needs over the next 20 years as determined by the detailed analyses in this Master Plan. The Capital Improvement Plan (CIP) consists of various projects to construct new utility system and transportation components and projects to correct deficiencies in existing utility systems to increase system capacity to serve the growing population in the Industrial Park.

As part of the master planning efforts, numerous options for utility infrastructure and road alternatives were evaluated. Nonviable options were screened out, and a limited number of selected alternatives were established and evaluated in detail.

The CIP is used to help establish funding needs, user rates, system development charges (SDCs), and to plan for and prioritize various project needs. The goal of these planning level cost estimates is to establish a reasonably conservative budget and to allow fair cost-comparisons of alternatives. As projects proceed and more detailed, site-specific information becomes available, the estimates will require updating.

The various projects recommended in this Master Plan for the 20-year planning period are summarized in Table 8.1. Costs include four components: construction cost, engineering cost, contingency, and legal and administrative costs. More detailed costs for each system component are included in the applicable sections. The estimates presented herein are preliminary and are based on the level and detail of planning presented in this Study.

8.2 Capital Improvement Plan Phases

The various improvements recommended in the Master Plan are prioritized and separated into 4 zones of development (W, X, Y and Z), as shown in Figure 1.3 on page 1-6. The zones have been grouped based on utility development sequencing, ease of construction cost and existing conditions.

The cost for the capital improvement needs is large and there may be reason to prioritize the improvements or take projects on in phases. Table 8.2 shows improvement costs using a potential phased approach.

Table 8.1 Capital Improvement Plan IP Site Cost Summary

Zone W	
Facility	***Cost***
Water System	$51,838
Sanitary Sewer System	$1,554,183
Local Roads	$457,210
Zone W Project Budget Estimate	**$2,063,230**
Zone X	
Facility	***Cost***
Water System	$474,875
Sanitary Sewer System	$556,873
Local Roads	$4,147,733
Zone X Project Budget Estimate	**$5,179,480**
Zone Y	
Facility	***Cost***
Water System	$296,525
Sanitary Sewer System	$518,034
Local Roads	$1,732,050
Zone Y Project Budget Estimate	**$2,546,609**
Zone Z	
Facility	***Cost***
Water System	$176,538
Sanitary Sewer System	$286,230
Storm Drainage	$68,730
Local Roads	$1,620,121
Zone Z Project Budget Estimate	**$2,151,618**
City Infrastructure	
Facility	***Cost***
Sanitary Sewer System	$1,248,813
City Infrastructure Budget Estimate	**$1,248,813**
	Total Budget Estimate $13,189,750

TABLE 8.1 - CAPITAL IMPROVEMENT PLAN PHASING

		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Industrial Park Development																						
Zone W	**Design**			$284,583																		
	Construction Zone W				$1,778,647																	
Zone X	**Design**					$714,411																
	Construction Zone X							$4,465,069														
Zone Y	**Design**												$351,256									
	Construction Zone Y														$2,195,353							
Zone Z	**Design**																			$296,775		
	Construction Zone Z																					$1,854,843
	Fiscal Year Totals:	**$0**	**$284,583**	**$0**	**$1,778,647**	**$714,411**	**$0**	**$4,465,069**	**$0**		**$0**	**$0**	**$0**	**$351,256**	**$0**	**$2,195,353**	**$0**	**$0**	**$0**	**$0**	**$296,775**	**$1,854,843**
City of Waldport Sewer Infrastructure																						
Waldport	**Design**		$172,250																			
	Construct Sewer Force Main				$1,076,563																	
	Wastewater Treatment Plant Upgrades						$9,400,000															
	Fiscal Year Totals:	**$0**	**$172,250**	**$0**	**$1,076,563**	**$0**	**$9,400,000**	**$0**	**$0**		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

	City of Waldport Fiscal Year Totals:	**$0**	**$456,833**	**$0**	**$2,855,210**	**$714,411**	**$9,400,000**	**$4,465,069**	**$0**		**$0**	**$0**	**$0**	**$351,256**	**$0**	**$2,195,353**	**$0**	**$0**	**$0**	**$0**	**$296,775**	**$1,854,843**

SWLCWD Water Infrastructure																						
SWLCWD	**Design**		$278,500																			
	Construct 0.5 MG Tank				$839,063																	
	Contruct Booster Station					$901,563																
	Fiscal Year Totals:	**$0**	**$278,500**	**$0**	**$839,063**	**$901,563**	**$0**	**$0**	**$0**		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Access Road																						
Access Road	**Design**					$625,437																
	Construct Access Road							$3,908,980														
	Fiscal Year Totals:	**$0**	**$0**	**$0**	**$0**	**$625,437**	**$0**	**$3,908,980**	**$0**		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

8.3 Cost Estimates

Details for the various zones of development are included in this section in Tables 8.3 – 8.6.

Table 8.3 Zone W Budget Estimate Details

Zone W					
Sanitary Sewer System					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (15%)	ls	1	$124,000	$124,000
2	Construction Facilities & Temporary Controls (15%)	ls	1	$124,000	$124,000
3	8" PVC D3034 Pipe w/ Class 'B' Backfill	lf	3,800	$60	$228,000
4	48" SS Manhole	ea	14	$3,500	$49,000
5	4" PVC C900 Force Main w/ Class 'B' Backfill	lf	1,930	$45	$86,850
6	Main Lift Station	ls	1	$400,000	$400,000
7	Intermediary Lift Station	ea	2	$30,000	$60,000
Construction Cost Total					$1,071,850
Contingency (20%)					$214,370
Engineering (20%)					$214,370
Project Management and Legal (5%)					$53,593
Sanitary Sewer Budget Estimate					**$1,554,183**
Water System					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
8	Mobilization, Overhead, Profit (15%)	ls	1	$5,000	$5,000
9	Construction Facilities & Temporary Controls (6%)	ls	1	$2,000	$2,000
10	Fire Hydrant Assemblies	ea	5	$4,750	$23,750
11	Landscape Restoration	ls	1	$5,000	$5,000
Construction Cost Total					$35,750
Contingency (20%)					$7,150
Engineering (20%)					$7,150
Project Management and Legal (5%)					$1,788
Water System Budget Estimate					**$51,838**
Local Road Improvements					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
12	Mobilization, Overhead, Profit (12%)	ls	1	$30,000	$30,000
13	Construction Facilities & Temporary Controls (6%)	ls	1	$15,000	$15,000
14	Clearing and Grubbing (6%)	ls	1	$15,000	$15,000
15	Earthwork (Est. Cut 840 cy + Est Fill 0 cy)	cy	840	$20	$16,800
16	Unsuitable Material Disposal	cy	375	$50	$18,750
17	Aggregate Sub Base- 1 1/2" Minus	cy	0	$39	$0
18	Aggregate Base- 3/4" Minus	cy	0	$48	$0
19	Geotextile Separation Fabric	sy	4,252	$2	$7,866
20	Asphalt Concrete Pavement, 4"	ton	0	$88	$0
21	Gravel Path	cy	709	$39	$27,651
22	18" CPP Culverts	lf	1,380	$100	$138,000
23	Drainage Cross Culvert	lf	0	$150	$0
24	Geotextile Mat for Ditch w/Seed	sy	4,250	$5	$21,250
25	HydroSeeding Slopes	sy	0	$8	$0
26	Landscape Restoration	ls	1	$25,000	$25,000
Construction Cost Total					$315,317
Contingency (20%)					$63,063
Engineering (20%)					$63,063
Project Management and Legal (5%)					$15,766
Local Road Budget Estimate					**$457,210**
Total Zone W Project Budget Estimate					**$2,063,230**

Table 8.4 Zone X Budget Estimate Details

Zone X					
Sanitary Sewer System					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (15%)	ls	1	$44,000	$44,000
2	Construction Facilities & Temporary Controls (15%)	ls	1	$44,000	$44,000
3	4" PVC C900 Force Main w/ Class 'B' Backfill	lf	1,510	$45	$67,950
4	8" PVC D3034 Pipe w/ Class 'B' Backfill	lf	3,160	$60	$189,600
5	48" SS Manhole	ea	11	$3,500	$38,500
6	Intermediary Lift Station	ea	1	$30,000	$30,000
Construction Cost Total					$384,050
Contingency (20%)					$76,810
Engineering (20%)					$76,810
Project Management and Legal (5%)					$19,203
Sanitary Sewer Budget Estimate					**$556,873**
Water System					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
7	Mobilization, Overhead, Profit (15%)	ls	1	$40,000	$40,000
8	Construction Facilities & Temporary Controls (6%)	ls	1	$16,000	$16,000
9	8" PVC C-900 Pipe w/ Class 'B' Backfill	lf	3,700	$55	$203,500
10	PVC Fittings	ls	1	$20,000	$20,000
11	Fire Hydrant Assemblies	ea	8	$4,750	$38,000
12	Landscpae Restoration	ls	1	$10,000	$10,000
Construction Cost Total					$327,500
Contingency (20%)					$65,500
Engineering (20%)					$65,500
Project Management and Legal (5%)					$16,375
Water System Budget Estimate					**$474,875**
Local Road Improvements					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
13	Mobilization, Overhead, Profit (12%)	ls	1	$277,000	$277,000
14	Construction Facilities, Temporary Controls (6%)	ls	1	$138,000	$138,000
15	Clearing and Grubbing (6%)	ls	1	$138,000	$138,000
16	Earthwork (Est. 29,000 cy Cut + Est. 28,500 cy Fill)	cy	57,500	$20	$1,150,000
17	Unsuitable Material Disposal	cy	7,080	$50	$354,000
18	Aggregate Sub Base- 1 1/2" Minus	cy	3,644	$39	$142,116
19	Aggregate Base- 3/4" Minus	cy	1,444	$48	$69,312
20	Geotextile Separation Fabric	sy	17,770	$2	$32,875
21	Asphalt Concrete Pavement, 4"	ton	2,925	$88	$257,400
22	Gravel Path	sf	852	$39	$33,228
23	18" CPP Culverts	lf	1,440	$100	$144,000
24	Drainage Cross Culverts	lf	200	$150	$30,000
25	Geotextile Mat for Ditch w/Seed	sy	5,215	$5	$26,075
26	HydroSeeding Slopes	sy	7,800	$8	$58,500
27	Landscape Restoration	ls	1	$10,000	$10,000
Construction Cost Total					$2,860,506
Contingency (20%)					$572,101
Engineering (20%)					$572,101
Project Management and Legal (5%)					$143,025
Local Road Budget Estimate					**$4,147,733**
Total Zone X Project Budget Estimate					**$5,179,480**

Table 8.5 Zone Y Budget Estimate Details

Zone Y					
Sanitary Sewer System					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (15%)	ls	1	$41,000	$41,000
2	Construction Facilities & Temporary Controls (15%)	ls	1	$41,000	$41,000
3	8" PVC D3034 Pipe w/ Class 'B' Backfill	lf	2,335	$60	$140,100
4	48" SS Manhole	ea	9	$3,500	$31,500
5	4" HDPE Force Main w/ Class 'B' Backfill	lf	1,637	$45	$73,665
6	Intermediary Lift Station	ea	1	$30,000	$30,000
Construction Cost Total					$357,265
Contingency (20%)					$71,453
Engineering (20%)					$71,453
Project Management and Legal (5%)					$17,863
Sanitary Sewer Budget Estimate					**$518,034**
Water System					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
7	Mobilization, Overhead, Profit	ls	1	$25,000	$25,000
8	Construction Facilities & Temporary Controls	ls	1	$6,000	$6,000
9	8" PVC C-900 Pipe w/ Class 'B' Backfill	lf	2,400	$55	$132,000
10	PVC Fittings	ls	1	$13,000	$13,000
11	Fire Hydrant Assemblies	ea	6	$4,750	$28,500
Construction Cost Total					$204,500
Contingency (20%)					$40,900
Engineering (20%)					$40,900
Project Management and Legal (5%)					$10,225
Water System Budget Estimate					**$296,525**
Local Road Improvements					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
12	Mobilization, Overhead, Profit (12%)	ls	1	$115,000	$115,000
13	Construction Facilities, Temporary Controls (6%)	ls	1	$58,000	$58,000
14	Clearing and Grubbing (6%)	ls	1	$58,000	$58,000
15	Slope Stabilization - Retaining Walls	ls	1	$50,000	$50,000
16	Earthwork (Est. 6900 cy Cut + Est. 8800 cy Fill)	cy	15,700	$20	$314,000
17	Unsuitable Material Disposal	cy	3,000	$50	$150,000
18	Aggregate Sub Base- 1 1/2" Minus	cy	2,340	$39	$91,260
19	Aggregate Base- 3/4" Minus	cy	935	$48	$44,880
20	Asphalt Concrete Pavement, 4"	ton	1,877	$88	$165,176
21	Gravel Path	cy	539	$39	$21,021
22	Geotextile Separation Fabric	sy	11,447	$3	$28,618
23	18" CPP Culverts	lf	240	$100	$24,000
24	Drainage Cross Culverts	lf	100	$150	$15,000
25	Geotextile Mat for Ditch w/Seed	sy	3,050	$5	$15,250
26	HydroSeeding Slopes	sy	4,575	$8	$34,313
27	Landscape Restoration	ls	1	$10,000	$10,000
Construction Cost Total					$1,194,517
Contingency (20%)					$238,903
Engineering (20%)					$238,903
Project Management and Legal (5%)					$59,726
Local Road Budget Estimate					**$1,732,050**
Total Zone Y Project Budget Estimate					**$2,546,609**

Table 8.6 Zone Z Budget Estimate Details

Zone Z					
Sanitary Sewer System					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
1	Mobilization, Overhead, Profit (15%)	ls	1	$23,000	$23,000
2	Construction Facilities & Temporary Controls (15%)	ls	1	$23,000	$23,000
3	8" PVC D3034 Pipe w/ Class 'B' Backfill	lf	2,290	$60	$137,400
4	48" SS Manhole	ea	4	$3,500	$14,000
Construction Cost Total					$197,400
Contingency (20%)					$39,480
Engineering (20%)					$39,480
Project Management and Legal (5%)					$9,870
Sanitary Sewer Budget Estimate					**$286,230**
Water System					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
5	Mobilization, Overhead, Profit (15%)	ls	1	$16,000	$16,000
6	Construction Facilities & Temporary Controls (6%)	ls	1	$6,000	$6,000
7	8" PVC C-900 Water Main	lf	1,520	$55	$83,600
8	PVC Fittings	ls	1	$11,400	$11,400
9	Fire Hydrant Assemblies	ea	1	$4,750	$4,750
Construction Cost Total					$121,750
Contingency (20%)					$24,350
Engineering (20%)					$24,350
Project Management and Legal (5%)					$6,088
Water System Budget Estimate					**$176,538**
Storm Drainage					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
10	Mobilization, Overhead, Profit (12%)	ls	1	$5,000	$5,000
11	Construction Facilities & Temporary Controls (6%)	ls	1	$2,400	$2,400
13	Detention Pond (Earthwork, Landscaping, Geotextile)	ls	1	$40,000	$40,000
Construction Cost Total					$47,400
Contingency (20%)					$9,480
Engineering (20%)					$9,480
Project Management and Legal (5%)					$2,370
Storm Drainage Budget Estimate					**$68,730**
Local Road Improvements					
Item	***Item Description***	***Unit***	***Quantity***	***Unit Cost***	***Item Cost***
14	Mobilization, Overhead, Profit (12%)	ls	1	$108,000	$108,000
15	Construction Facilities & Temporary Controls (6%)	ls	1	$54,000	$54,000
16	Clearing and Grubbing (6%)	ls	1	$54,000	$54,000
17	Earthwork (Est.11,500 cy Cut + Est. 10,500 cy Fill)	cy	22,000	$20	$440,000
18	Unsuitable Material Disposal	cy	3,500	$50	$175,000
19	Aggregate Sub Base- 1 1/2" Minus	cy	1,686	$39	$65,754
20	Aggregate Base- 3/4" Minus	cy	668	$48	$32,064
21	HMAC Asphalt, 4"	ton	1,295	$88	$113,960
22	Gravel Path	cy	376	$39	$14,664
23	Geotextile Separation Fabric	sy	7,893	$3	$19,733
24	18" CPP Culverts	lf	150	$100	$15,000
25	Geotextile Mat for Ditch w/Seed	sy	930	$5	$4,650
26	HydroSeeding Slopes	sy	1,400	$8	$10,500
27	Landscape Restoration	ls	1	$10,000	$10,000
Construction Cost Total					$1,117,325
Contingency (20%)					$223,465
Engineering (20%)					$223,465
Project Management and Legal (5%)					$55,866
Local Road Budget Estimate					**$1,620,121**
Zone Z Total Project Budget Estimate					**$2,151,618**

A summary of the Access Road options can be found in Table 8.7, below.

Table 8.7: Access Roads Budget Estimate Summary

Access Roads			
Facility	***Location***	***Description***	***Total Cost***
Access Road #1	Southwest Industrial Park	Access Road with Storm Drainage Conveyance	$5,221,341
Access Road #2	Northwest Industrial Park	Access Road with Storm Drainage Conveyance	$4,534,417
Access Road #3	North Northwest Industrial Park	Access Road with Storm Drainage Conveyance	$8,437,982

This master planning document should be seen as a framework for guiding the actions of the City in the development of the Industrial Park. The Master Plan can serve as a flexible and responsive tool, which can and will be modified in response to the changing needs of the City and the business/commercial community.

In order to entice existing employers to remain within the community and recruit new business, the City should pursue "shovel ready" designation of the lands within the Industrial Park area through the State of Oregon's Shovel Ready program. The "Shovel Ready" designation demonstrates to prospective employers that the site has undergone extensive title work, proof of ownership, legal and environmental review and qualifies for expedited permitting. Completion of these basic procedures lowers the cost of site development for business and allows for speedy development of the property, reducing the permitting and feasibility components to development significantly. The State's "Shovel Ready" program will also assist with marketing properties to prospective employers from outside of the community. The City should work closely with members of the Governor's Economic Recovery Team to develop a roadmap for designating properties within the plan area as "Shovel Ready".

In order to fund the improvements necessary to allow for the full development of the Industrial Park, the City will need to examine a comprehensive approach to funding. A variety of funding options have been identified in Appendix D. Specific projects identified in this master plan will need to be included within the City's water, sewer and transportation master plans and their respective capital improvement plans to ensure that adequate System Development Charges (SDC) are collected within the plan area and other areas of the City.

References

Section 9

The following documents were reviewed for policies and regulations applicable to development of the Waldport Industrial Park:

Federal

- National Centers for Environmental Information (2012)
- Federal Emergency Management Agency (2009)

State/ODOT

- Transportation Planning Rule (OAR 660-12)
- Oregon Transportation Plan (1992)
- Oregon Highway Plan (1999)
- Oregon Bicycle and Pedestrian Plan (1995)
- Access Management Rule (OAR 734-051)
- Freight Moves the Oregon Economy (1999)
- Proposed Oregon Coast Highway Corridor Master Plan (1995)
- Pacific Coast Scenic Byway Corridor Management Plan for US 101 in Oregon (1997)
- US 20/OR 34 Newport to Sweet Home Interim Corridor Strategy (1998)
- Oregon Department of Environmental Quality (DEQ)

Lincoln County

- Comprehensive Plan (2009)
- Lincoln County Natural Hazards Mitigation Plan (2015)
- Transportation System Plan (October 2007)
- Lincoln County Economic Study (August 2014)
- SWLCWD Water Management and Conservation Plan (WMCP, 2014)

City of Waldport

- Comprehensive Plan (1982/2013)
- Transportation System Plan (1999/2009)
- Wastewater Collection System Master Plan (May 2000)
- Water Master Plan (April 2002)
- Water Management and Conservation Plan (2012)
- Storm Water Master Plan (1999)

- Waldport Yaquina John Point Land Use and Transportation Final Preferred Plan (adopted June 14, 2012 into the Waldport Transportation System Plan)
- South Waldport – North Subsection Local Improvement District (LID) Sanitary Sewer Construction
- Waldport Development Code (2001)

Attachment A

Proposed Industrial Park Lot Information

Table 3.1
Industrial Park
Proposed Lots

New Lot Number	Old Lot Number	Owner	Proposed Lot	Lot Size (acres)	Existing Building Size (ft^2)	Proposed Building Size (acres)	Proposed Building Size (ft^2)	Notes
1	60	Robert M. Conway		0.27		0.13	5,830	
2	59	Robert M. Conway		0.69	5,100	0.35	15,062	
3	61	Russell R. Dahl		0.30		0.15	6,604	
4	62	Dahl Disposal Services		0.11		0.06	2,396	
5	64	Gene R. Dahl	X	0.30		0.15	6,576	
6	63	Gene R. Dahl	X	0.26		0.13	5,663	
7	64	Dahl & Dahl	X	5.53	9,230	2.77	120,443	
8	15	Dahl & Dahl	X	2.76		1.38	60,113	
9	16,11	South Lincoln Landfill	X	23.50	-	-	-	Existing Landfill
10	10	Gene R. Dahl, Leone R. Dahl	X	12.95	12,300	6.48	282,051	
11	65	Gene R. Dahl		0.91		0.46	19,849	
12	39	Gene R. Dahl		0.31		0.16	6,752	
13	38	TJJT		0.37		0.19	8,059	
14	66	Lee Arce Development Co.	X	2.31		1.16	50,312	
15	40	Leone R. Dahl		0.67		0.34	14,593	
16	67	Lee Arce Development Co.	X	2.08		1.04	45,223	
17	41	Leone R. Dahl		0.68		0.34	14,810	
18	43	Leone R. Dahl	X	1.07		0.54	23,305	
19	68	Lee Arce Development Co.	X	1.95		0.98	42,558	
20	51	Leone R. Dahl	X	0.95		0.48	20,765	
21	52	Leone R. Dahl		0.57		0.29	12,415	
22	54	Leone R. Dahl		0.34		0.17	7,405	
23	69	Northwest Pacific		1.84		0.92	40,075	
24	70	South Lincoln Resources		0.92	10,375	0.46	20,038	
25	71	David W. Wood		0.92		0.46	20,038	
26	73	329 Three LLC		0.73	12,200	0.37	15,960	
27	72	Michael Schlosser		0.92	8,900	0.46	20,038	
28	75	Pioneer Telephone Co.		0.64	7,200	0.32	13,939	
29	74	Pioneer Telephone Co.		0.92	2,550	0.46	20,038	
30	76	Lenard R. and Carrie Olsen		0.34	3,800	0.17	7,405	
31	77	Gerald Buchko		0.35		0.18	7,623	
32	78	Central Coast Builders Supply		0.45	7,500	0.23	9,801	

Table 3.1
Industrial Park
Proposed Lots

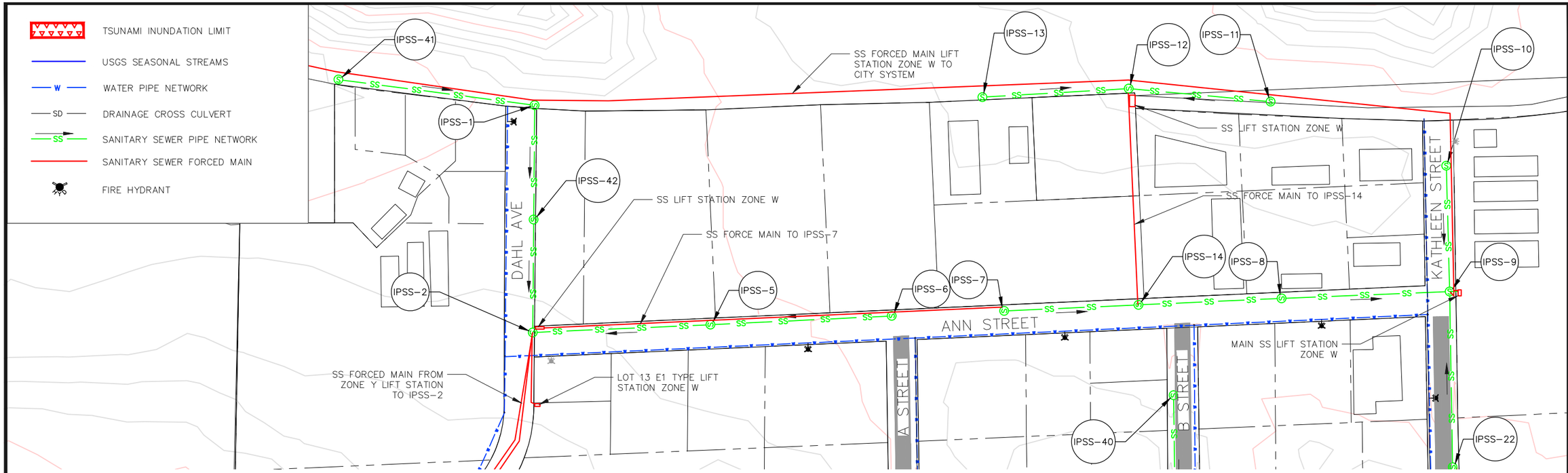
New Lot Number	Old Lot Number	Owner	Proposed Lot	Lot Size (acres)	Existing Building	Proposed Building Size	Proposed Building Size	Notes
33	55	Schweich Daniel and Carrie		0.68		0.34	14,810	
34	56	City of Waldport		0.67		0.34	14,593	
35	57	City of Waldport		0.67	10,525	0.34	14,593	
36	58	Glorietta Bay		4.30	16,000	2.15	93,654	
37	42	Leone R. Dahl	X	0.90		0.45	19,602	
38	44	Leone R. Dahl	X	0.94		0.47	20,473	
39	45	Leone R. Dahl	X	0.56		0.28	12,197	
40	46	Leone R. Dahl	X	0.66		0.33	14,375	
41	47	Leone R. Dahl	X	0.66		0.33	14,392	
42	48	Leone R. Dahl	X	0.75		0.38	16,413	
43	49	Leone R. Dahl	X	0.57		0.28	12,351	
44	50	Leone R. Dahl	X	1.64		0.82	35,826	
45	25	Leone R. Dahl, South Lincoln Landfill	X	1.54		0.77	33,541	
46	31	Leone R. Dahl	X	1.09		0.55	23,740	
47	53	Leone R. Dahl		0.34		0.17	7,405	
48	27	Leone R. Dahl	X	0.62		0.31	13,504	
49	33	Leone R. Dahl	X	0.62		0.31	13,504	
50	28	Leone R. Dahl	X	0.72		0.36	15,682	
51	34	Leone R. Dahl	X	0.72		0.36	15,682	
52	29	Leone R. Dahl	X	0.56		0.28	12,197	Added lot
53	35	Leone R. Dahl	X	0.55		0.28	11,979	Added lot
54	36	Leone R. Dahl	X	1.56		0.78	33,977	
55	30	Leone R. Dahl	X	1.60		0.80	34,848	
56	21	Leone R. Dahl	X	0.97		0.49	21,127	

Table 3.1
Industrial Park
Proposed Lots

New Lot Number	Old Lot Number	Owner	Proposed Lot	Lot Size (acres)	Existing Building Size (ft^2)	Proposed Building Size (acres)	Proposed Building Size (ft^2)	Notes
57	22	Leone R. Dahl	X	0.96		0.48	20,909	
58	20	Leone R. Dahl	X	1.67		-	-	Storm Water Management
59	24	Leone R. Dahl	X	3.79		1.90	82,546	
60	13	Leone R. Dahl	X	3.41		1.71	74,270	
61	23	Leone R. Dahl	X	2.51		1.26	54,668	
62	14	Leone R. Dahl	X	1.60		0.80	34,848	
63	9	Gene R. Dahl	X	2.34		1.17	50,965	
64	8	Gene R. Dahl	X	1.46		0.73	31,799	
65	7	Gene R. Dahl	X	1.45		0.73	31,581	
66	6	Gene R. Dahl, Leone R. Dahl, South Lincoln Landfill	X	22.29	-	-	-	Existing Creek
67	5	Leone R. Dahl, Trustee	X	1.59		0.80	34,630	
68	4	Gene R. Dahl, Leone R. Dahl	X	0.71		0.36	15,464	
69	3	Gene R. Dahl	X	1.02		0.51	22,216	
70	2	Gene R. Dahl	X	1.18		0.59	25,700	
71	1	Gene R. Dahl	X	1.36		0.68	29,621	
72	18	Leone R. Dahl, South Lincoln Landfill	X	1.16		0.58	25,265	
73	19	Leone R. Dahl	X	1.18		0.59	25,700	
74	12	Leone R. Dahl	X	4.47		2.24	97,357	
75	26	Leone R. Dahl	X	1.09		0.55	23,740	
		TOTALS:	**51**	**146.06**		**49.30**	**2,147,480**	

Attachment B

Utility System Plan and Profiles



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PLAN PIPE NETWORK ANN STREET

N

PLAN SCALE

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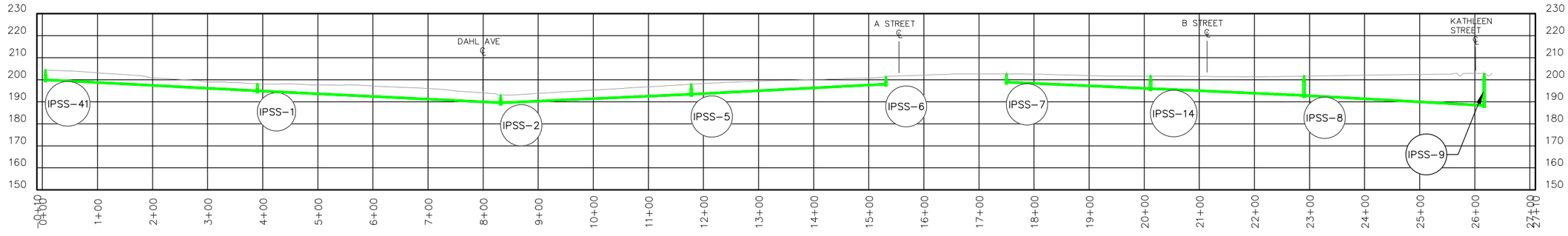
1" = 200'

N-ANN SS PROFILE



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5.1

PROFILE PIPE NETWORK ANN STREET

Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

WALDPORT INDUSTRIAL PARK

SANITARY SEWER P&P

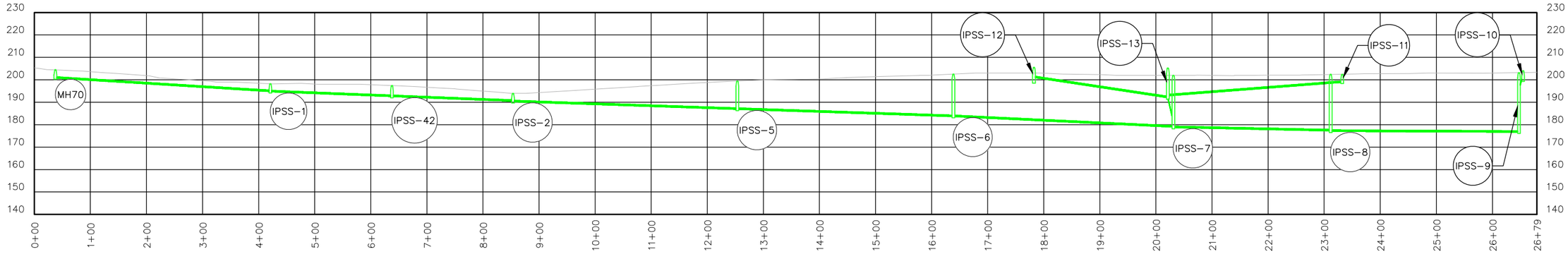
1" 0 NTS

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE
5.1

1
5.1a

PLAN PIPE NETWORK ANN STREET



2
5.1a

PROFILE PIPE NETWORK ANN STREET

NTS

Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

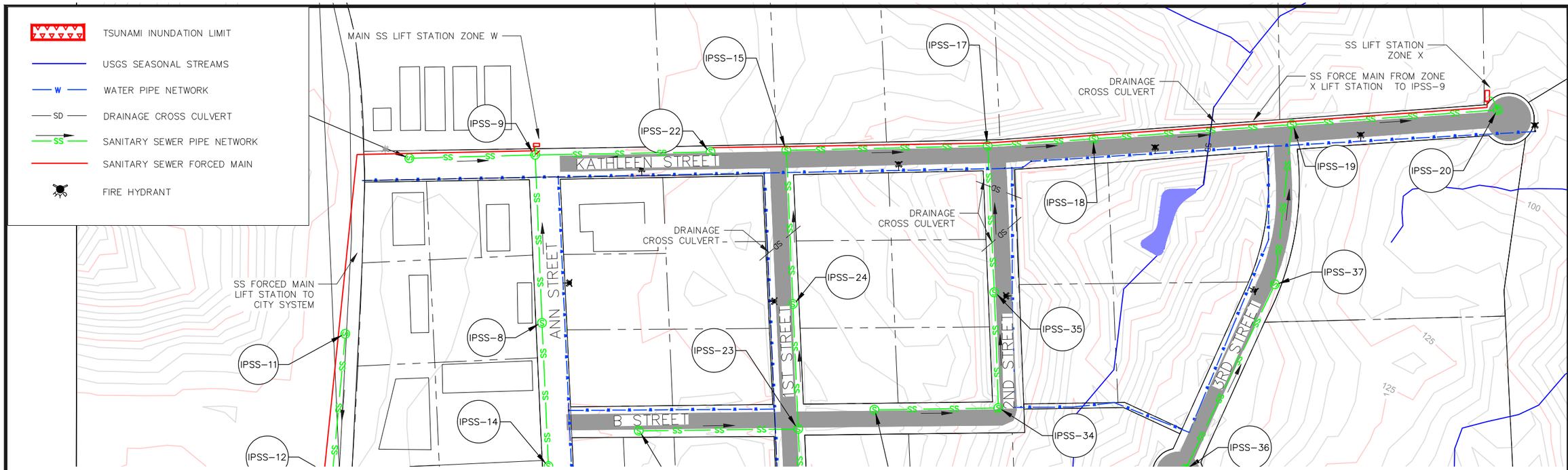
WALDPORT INDUSTRIAL PARK

SANITARY SEWER P&P

1"
0
1" = 200'

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE
5.1a



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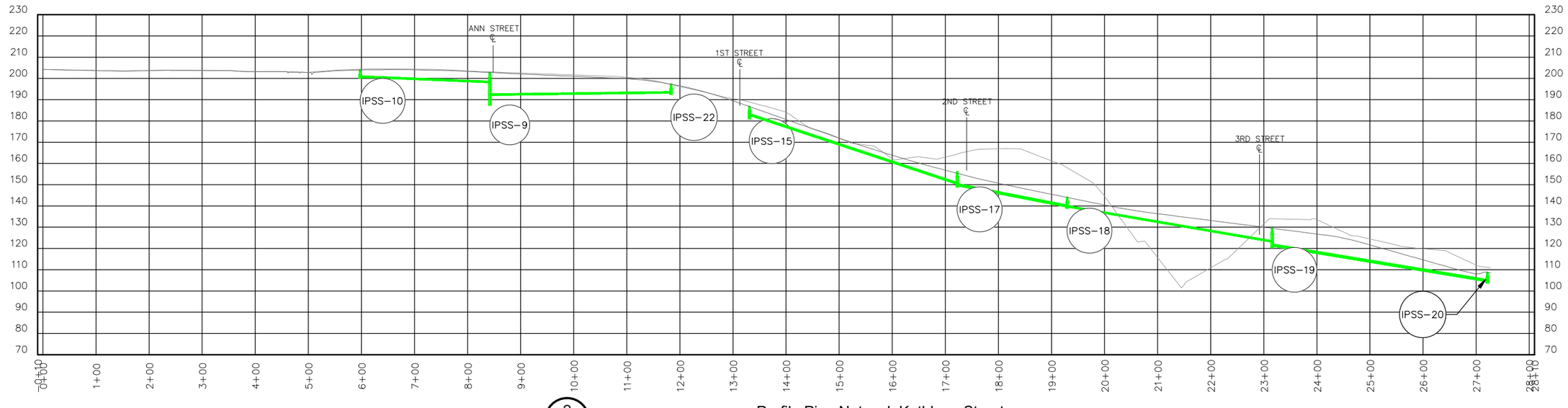
Plan Pipe Network Kathleen Street



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5.2

Profile Pipe Network Kathleen Street

Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

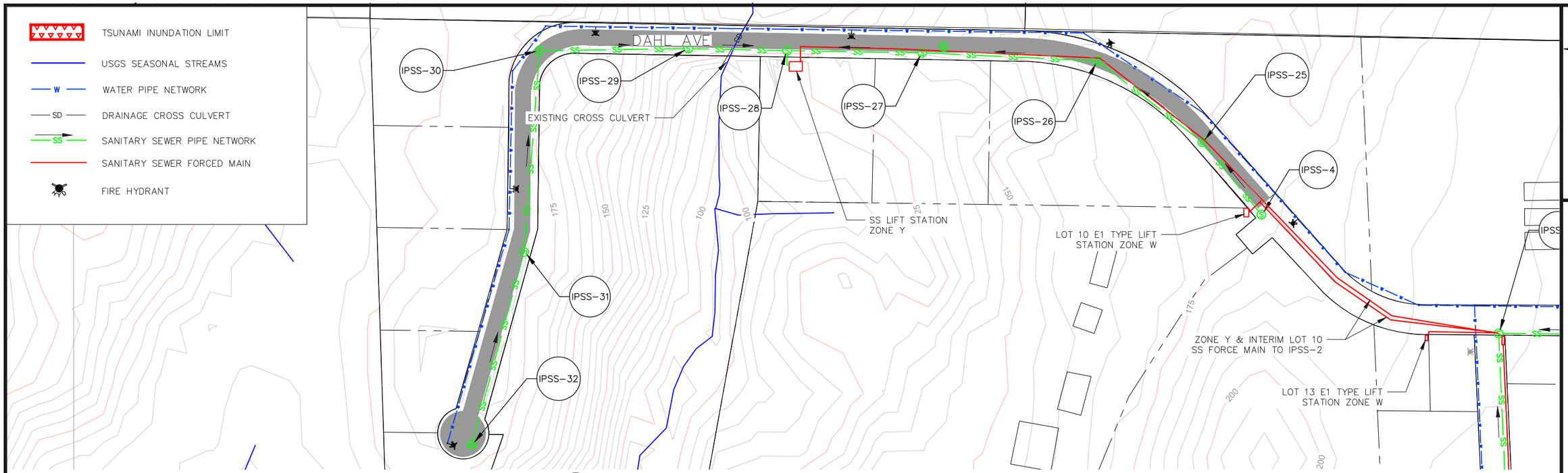
WALDPORT INDUSTRIAL PARK

SANITARY SEWER P&P

1" NTS 0

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE
5.2



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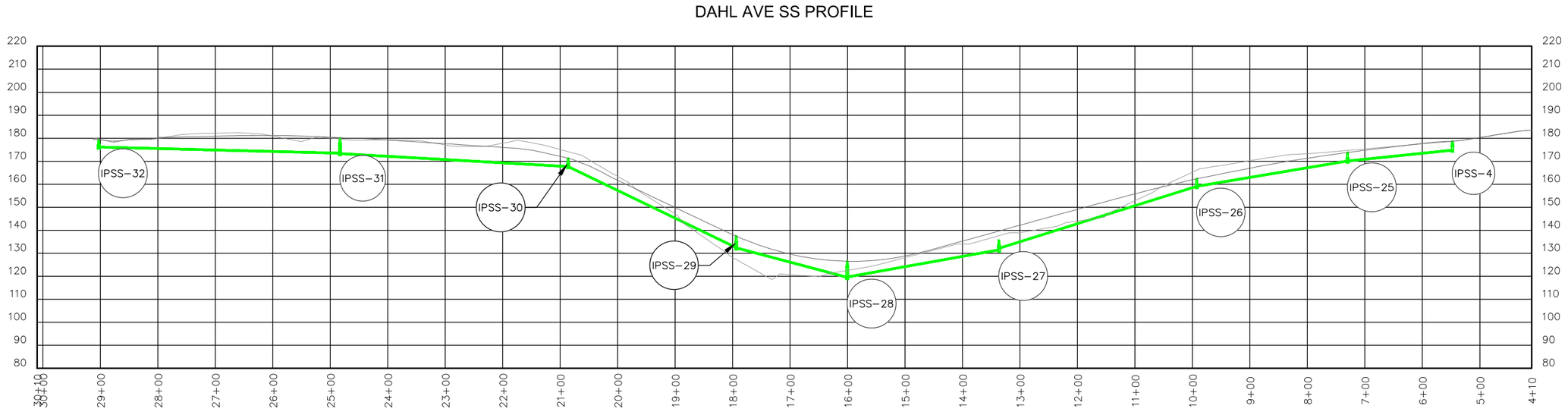
Plan Pipe Network Dahl Ave.



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5.3

Profile Pipe Network Dahl Ave

Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

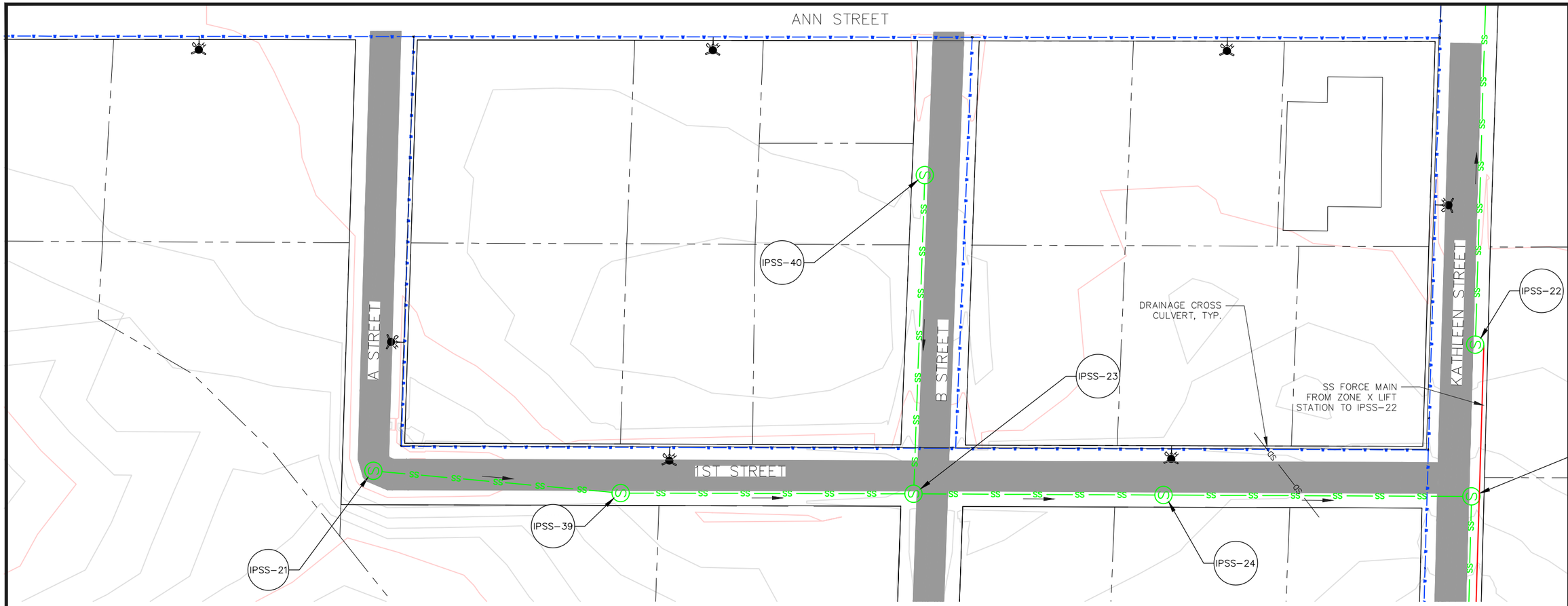
WALDPORT INDUSTRIAL PARK

SANITARY SEWER P&P

1" 0 NTS

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE
5.3



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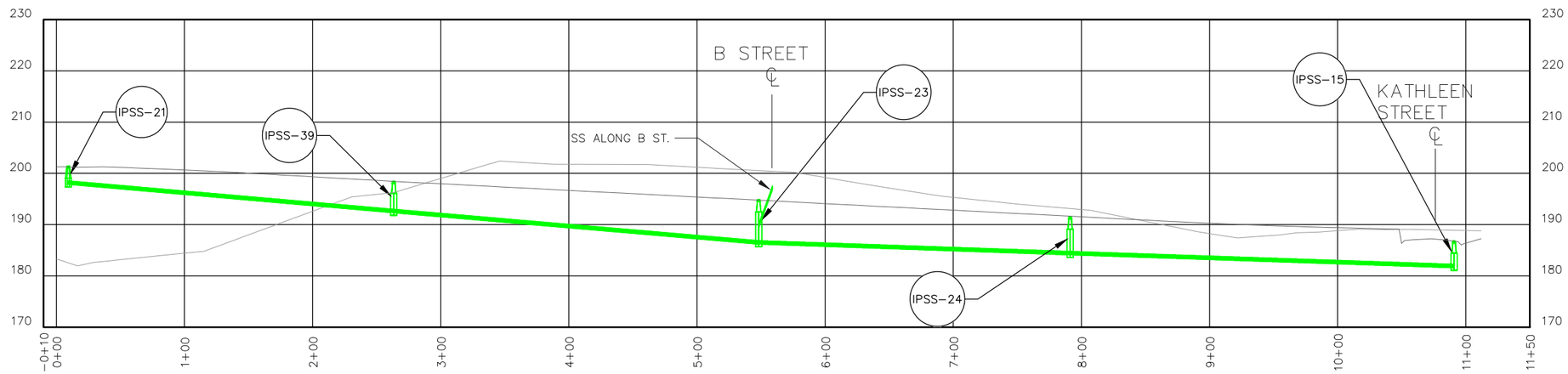
5.4
PLAN PIPE NETWORK A ST. & 1ST. ST.

A St. & 1 St. SS PROFILE



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5.4
PROFILE PIPE NETWORK A ST. & 1ST. ST.

Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

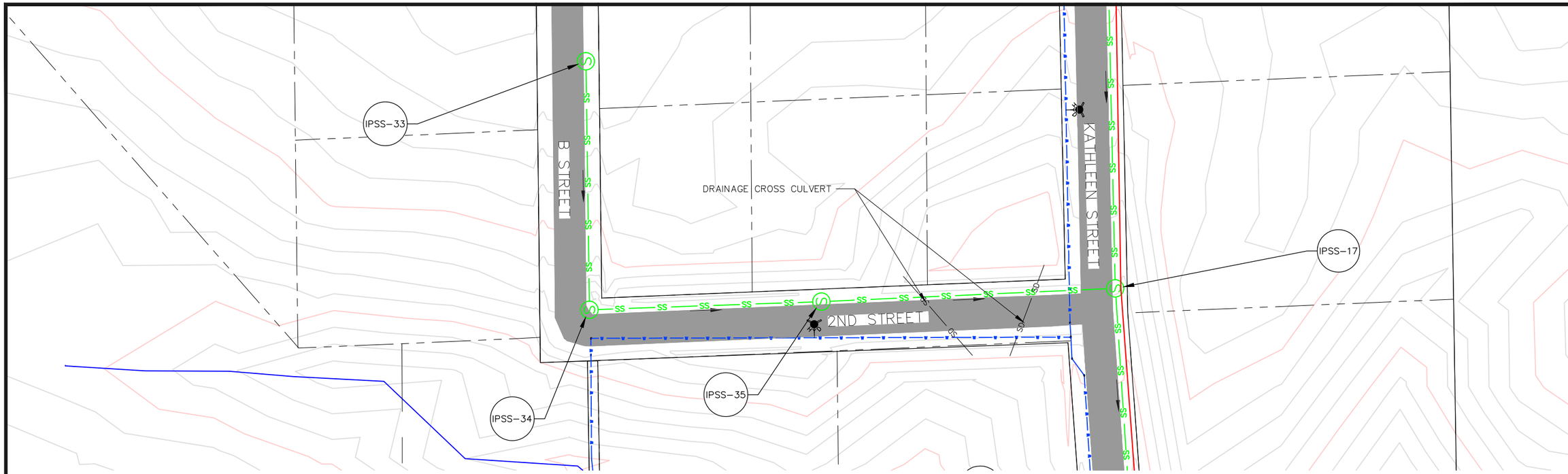
WALDPORT INDUSTRIAL PARK

SANITARY SEWER P&P

1" 0 NTS

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE
5.4



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5.5

PLAN PIPE NETWORK B ST. AND 2ND ST.

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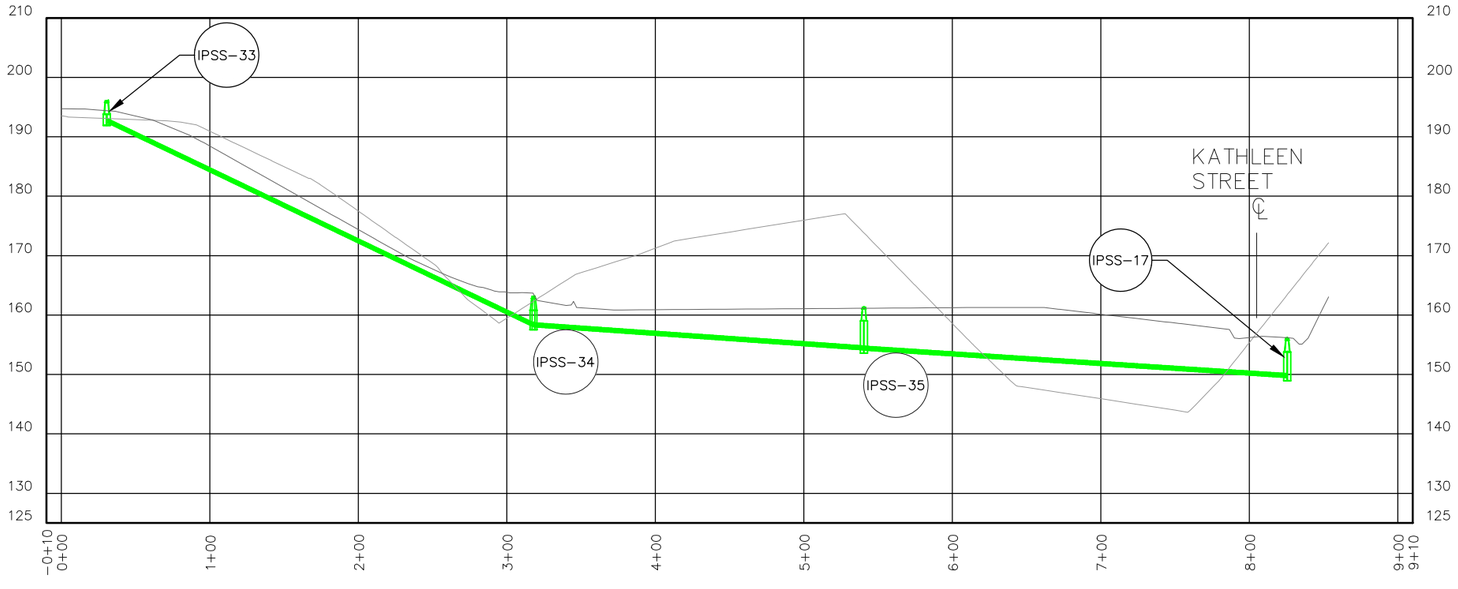
1" = 100'

N-SS-B St. & 2nd SS PROFILE



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5.5

PROFILE PIPE NETWORK B ST AND 2ND ST.

Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

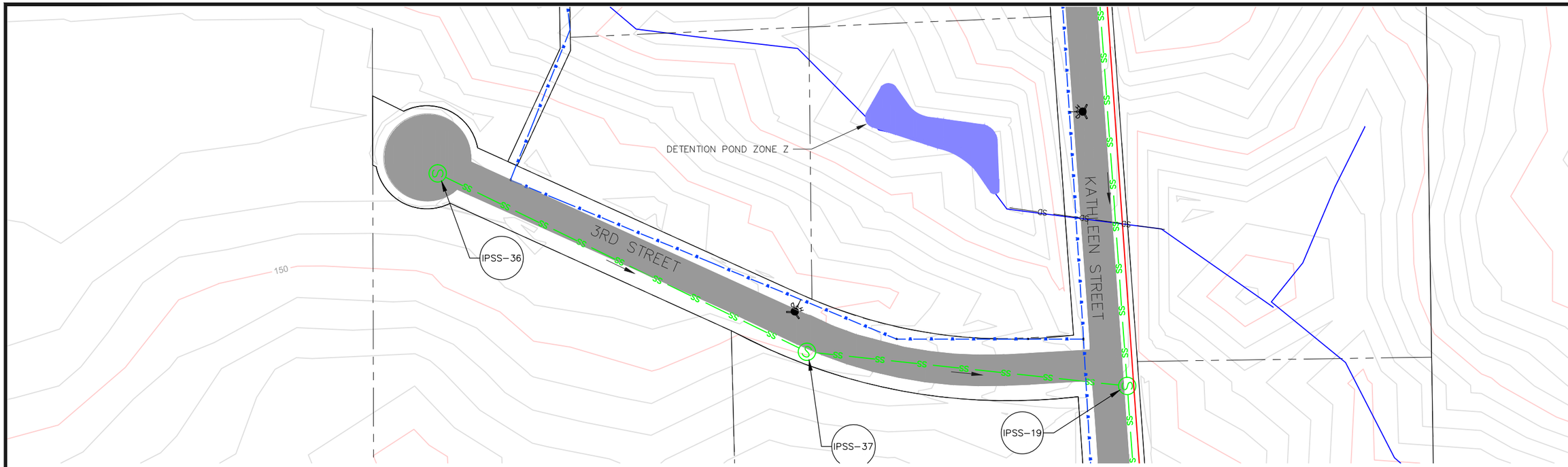
WALDPORT INDUSTRIAL PARK

SANITARY SEWER P&P

1"
0 NTS

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE
5.5



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5.6

PLAN PIPE NETWORK 3RD STREET

PLAN SCALE
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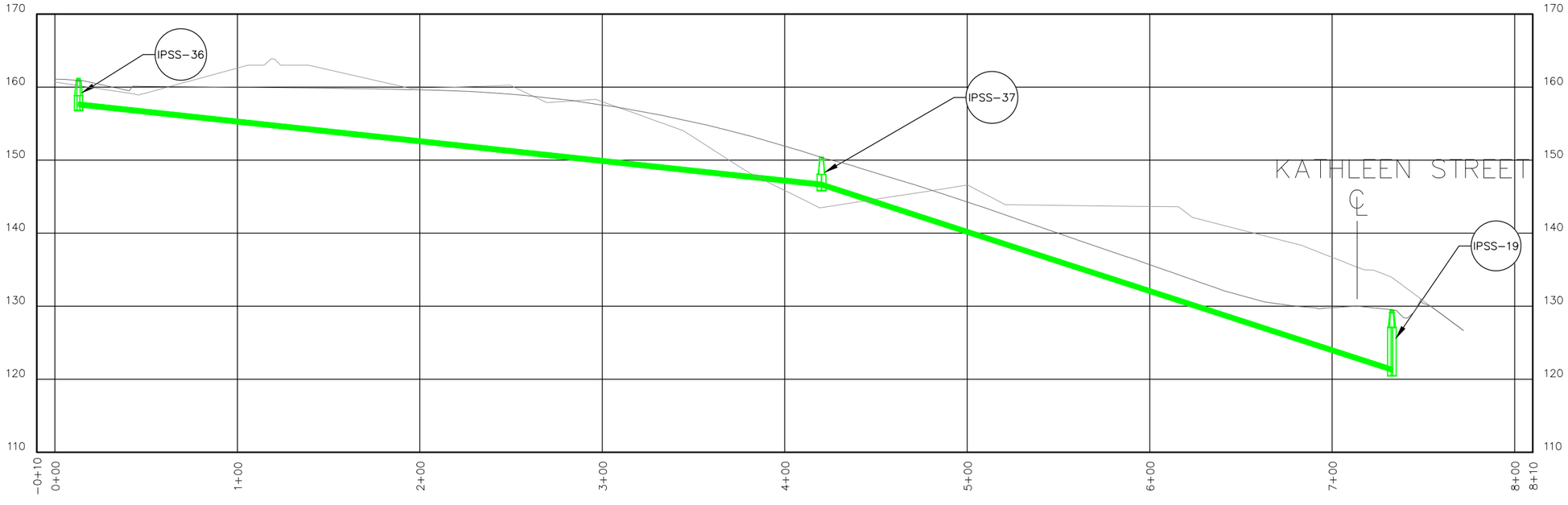
1" = 100'

3rd St SS PROFILE



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5.6

PROFILE PIPE NETOWRK 3RD ST.

Civil West Engineering Services, Inc.

CITY OF WALDPORT
LINCOLN COUNTY, OREGON

WALDPORT INDUSTRIAL PARK

SANITARY SEWER P&P

1"
0 NTS

DRAWN BY: CMJ
DATE: 4/21/2017

FIGURE
5.6

Attachment C

Lot Information for Access Road Option Areas

TABLE 7.1
Access Road Options
Existing Lots

Lot	Owner	Address	Taxlot #	Lot Size (acres)	Property Class	Notes
76	4RD RANCH INC		13-11-31-00-00401-00	78.63	Designated Forest Non-EFU Farm	VACANT
77	LEONE N. DAHL TRUSTEE		CO-13-11-31-00100-00	79.22	RR-2	VACANT
78	LARRY A. CLAUSSEN TRUSTEE		DA-13-12-36-00100-00	11.28	Special Assessed Vacant Forest Land	VACANT
79	LINCOLN COUNTY	SW FLANSBERG AVE				50' ROW
80	NEILSEN ORCHIDS, INC.	4470 SW FLANSBERG AVE	DA-13-12-36-00400-00	9.72	Improved Special Assessed Farmland	4+ BUILDINGS
81	ILENE SAMOWITZ		DB-13-12-36-03600-00	2.60	Residential Vacant Land	VACANT
82	LINCOLN COUNTY	SW SITKA RIDGE CT				50' ROW
83	ROBERT HAMILTON CARR TRUSTEE	4149 SW PACIFIC COAST HWY	13-12-36-AC-04100-00	0.36	Improved Residential Property	2 BUILDINGS
84	ROBERT HAMILTON CARR TRUSTEE		13-12-36-AC-04000-00	0.59	Residential Vacant Land	VACANT
85	R&C WASHINGTON FAMILY TRUST		13-12-36-AC-01200-00	17.45	Special Assessed Vacant Forest Land	VACANT
86	LAWRENCE RAYMOND FORD	4068 SW FEHREN-BACHER DR	13-12-36-AC-01100-00	0.41	Improved Residential Property	1 BUILDING
87	LINCOLN COUNTY	SW FEHREN-BACHER DR				40' ROW
88	JOHN W COOPER	4067 SW FEHREN-BACHER DR	13-12-36-AC-01900-00	0.30	Improved Residential Property	1 BUILDING
89	BENEDICT K NUSSBAUMER	875 SW EDGEWATER DR	13-12-36-AC-03900-00	2.30	Improved Residential Property	1 BUILDING
90	JP MORGAN CHASE BANK	745 SW EDGEWATER DR	13-12-36-AD-00700-00	1.37	Improved Residential Property	2 BUILDINGS
91	GARY R. & DARYL K. ALLEN	649 SW EDGEWATER DR	13-12-36-AD-00600-00	2.22	Improved Residential Property	1 BUILDING

TABLE 7.1
Access Road Options
Existing Lots

Lot	Owner	Address	Taxlot #	Lot Size (acres)	Property Class	Notes
92	THEODORE M. KELLY TRUSTEE	629 SW EDGEWATER DR	13-12-36-AD-00500-00	2.15	Improved Residential Property	1 BUILDING
93	DAVID BRIAN ANTHONY	1239 SW FERNWOOD DR	13-12-36-AC-00200-00	0.46	Improved Residential Property	1 BUILDING
94	LINCOLN COUNTY	SW FEHREN-BACHER DR				50' ROW
95	JAMES F CULBERTSON	3795 SW FEHREN-BACHER DR	13-12-36-AC-03200-00	0.95	Improved Residential Property	1 BUILDING
96	JESSE V LAUB	1041 SW FERNWOOD DR	13-12-36-AC-03100-00	1.00	Improved Residential Property	1 BUILDING
97	LAURA HERRICK	968 SW FERNWOOD DR	13-12-36-AC-03000-00	1.00	Improved Residential Property	1 BUILDING
98	LINCOLN COUNTY	WHITECAP DR				50' ROW
99	CHARLES BATTLES CO-TRUSTEE	3765 SW DAHLIA LN	13-12-36-AC-02200-00	1.00	Improved Residential Property	1 BUILDING
100	LEONE N. DAHL TRUSTEE		13-12-36-AD-00100-00	21.31	Small Tract Forest Land	VACANT
101	LINCOLN COUNTY	SW FERNWOOD DR				25' ROW - 225' 50' ROW - 385'
102	JOHN M HARRISON	1212 SW FERNWOOD DR	13-12-36-AC-00100-00	0.44	Improved Residential Property	1 BUILDING
103	NEVA GAE CLAUSEN	1140 SW FERNWOOD DR	13-12-36-AC-02000-00	0.41	Improved Residential Property	1 BUILDING
104	LINCOLN COUNTY	SW FERNWOOD LN				50' ROW
105	DENNIS W JOLL	1052 SW FERNWOOD DR	13-12-36-AC-02100-00	0.46	Improved Residential Property	1 BUILDING
106	SEBASTIANI JACQUELYN A	902 SW FERNWOOD DR ;908 SW FERNWOOD	13-12-36-AC-04200-00	1.10	Improved Residential Property	1 BUILDING
107	PHILIP M HURLEY TRUSTEE	1225 SW WHITECAP DR	13-12-36-AB-00200-00	0.74	Improved Residential Property	1 BUILDING

TABLE 7.1
Access Road Options
Existing Lots

Lot	Owner	Address	Taxlot #	Lot Size (acres)	Property Class	Notes
108	LEONE N. DAHL TRUSTEE		13-12-36-AB-00100-00	14.12	Small Tract Forest Option Land	VACANT
109	LINCOLN COUNTY	SW WHITECAP DR				50' ROW
110	L T MERRITT	1240 SW WHITECAP DR	13-12-25-DC-01224-00	1.01	Improved Residential Property	1 BUILDING
111	BETTY L KRAUSE TRUSTEE		13-12-25-DC-01216-00	0.27	Residential Vacant Land	VACANT
112	DARREL M WEAVER	3025 SW BREAKERS CT	13-12-25-DC-01201-00	2.20	Improved Residential Property	1 BUILDING
113	MARY DEE YARNELL		13-12-25-DC-01200-00	1.41	Residential Vacant Land	VACANT
114	MARY DEE YARNELL		13-12-25-00-00500-00	51.52	Special Assessed Vacant Forest Land	VACANT
115	LEONE N. DAHL TRUSTEE		13-12-36-00-00100-00	40.00	Small Tract Forest Option Land	VACANT
116	DALE LAURANCE TRUSTEE		13-11-30-00-00800-00	39.74	Small Tract Forest Option Land	VACANT
117	LINCOLN COUNTY SCHOOL DISTRICT	2750 S CRESTLINE DR ;3000 S CRESTLINE DR	13-11-30-00-00901-00	42.15	Exempt School Improved Property	CRESTVIEW HEIGHTS AND WALDPORT HIGHSCHOOL
118	OREGON COAST COMM COLLEGE	3120 S CRESTLINE DR	13-11-30-00-00902-00	2.00	Exempt School Improved Property	OREGON COAST COMM COLLEGE
119	BRANDI C MILLER	3232 S CRESTLINE DR	13-11-31-B0-00100-00	0.52	Residential Improvement in Industrial Zone	VACANT
120	TERRY & BRANDT THISSELL		13-12-25-00-00300-00	24.77	Designated Forest	VACANT
121	TERRY & BRANDT THISSELL		13-12-25-00-00301-00	51.17	Designated Forest	VACANT
122	LINDA & DALE LAURANCE		13-11-30-00-00800-00	135.77	Small Tract Forestland	VACANT

TABLE 7.1
Access Road Options
Existing Lots

Lot	Owner	Address	Taxlot #	Lot Size (acres)	Property Class	Notes
76	4RD RANCH INC		13-11-31-00-00401-00	78.63	Designated Forest Non-EFU Farm	VACANT
77	LEONE N. DAHL TRUSTEE		CO-13-11-31-00100-00	79.22	RR-2	VACANT
78	LARRY A. CLAUSSEN TRUSTEE		DA-13-12-36-00100-00	11.28	Special Assessed Vacant Forest Land	VACANT
79	LINCOLN COUNTY	SW FLANSBERG AVE				50' ROW
80	NEILSEN ORCHIDS, INC.	4470 SW FLANSBERG AVE	DA-13-12-36-00400-00	9.72	Improved Special Assessed Farmland	4+ BUILDINGS
81	ILENE SAMOWITZ		DB-13-12-36-03600-00	2.60	Residential Vacant Land	VACANT
82	LINCOLN COUNTY	SW SITKA RIDGE CT				50' ROW
83	ROBERT HAMILTON CARR TRUSTEE	4149 SW PACIFIC COAST HWY	13-12-36-AC-04100-00	0.36	Improved Residential Property	2 BUILDINGS
84	ROBERT HAMILTON CARR TRUSTEE		13-12-36-AC-04000-00	0.59	Residential Vacant Land	VACANT
85	R&C WASHINGTON FAMILY TRUST		13-12-36-AC-01200-00	17.45	Special Assessed Vacant Forest Land	VACANT
86	LAWRENCE RAYMOND FORD	4068 SW FEHREN-BACHER DR	13-12-36-AC-01100-00	0.41	Improved Residential Property	1 BUILDING
87	LINCOLN COUNTY	SW FEHREN-BACHER DR				40' ROW
88	JOHN W COOPER	4067 SW FEHREN-BACHER DR	13-12-36-AC-01900-00	0.30	Improved Residential Property	1 BUILDING
89	BENEDICT K NUSSBAUMER	875 SW EDGEWATER DR	13-12-36-AC-03900-00	2.30	Improved Residential Property	1 BUILDING
90	JP MORGAN CHASE BANK	745 SW EDGEWATER DR	13-12-36-AD-00700-00	1.37	Improved Residential Property	2 BUILDINGS
91	GARY R. & DARYL K. ALLEN	649 SW EDGEWATER DR	13-12-36-AD-00600-00	2.22	Improved Residential Property	1 BUILDING

TABLE 7.1
Access Road Options
Existing Lots

Lot	Owner	Address	Taxlot #	Lot Size (acres)	Property Class	Notes
92	THEODORE M. KELLY TRUSTEE	629 SW EDGEWATER DR	13-12-36-AD-00500-00	2.15	Improved Residential Property	1 BUILDING
93	DAVID BRIAN ANTHONY	1239 SW FERNWOOD DR	13-12-36-AC-00200-00	0.46	Improved Residential Property	1 BUILDING
94	LINCOLN COUNTY	SW FEHREN-BACHER DR				50' ROW
95	JAMES F CULBERTSON	3795 SW FEHREN-BACHER DR	13-12-36-AC-03200-00	0.95	Improved Residential Property	1 BUILDING
96	JESSE V LAUB	1041 SW FERNWOOD DR	13-12-36-AC-03100-00	1.00	Improved Residential Property	1 BUILDING
97	LAURA HERRICK	968 SW FERNWOOD DR	13-12-36-AC-03000-00	1.00	Improved Residential Property	1 BUILDING
98	LINCOLN COUNTY	WHITECAP DR				50' ROW
99	CHARLES BATTLES CO-TRUSTEE	3765 SW DAHLIA LN	13-12-36-AC-02200-00	1.00	Improved Residential Property	1 BUILDING
100	LEONE N. DAHL TRUSTEE		13-12-36-AD-00100-00	21.31	Small Tract Forest Land	VACANT
101	LINCOLN COUNTY	SW FERNWOOD DR				25' ROW - 225' 50' ROW - 385'
102	JOHN M HARRISON	1212 SW FERNWOOD DR	13-12-36-AC-00100-00	0.44	Improved Residential Property	1 BUILDING
103	NEVA GAE CLAUSEN	1140 SW FERNWOOD DR	13-12-36-AC-02000-00	0.41	Improved Residential Property	1 BUILDING
104	LINCOLN COUNTY	SW FERNWOOD LN				50' ROW
105	DENNIS W JOLL	1052 SW FERNWOOD DR	13-12-36-AC-02100-00	0.46	Improved Residential Property	1 BUILDING
106	SEBASTIANI JACQUELYN A	902 SW FERNWOOD DR ;908 SW FERNWOOD	13-12-36-AC-04200-00	1.10	Improved Residential Property	1 BUILDING
107	PHILIP M HURLEY TRUSTEE	1225 SW WHITECAP DR	13-12-36-AB-00200-00	0.74	Improved Residential Property	1 BUILDING

TABLE 7.1
Access Road Options
Existing Lots

Lot	Owner	Address	Taxlot #	Lot Size (acres)	Property Class	Notes
108	LEONE N. DAHL TRUSTEE		13-12-36-AB-00100-00	14.12	Small Tract Forest Option Land	VACANT
109	LINCOLN COUNTY	SW WHITECAP DR				50' ROW
110	L T MERRITT	1240 SW WHITECAP DR	13-12-25-DC-01224-00	1.01	Improved Residential Property	1 BUILDING
111	BETTY L KRAUSE TRUSTEE		13-12-25-DC-01216-00	0.27	Residential Vacant Land	VACANT
112	DARREL M WEAVER	3025 SW BREAKERS CT	13-12-25-DC-01201-00	2.20	Improved Residential Property	1 BUILDING
113	MARY DEE YARNELL		13-12-25-DC-01200-00	1.41	Residential Vacant Land	VACANT
114	MARY DEE YARNELL		13-12-25-00-00500-00	51.52	Special Assessed Vacant Forest Land	VACANT
115	LEONE N. DAHL TRUSTEE		13-12-36-00-00100-00	40.00	Small Tract Forest Option Land	VACANT
116	DALE LAURANCE TRUSTEE		13-11-30-00-00800-00	39.74	Small Tract Forest Option Land	VACANT
117	LINCOLN COUNTY SCHOOL DISTRICT	2750 S CRESTLINE DR ;3000 S CRESTLINE DR	13-11-30-00-00901-00	42.15	Exempt School Improved Property	CRESTVIEW HEIGHTS AND WALDPORT HIGHSCHOOL
118	OREGON COAST COMM COLLEGE	3120 S CRESTLINE DR	13-11-30-00-00902-00	2.00	Exempt School Improved Property	OREGON COAST COMM COLLEGE
119	BRANDI C MILLER	3232 S CRESTLINE DR	13-11-31-B0-00100-00	0.52	Residential Improvement in Industrial Zone	VACANT
120	TERRY & BRANDT THISSELL		13-12-25-00-00300-00	24.77	Designated Forest	VACANT
121	TERRY & BRANDT THISSELL		13-12-25-00-00301-00	51.17	Designated Forest	VACANT
122	LINDA & DALE LAURANCE		13-11-30-00-00800-00	135.77	Small Tract Forestland	VACANT

Attachment D

Infrastructure Financing Options

Infrastructure Financing Options:

- **System Development Charges (SDC)** – Can be used to fund projects on the City's Capital Improvement List. May also be used for projects that oversize public infrastructure (i.e. SDC credits to the developer that oversizes the infrastructure for future capacity).

- **Local Improvement District (LID)** – City finances the improvements to be paid back by adjacent property owners or other identified property owners that benefit from the improvements.

- **Developer Dedications** – Improvements funded and built by the developer of the property (i.e. extend water, sewer, storm; full street improvements). Required improvements must meet the impact of the proposed development (i.e. be roughly proportional). If developer is oversizing public infrastructure, they may be eligible for SDC credits.

- **Advanced Financing Agreements** – Individual property owner finances improvements and is then reimbursed by other property owners that tap into or use the improvements in the future.

- **Urban Renewal & Tax Increment Financing** - The purpose of urban renewal is to improve specific areas of a city that are poorly developed or underdeveloped. These areas can have old deteriorated buildings and bad streets and utilities or the areas can lack streets and utilities altogether. Urban renewal provides three types of authority that are not otherwise available to local governments: first, it allows for the use of tax increment financing to finance improvement projects; second, it allows for special powers to buy and assemble sites for development or redevelopment, if that is desired; and third, it allows for special flexibility in working with private parties to complete development projects. For a city to use urban renewal it must establish an urban renewal agency and it must adopt an urban renewal plan. Urban renewal agencies can do certain projects or activities under an adopted urban renewal plan. These activities include:

  1. Construction or improvement of streets, utilities and other public uses. The most common type of urban renewal project is infrastructure development, including streets and utilities. Urban renewal also commonly funds parks, plazas and pedestrian facilities.

  2. Rehabilitation or conservation of existing buildings. An urban renewal agency can assist in rehab projects of any type (residential, commercial, industrial) typically through loans and grants to private property owners.

  3. Acquisition and improvement of property. An urban renewal agency can acquire property, typically for re-sale for private or a combination of public/private development. The agency has the power of eminent domain (condemnation) for redevelopment purposes, which is not a clear power of cities or counties themselves. The agency must identify properties to be acquired in the urban renewal plan. Properties must be acquired at fair market value. Once acquired, urban renewal agencies can clear and improve the properties prior to resale or lease. Any persons or businesses displaced by agency acquisition are entitled to relocation assistance.

  4. Re-sale or lease of property. An urban renewal agency can sell or lease property it owns for redevelopment. Unlike cities and counties, the agency can legally sell for less than fair market value. Property can be sold for its "fair re-use value" which is the value for a specified use required in the urban renewal plan.

Urban renewal is unique in that it can be financed by urban renewal taxes or tax increment financing. Urban renewal taxes are the taxes generated by the increase in total assessed values in the urban renewal area from the time the urban renewal area is first established. The assessed value of an urban renewal area at the time the plan is adopted is called the "frozen base". Growth above the base is called the "increment."

- **Oregon Statewide Transportation Improvement Program (STIP)** - The Statewide Transportation Improvement Program, known as the STIP, is Oregon's four-year transportation capital improvement program. It is the document that identifies the funding for, and scheduling of, transportation projects and programs. It includes projects on the federal, state, city, and county transportation systems, multimodal projects (highway, passenger rail, freight, public transit, bicycle and pedestrian), and projects in the National Parks, National Forests, and Indian tribal lands. Federal regulations require that all federally funded transportation projects and all "regionally significant" transportation projects be identified in the STIP. Regionally significant refers to projects with air quality impacts, such as adding more lanes, building a bypass, or installing a new signal. Regionally significant also refers to projects that are of significant interest to the local community. Regionally significant local government projects in the STIP are identified and prioritized utilizing system management data and public involvement at the local government level. ODOT is included in the process as directed by federal law.

- **Oregon Immediate Opportunity Fund Program** - Provides grant funding needed for street or road improvements to influence the location, relocation or retention of a firm in Oregon, revitalize business or industrial centers, and prepare Oregon Certified Project Ready Industrial Sites. Three types of projects can be funded at the following maximum grants per project: Type A: Specific economic development projects that affirm job retention and job creation opportunities. Maximum grant: $1,000,000; Type B: Revitalization of business or industrial centers to support economic development. Maximum grant: $250,000; Type C: Preparation of Oregon Certified Project Ready Industrial Sites. Maximum grant: $500,000.

- **Oregon Industrial Development Revenue Bond Program** – The Oregon Economic and Community Development Commission is authorized by statute to issue industrial development bonds for qualified projects throughout Oregon. Bonds can be issued on a tax-exempt basis if federal requirements are met, or on a taxable basis for projects that do not meet these requirements. Industrial development bonds are not direct obligations of the state of Oregon. The entity on whose behalf they are issued is legally obligated to repay them. Eligible activities include manufacturing, processing, warehousing, research and development, natural resource utilization and certain tourism-related facilities. Projects must be cost effective and must produce goods or services that are sold in markets for which national or international competition exists.

- **Oregon Transportation Infrastructure Bank (OTIB)** – A statewide revolving loan fund designed to promote innovative financing solutions for transportation needs. Eligible projects include: highway projects such as roads, signals, intersection improvements, and bridges; transit capital projects such as buses, equipment, and maintenance or passenger facilities; and bikeway or pedestrian access projects on highway right-of-way.

- **OECDD Special Public Works Fund** – Primarily a loan program with some grant provisions. Eligible entities include cities, counties, county service districts, tribes, ports & districts, airport districts. Eligible projects/activities (projects must be public-owned): can be used to finance construction of airport facilities; buildings and associated equipment; port facilities, wharves and docks; telecommunications infrastructure; roadways, bridges, etc.; solid waste disposal sites; wastewater system improvements; renewable energy projects. Provides for activities such as: conduct of feasibility and other preliminary studies and engineering necessary as part of the development of a construction project; mitigation of environmental conditions on industrial lands; purchase of land, rights of way and easement necessary for public infrastructure.