



Community Advisory Committee - Meeting #10

Thursday, January 23, 2020

6:00 – 8:00 PM

Happy Valley City Hall – Council Chambers

16000 SE Misty Drive, Happy Valley, OR

ITEM	TIME
Welcome and Introductory Items	6:00-6:10 PM
<ul style="list-style-type: none">a. Welcome - Michael Walterb. Approval of Minutes (CAC Meetings 7, 8, 9)c. Where we are in the process and today's agenda – Joe Dills, APG	
Infrastructure Planning	6:10-6:50 PM
<i>This item will provide information about storm water planning to support the draft land use planned for the project area.</i>	
<ul style="list-style-type: none">a. Presentation (by Clackamas County Water Environment Services team) and discussion	
Plan Updates and Documentation	6:50-7:45 PM
<ul style="list-style-type: none">a. Pleasant Valley Downtown District Updateb. Foster Parkway Updatec. Options Considered for Employment Lands and North Carver Road Connections	
<i>This item is the project team's proposed documentation of the options considered by the project committees for two issues: employment lands and North Carver road connections. The attached memo describes those issues and summarizes the opinions that were voiced during the process. This memo will be forwarded to the Planning Commission along with the other materials from the process.</i>	
Public Comment and Next Steps	7:45-8:00 PM
<ul style="list-style-type: none">a. Public Commentb. Next Steps<ul style="list-style-type: none">• Last meeting: February 27, 2020• Planned public outreach activities and future hearings – The team will describe the steps and schedule.	

CAC Minutes

9-19-19 – 6:00pm – 8:00pm

Attendance

See Sign-In sheet - Introductions were made.

Meeting began at 6:05 p.m.

The following discussion was made:

- Michael Walter introduced himself and stated that AKS Engineering is doing the modeling for future trip generation
- Gave a quick refresher recap of the plan
- Joseph Briglio gave a presentation
 - The plan is still in draft format
 - Hope to be complete by Spring 2021
 - Next meeting is scheduled for October 17, 2019
 - Not much has changed with the comprehensive map – changed the LDR zone to NDR to match the PC concept plan
 - Employment land – had option A or B but went with Option C to reduce employment lands as much as possible but still meet the required numbers
- Discussed reduction of employment lands with Metro and they weren't excited about it but won't oppose the reductions
- The ODR change has not been updated since 2004 – is it better for the city to lead or to follow Metro
- It was asked if we could follow property lines when changing zones
- Need to confirm what Gresham is doing regarding their zoning
- Due to the flood plains the Carver Riverfront area will not be developed for housing and have more recreational use
- CAC is displeased with the lack of employment lands – need to have more jobs where we live – seems out of balance currently so it will be in the future too
- Would like to have some delineation between the commercial areas and the flood plain regarding residential areas
- Refined Street Network Plan
 - Removing the alignment through the Belair and Carver area – it needs an east/west and north/south connection how this is accomplished will be completed in the future
 - Need to bring the Foster Corridor to the Sunnyside Extension or vice versa
- Nothing has changed on the Refined Bikeway and Trails Plan

- Have received no reports from the school districts
- Damascus Parkway Blvd design considerations
 - Discussed a parkway and how it would work
 - Damascus Blvd is an extension of Sunnyside Rd
 - Will have a roundabout that could be built in the future
 - Will need to have a major arterial to serve the future area
 - Trying to project 40 years out into the future
 - All the roadways need to be able to manage and handle the future areas and population
 - The PV Concept Plan is feathered into this plan and there has been a lot of coordination with Gresham
 - It was stated that there is no sewer line out this far east of the future development – it is on WES Capital Development Plan – Sewer is the biggest constraint for future development
- Metro states that we are aiming to low for the employment land to the east
- SWA has a very small area that can't be served by Sunrise – this is a limiting factor
- School districts are a special exemption to these areas and can go outside of the rules for development
- The city can acquire land for parks if the funding is available
- Public Comments
 - Carver Connection – alleviate the carver curves and go further out which would straighten the roadway – the CAC wants to swing from the river and hug the butte
 - See mistakes with separation of lands is this an extension of what is currently in Happy Valley – The future city has higher mixed use and two downtown areas
 - There are strips of land that are hazy, why – Is already in the EHVCP and has urban zoning which was adopted in 2009
 - If you are located within the future commercial area you are grandfathered in
 - The city will have jurisdiction over the vacant lands

The meeting was adjourned at 7:30 p.m.

Minutes were taken by Cheryl Whitehead, Planning Department.

CAC MINUTES

10-17-19 -6:00pm-7:50pm

Attendance

Meeting began at 6:00pm.

Mayor Tom Ellis made the following statement:

- Public Safety Ballot coming up in November
- Five year levy for dedicated police service in the City
- If levy does not pass, there will be no police in the City
- We contract with the County to have dedicated police in our City
- City staff cannot advocate for levy, but Mayor can

See Sign-In Sheet – Introductions were made.

The following discussion was made:

- This is the 8th meeting
- Packets available with refresher plan to date
- Parks Refresher and Plan
 - How will parks connect
 - Walkway, streets, waterways are conceptual
 - Parks are aligned to not disturb natural resources
 - Parks to be in residential neighborhoods
 - Park level and usage based on area geography
 - How will parks fit in with school
 - Numbers are independent from schools
 - School parks are off limits during school time and not counted
 - City of Damascus Park was inherited by Metro, but it surrounded by Happy Valley in unincorporated Happy Valley
 - City of Damascus Park may be an option for the City to take over and possibly expand
 - Nature needs to be considered now that we are venturing into the Clackamas River area
 - Open spaces that are undeveloped will be kept as continuous corridors
 - Traffic in the communities needs to be considered when parks go in for future development
 - When developers purchase property and provide a park this park is private
 - If park is private it does not count
 - Parks should be public
 - Possibly partner with developers to make parks in neighborhood public
- Transportation Analysis Review
 - Study was done in entire Metro area
 - Used Metro model currently in place
 - Discussed if current roads could be redirected to a light

- Tong currently has a road that connects with 172nd, but is currently closed. Would like to know why
- Will look at neighborhood street connections, but do not want collector roads through a neighborhood
- Plan B is the consensus for the Foster Parkway Design
- Need to consider scooters and bike commuters on paths
- At this time there is no room for a dedicated bike lane, current design is not safe for commuters
- Could consider a 2-way path, one for commuters and one for walkers
- Path should be cost effective too
- Set the City preference for Carver Junction and provide information/plan to ODOT
- Option B creates better flow and access and more opportunity for businesses
- Connect Foster to Troge and Vogel parkway
- All roads would need to be redone to Urban standards

Questions/statements from the public:

- Would like to create more jobs in Happy Valley
- Make sure to include transit on our new roads
- Metro to continue to study employment needs
- We are at a very draft level and things will change
- Keep employment land between 172nd & Foster
- Would like to look at space on both sides of Foster and make that plan B
- Want as much employment as possible on 172 & Foster
- Change zoning for some properties in Carver to commercial that are currently residential for economic growth.
- Combine maps
- Stormwater done by WES
- Conservation slopes will be undeveloped. Consider that open space
- Extension of Sunnyside Rd. eventually
- Cannot name the extension Sunnyside Rd. because of fire
- Concerned with all the address changes because of this requirement by fire
- With the density would need a 5-lane road
- Must consider the future in 40+ years
- Next meeting is December 5th

Meeting adjourned at 7:50pm

Minutes taken by Gerri Toops, Permit Technician

CAC Minutes

12-5-19 – 6:00pm – 8:00pm

Attendance

See Sign-In sheet - Introductions were made.

Meeting began at 6:00 p.m.

The following discussion was made:

- Will have public comments at the end of the meeting
- Meeting number 9 – Two additional meetings scheduled in January and February 2020 – This will be the conclusion of the CAC

Sunrise Water Authority – Elizabeth Edgar

- Sunrise Water Authority (SWA) is the water provider for Happy Valley, Clackamas County and Damascus
- Approximately 50,000 customers and 15,887 service connections
- SWA is a gravity fed water system
- 60psi is the medium pressure and safe number for fire flow to hydrant – what we strive for
- Topography is a unique issue with many hills
- There are two different water districts in the area – Damascus/Mt Scott Water Service (which merged in 2001) and SWA – explained the difference between the two – urban level to the west and rural level to the east
- SWA created a Capital Improvement Plan in 2017 and mirrors the PVNCCP closely but everything between the 470ft up to the 610ft reservoir have a 60psi but heading to the east the system is built to rural standards
- The SDC money that is collected is for water treatment, transmission and infrastructure – does not pay for new development
- New development pays for all new future water development with the SDC
- The Capital Improvement Plan has four sections – adding reservoir 11 to help serve the Pleasant Valley area
- Adding additional transmission and connections to the Pleasant Valley transmission
- Will be adding more pumping of water to the additional 610 zone and will serve as a new wet well – once complete can serve to the east
- We do have additional capacity for new schools and hospitals etc.

- Both the SWA and City numbers from each study align very well together – the plan is for the greater good of the Happy Valley area and some areas are not identified for improvements so these areas will be done at the cost of the development
- SWA is pay as we go so no loans – this plan will be paid for as we go so if someone wants to move it along faster than they can pay for it and have a 10-year reimbursement
- The timeline within the comprehensive plan for water to the east is approximately 20 years out or 7500 purchased meters
- SWA and sewer are on 20-year plans
- It was asked why SWA does not put a reservoir on the south side of Hwy 212 – will be adding a higher reservoir to serve Damascus
- SWA cannot support additional development in the Belair area – a developer could pay to add the additional infrastructure for the development
- It was stated that there is a large water shed and what are some of the challenges to maintaining our water quality
 - Tim Jannsen of Sunrise Water Authority stated
 - Don't envision too much change going into the river it may be more but will be similar to the current water quality
 - Have wells for emergency and summertime to meet the peaks which are critical
- It was asked if there are any concerns around the climate changes, like snow melt etc.
 - Water consumption is changing but the overall peak may not change
- SWA has a purple pipe system for irrigation for green spaces and commercial areas and ASR technology

Water Environmental Services – Jessica Rinner

- Water Environmental Services (WES) is the clean water provider
- Protect public health, environment and education also provide infrastructure
- Zone 2 is the Happy Valley area
- Just completed the Collection System Master Plan – will be doing improvements over the next 20 years
- Will need to do capacity improvements in the Clackamas County area and upsize the pump station
- Rock Creek Interceptor
 - A portion is already installed and extends to the county boundary and the Foster line
 - 7 million cost
- Clackamas Interceptor
 - Will upsize the existing interceptor and pump station
 - Complete a 30in main – this is currently in the works with approximately 60 million cost to be completed within the next ten years

- Tri-City Treatment Facility
 - Currently under expansion with 20 million cost
- Inflow and infiltration are clean water which takes up capacity for the dirty water – will be targeting and reducing by 65% of the various interceptors –
- It is more cost effective to update and fix the pipes rather than upsizing the sewer
- Questions regarding the Rock Creek Interceptor
 - What is the timeline for the Pleasant Valley upgrade to be completed – Should be completed by 2023
 - When would you require connection to this new line for developers once installed – it would be a case by case issue but could be installed the next day once it is installed and in place
- Will anything from Happy Valley area go to the Kellogg Facility
 - Yes, but the Kellogg Facility is a 20 million capacity for flow, and we have room to expand at the Tri-City Facility
- Land Use Maps presented by Joe Dills
- Refined the Land Use Map and put together with a host of other maps and data
- There are several Mixed Use uses for a downtown district
- Carver Map
 - Entire new Riverfront District
 - Discussed the surrounding zoning designations and as to why it was selected
- Pleasant Valley Downtown Area
 - Is a Mixed-Use walkable area with anchor store and restaurants
 - This sets the guidance but will be built out by future development
- Employment Center
 - Is 44 acres
 - Like to consider higher density residential and could wrap around the commercial density
- North Carver Map
 - The butte area is residential but allows for a restaurant
- Riverfront District Area
 - Restaurants and trails
 - A public park which is located within the flood plain
 - Selected a flexible zone of MURX which allows for a hotel to shops to residential – there is transition between the residential
- Acreage and Unit Projections – discussed the charts with an overview
- The 50/50 split and density ranges etc. are a Metro requirement
- House Bill 2001 allows City's the medium range of housing in single family homes which is a state requirement and is reflecting in our maps
- Land Use Policies
 - The PVNCCP vision and guiding policies

- PV Downtown District
 - Carver Riverfront District
 - Transportation policies for Pleasant Valley and North Carver
- Lowell Patton asked the following questions
 - Nothing has been said regarding transportation at Eckert and 172nd connection and the Belair and Carver connection
 - Haven't suggested any local connection
 - Mr. Dills will follow up on connecting Tong Rd to 172nd
- It was stated that they hope the policy becomes more than words – ask to see more investment in attracting jobs and local businesses – almost 70% of residents leave the area for work and would like to have more jobs within the area
- Public Comments
- Tom Riggs
 - The zoning on the riverfront is primarily residential and commercial
 - A lot of people are there on nice days with not a lot of parking available
 - Like to know how the area is planned for use during peak usage, recreation and river access
- Dean Aposlol
 - Does the 2000 gross acres include the already developed areas
 - Where does Trillium Rd fit in – seems more like R-7
 - Who will take care of the natural area stream corridors - the Parks Master Plan includes natural areas within the park maintenance
 - Suggest a wildlife corridor from east to west in the Scouter Mountain area
- A number difference regarding zoning was pointed out on page 8 of the packet
- TAC hasn't had any critiques of the plan and the city feels confident that the state will support the plan – generally Metro would like to see higher density than what we have shown on the chart
- Metro Title 3 is habitat conservation and built into City's IDC and mirrored with steep slopes with limited development - we will see a lot of the developed land in open space tracts owned by the HOA's and are protected by the overlays
- The Transportation System can't handle higher density
- John Wright – Owner of Carver Store made the following comments
 - A lot of this is all new to us
 - The plan looks like it takes over two mobile parks
 - How will this be acquired and how will people who already live there be taken care of
 - Michael Walter stated that this plan will allow for zoning of home parks to be changed but only if sold or acquired – residents won't be displaced we will have to allow for affordable housing for the mobile home residents to relocate to

- Ample parking will need to be available for the riverfront area – the plan allows for this but only when development happens
- The city has expanded the city's newsletter routing area so that every property owner should receive it

The meeting was adjourned at 8:15 p.m.

Minutes were taken by Cheryl Whitehead, Planning Department.



Technical Memorandum

To: Leah Johanson, Clackamas County Water Environment Services
From: Karina Nordahl, PE
Teresa Huntsinger, EI
Copies: Trista Kobluskie; Kevin Timmins; File
Date: December 20, 2019
Subject: Pleasant Valley/North Carver Stormwater Infrastructure Plan – **DISCUSSION DRAFT**
Project No.: 19109

Introduction

Otak, Inc. is working with Clackamas County Water and Environment Services (WES) on the Happy Valley Stormwater Masterplan. The Pleasant Valley/North Carver (PVNC) area was recently brought into Happy Valley's urban growth boundary, but a Community Plan for the area must be completed before redevelopment of the area can occur. The City has many creeks and streams that will be impacted by development if stormwater runoff is not carefully managed. As part of the Masterplan development and the Community Plan, potential locations for regional stormwater ponds were identified to provide treatment and detention. This memorandum documents the process that was used to develop proposed locations and sizes for regional stormwater facilities in the Pleasant Valley/North Carver district of Happy Valley in Clackamas County. Adding low-impact development strategies upstream of the regional ponds could reduce their required size but was not included in the analysis.

Stormwater Management Strategy

This memorandum reflects stormwater facility recommendations (size and location) for a stormwater management strategy that relies primarily the use of regional facilities to serve the future PVNC area. The use of regional facilities is efficient and desirable from an overall land availability and long-term operations perspective but presents certain challenges to implementation. These challenges can include:

- Timing and location of development
- Availability of funding
- Timing of conveyance infrastructure
- Land/easement acquisition

While these challenges have been overcome in other areas, Clackamas County has previously had mixed results at implementing a regional facility approach. New policies and procedures will be required to allow implementation of this regional approach. This discussion draft will be modified based on direction received from the City and WES on the regional approach and updated to reflect the adoption of a framework plan for PVNC.

Design Standards

Development in the City of Happy Valley and in unincorporated Clackamas County is subject to Clackamas County Service District No. 1 Stormwater Standards (Clackamas County, 2013). WES became the utility managing stormwater in this area in 2018, and WES is currently in the process of updating its design standards. WES has indicated that its new standards will match those currently used in the WES BMP Tool. The WES BMP Tool was developed in 2010 based on Clackamas County conditions and was adopted by the cities of Wilsonville and Oregon City but was never adopted by Clackamas County. The BMP tool uses continuous simulation modeling and long-term rainfall data rather than standard (i.e. 24-hour) synthetic design storms. The BMP Tool

was used for this conceptual, planning-level stage of design to develop rough estimates of how much land would need to be dedicated to establish regional stormwater facilities. More detailed hydrologic modeling will be required at later stages of facility design.

Following are the design assumptions that were used to size regional stormwater facilities. The facilities were sized to provide both water quality treatment and flow control.

Water Quality Treatment

WES requires capturing and treating the first 1-inch of stormwater runoff from a 24-hour storm event. The WES BMP Tool ensures treatment of 80 percent of the average annual runoff based on continuous simulation modeling. A 1-inch, 24-hour design storm represents 80 percent of average annual runoff in Clackamas County so these two requirements are equivalent. The detention pond design in the WES BMP Tool provides water quality treatment as well as detention.

Flow Control

The WES BMP Tool sizes detention ponds such that the flow duration curve from the pond outflow will be equal to or lower than the flow duration curve representing pre-project conditions for flows ranging from 42 percent of the 2-year peak flow to the 10-year peak flow. WES standards require that the 2-year post-developed runoff rate equal half of the 2-year, 24-hour pre-developed runoff rate.

Pre-Developed Conditions

WES defines pre-developed conditions as the conditions at the site immediately before application for development. Thus, the existing site land uses were used to estimate what portion of each basin was forest, grass, or impervious in existing conditions for the BMP Tool.

Infiltration Standard

WES standards require infiltration of all runoff from storm events up to one-half inch of rainfall in 24 hours. The WES BMP Tool does not have an infiltration standard; however, native soil infiltration rates are taken into account in sizing the facility to meet flow control standards.

Existing and Proposed Conditions

Existing and proposed land use GIS data was received from Angelo Planning. The proposed land uses were based on Angelo Planning's 10-01-19 Refined Land Use Designations, which are currently in the planning process and have not received final approval. The Pleasant Valley/North Carver Comprehensive Plan Area includes a variety of existing and proposed land uses ranging from agriculture and low density rural residential to a range of residential land use densities and some commercial and employment areas. Portions of the area, particularly to the south, have already been developed to proposed densities, other areas are proposed to remain very low density residential, and still others are proposed to become much more densely developed than current conditions. Regional stormwater ponds have been located in the areas where substantial new development is proposed. In areas where development has occurred recently, it is assumed that stormwater infrastructure is already in place and it would be unnecessary to construct additional stormwater ponds.

The study area is transected by many creeks that are tributaries of Rock Creek, which flows south to the Clackamas River. Portions of the area have very steep slopes that have been identified as conservation areas where little to no future development will occur. The study area has Hydrologic Soil Group Type C and D soils which are characterized by moderate to low infiltration rates.

A site visit was conducted to confirm that the proposed pond locations are suitable, and adjustments were made to pond locations as necessary. The pond locations are in gently sloping areas and some have potential for

creation of greenspace in addition to the pond. Some locations have existing buildings that will likely be removed as development occurs.

Hydrology

The proposed regional stormwater basins were delineated using existing 10-foot contours and stream locations provided by WES, as well as proposed tax lots and street locations provided by Angelo Planning. Areas where existing development already matches proposed densities were delineated using aerial photography. The proposed regional stormwater basins were created only in areas that are not yet developed to their proposed densities (see Figure 1). Existing and proposed impervious areas of the regional basins are outlined in Table 1.

Table 1—Regional Stormwater Basin Areas

Basin	Existing Impervious Area (ac)	Existing Pervious Area (ac)	Proposed Impervious Area (ac)	Proposed Pervious Area (ac)	Total Basin Area (ac)	Storage Volume* (cf)	Pond Area** (ac)	Pond Percent of Basin Area
A	8.5	123.6	60.2	71.9	132.1	180,209	1.1	0.9%
B	16.3	123.0	74.0	65.3	139.3	333,912	2.0	1.4%
C	2.5	31.2	21.1	12.6	33.6	109,575	0.7	2.2%
D	0.5	34.6	18.8	16.3	35.1	54,739	0.4	1.2%
E	2.4	25.9	17.6	10.7	28.3	52,249	0.4	1.4%
F	7.3	126.5	39.1	94.7	133.8	170,735	1.1	0.8%
G	7.1	134.0	80.4	60.6	141.1	397,080	2.4	1.7%
H	1.9	44.9	29.8	16.9	46.8	68,987	0.5	1.1%
I	12.0	127.8	69.9	69.9	139.7	284,753	1.7	1.2%
J	2.0	36.0	19.3	18.8	38.0	54,936	0.4	1.1%
K	7.7	77.2	45.3	39.6	84.9	178,988	1.1	1.3%
L	2.0	76.7	39.4	39.4	78.7	193,549	1.2	1.6%

*Storage volume includes the pond volume plus water storage in the three feet of soil media at the bottom of the facility assuming 40% porosity.

**Pond area includes the pond surface area plus 1 foot of freeboard at 3:1 side slopes and 15% additional area for maintenance access, fencing, etc.

Existing and proposed impervious areas of each basin were estimated based on the existing and proposed land use types, the average number of residential units per acre associated with those land uses, and corresponding average impervious area percentages.

Land use types were associated with units per acre based on two sources: an impervious area study from Clackamas County, and measurements based on aerial photography of the region. The impervious area study from Clackamas County (Murdock, 2005) was conducted as part of the Damascus area Urban Growth Boundary expansion. Clackamas County analyzed the impervious area percentages of numerous neighborhoods with various units per acre representative of current and future development in the area. Average impervious area percentages were selected from the study for land uses with similar units per acre for this analysis. The data from the study as an attachment. Existing and proposed land uses and their associated units per acre and impervious area percentages are shown in Table 2.

Table 2—Impervious Area and Land Use Density

Land Use Description	Density (units/acre)	Impervious Area Percentage
Existing Land Uses		
Agriculture	0.12	2%
Commercial	0	70%
Forest	0.01	1%
Industrial	0	60%
Multi-Family Residential	0.5	10%
Rural Residential	0.3	10%
Single Family Residential	1	15%
Vacant	0	0%
Road	0	1%
Proposed Land Uses		
Very Low Density Residential	2.5	25%
Low Density Residential	5.2	45%
Medium Density Residential	8.7	50%
High Density Residential	15	60%
Mixed Use Residential	25	65%
Employment	0	70%
Community Commercial Center	24	70%
Mixed Commercial Center	24	70%
Institutional and Public Use	0	30%
Road	0	100%

Basins F and H contain significant areas of steep conservation slope areas that Angelo Planning indicated will be unbuildable (purple areas in Figure 1). However, 2 units per acre may be transferred from conservation slope areas to other developable lands. The methodology for calculating proposed impervious area was modified for these two basins. The conservation slope areas in Basins F and H, which are currently forested, remain forested in proposed conditions. Two additional units per acre of conservation slopes were added to the developable lands in the basin, resulting in a slight increase in density for the developable areas.

Hydraulics

Existing and proposed basin areas were entered into the WES BMP Tool to calculate the minimum detention pond sizes. Detention ponds were designed with 3:1 side slopes and 4 feet of active storage. The WES BMP Tool includes 3 feet of soil media depth, so the total pond depth used in the tool was 7 feet. Pond infiltration rates in the tool were selected based on the NRCS Hydrologic Soil Group (HSG) at the proposed pond location. The output report from the BMP Tool is provided in Appendix B.

Minimum pond surface areas for each basin are provided in Table 1, above. These areas include the freeboard area which is not included in the WES BMP Tool and an additional 15% surface area for maintenance access, fencing, grading to existing surfaces, etc. The pond sizes range from 0.8 percent to 2.2 percent of the basin area, depending on the area's existing conditions, proposed land use, and soil types. For planning purposes, a sizing

factor of 2.2 percent of basin area can be used as a rule of thumb to estimate how much land to set aside for regional stormwater facilities.

Conclusions

Preliminary sizes and locations were developed for 12 regional stormwater facilities in the Pleasant Valley/North Carver District using the WES BMP Sizing Tool. The pond sizes range from 0.4 acres to 2.1 acres, including area for maintenance access and freeboard, and they are all less than 2.2 percent of the area of the basin that drains to them. Establishing regional stormwater facility locations during planning for the area will facilitate future development of the district.

References

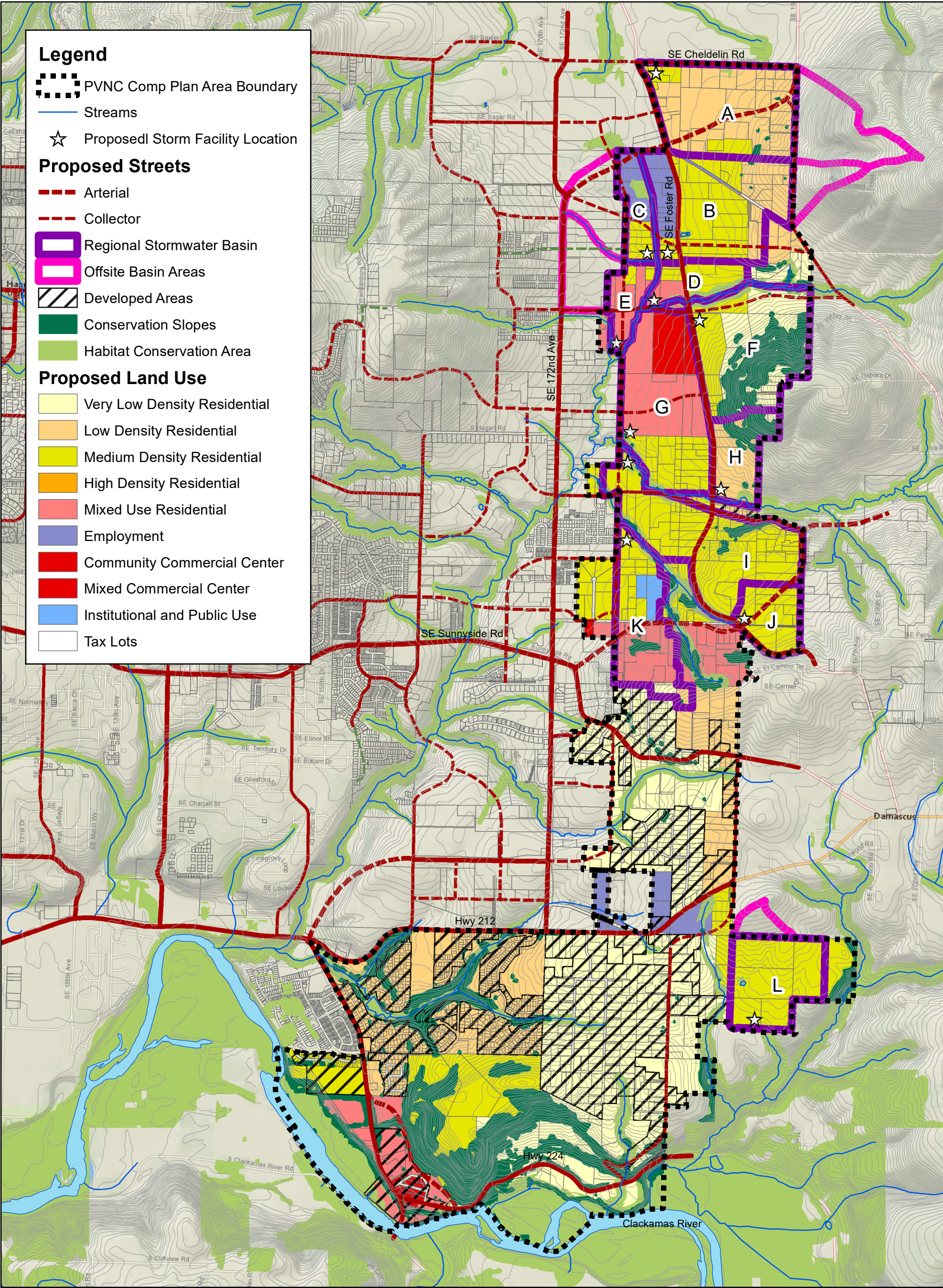
Clackamas County, 2013. *Stormwater Standards: Clackamas County Service District No. 1*. Clackamas County and Water Environment Services. July 1, 2013.

Murdock, 2005. Results of evaluation and analysis of impervious surface and current and future land use types in CCSD#1 and the Damascus UGB expansion area. Memo from Carol Murdock, Clackamas WES to Ted Kyle, Clackamas WES. July 26, 2005.

Wilsonville, 2017. *User's Guide for the BMP Sizing Tool*. City of Wilsonville and City of Oregon City. Revised December 2017.

Attachments

- Figure 1. Pleasant Valley / North Carver Stormwater Infrastructure Plan
- Background Information: Clackamas WES impervious surface data
- Hydraulics: WES BMP Tool Sizing Report



Document Path: L:\Project\19100\19109\CADD\GIS\MXDs\PVNC_RegionalStorm.mxd
Date: 12/19/2019

0 2,000 4,000 8,000 Feet

Basin	A	B	C	D	E	F	G	H	I	J	K	L
Pond Area (ac)	1.0	1.8	0.6	0.4	0.3	1.0	2.1	0.4	1.5	0.4	1.0	1.1



Figure 1. Pleasant Valley / North Carver Stormwater Infrastructure Plan

ID	DESCRIPTION	TOTAL AC	DWELLINGS PER ACRE	PAVED ROAD	DRIVE/PARK	SIDEWALKS	BUILDINGS	OTHER	TOTAL IA (SF)	TOTAL IA (AC)	PERCENT IA	TOTAL IA NO ROADS	TOTAL IA NO ROADS (AC)	PERCENT IA NO ROADS
1	RESIDENTIAL A/SMALL LOT	62	10.45	131555	575464	91992	619308	34670	1452989	33.36	53.8%	1321434	30.34	48.9%
2	RESIDENTIAL A/ASF	13	14.77	30195	106773	8223	110800	14580	270571	6.21	47.8%	240376	5.52	42.4%
3	RESIDENTIAL B	14	9.57	3668	193492	28766	130441	22642	379009	8.70	62.1%	375341	8.62	61.5%
4	RESIDENTIAL C/VERY LARGE LOT	106	4.29	609255	347950	171086	863147	217085	2208523	50.70	47.8%	1599268	36.71	34.6%
5	RESIDENTIAL C/VERY LARGE LOT	138	4.34	716247	410622	153201	1045434	222733	2548237	58.50	42.4%	1831990	42.06	30.5%
6	SCHOOL	54	0	5687	359646	126923	328951	38304	859511	19.73	36.5%	853824	19.60	36.3%
7	RESIDENTIAL C/LARGE LOT	109	4.98	568762	396184	40120	987192	166069	2158327	49.55	45.5%	1589565	36.49	33.5%
8	LOW DENSITY RES GREEN/VERY LG LOT	43	3.23	55660	140568	3104	186621	37034	422987	9.71	22.6%	367327	8.43	19.6%
9	RESIDENTIAL C/ESTATE LOT	134	2.66	532448	360373	169491	824712	192958	2079982	47.75	35.6%	1547534	35.53	26.5%
10	RESIDENTIAL C/VERY LG LOT	153	3.24	743097	487212	215065	1200609	217366	2863349	65.73	43.0%	2120252	48.67	31.8%
11	VERY LOW EXECUTIVE/ESTATE	95	0.84	145766	202663	29782	212618	80424	671253	15.41	16.2%	525487	12.06	12.7%
12	INDUSTRIAL MIXED EMPLOYMENT/RSIA	135	0	196906	2122245	30986	1703807	84035	4137979	94.99	70.4%	3941073	90.47	67.0%
13	INDUSTRIAL MIXED EMPLOYMENT/RSIA	319	0	647347	5179173	116062	4158609	47791	10148982	232.99	73.0%	9501635	218.13	68.4%
14	INDUSTRIAL	24	0	57315	326744	12146	251693	2899	650797	14.94	62.3%	593482	13.62	56.8%
15	INDUSTRIAL RSIA	161	0	355380	2607384	69053	1745714	105839	4883370	112.11	69.6%	4527990	103.95	64.6%
16	CORRIDOR	37	14.22	125909	334743	53339	384051	76495	974537	22.37	60.5%	848628	19.48	52.7%
17	NEIGHBORHOOD CENTER	207	4.81	1322269	849032	446174	1853472	190557	4661504	107.01	51.7%	3339235	76.66	37.0%
18	EMPLOYMENT 1A/1B/TOWN CENTER	215	0	1679977	3568011	254100	1654172	160367	7316627	167.97	78.1%	5636650	129.40	60.2%
19	EMPLOYMENT 1A/1B	31	0	149945	572815	67246	200898	20213	1011117	23.21	74.9%	861172	19.77	63.8%
20	EMPLOYMENT 1A/1B	32	0	87879	282999	25161	228577	13995	638611	14.66	45.8%	550732	12.64	39.5%
21	EMPLOYMENT 1A/1B	33	0	140478	664324	60309	288063	19444	1172618	26.92	81.6%	1032140	23.69	71.8%
22	EMPLOYMENT 1A/1B	56	0	173956	840236	174700	489090	20962	1698944	39.00	69.6%	1524988	35.01	62.5%
23	LARGE FORMAT RETAIL	183	0	903219	3552945	250183	1681577	175835	6563759	150.68	82.3%	5660540	129.95	71.0%
24	TRAILER PARK	44	7.44	201982	122843	10334	351638	106725	793522	18.22	41.4%	591540	13.58	30.9%
25	APARTMENT/RES A1/MDF	59	25.47	96523	618953	127604	730785	22567	1596432	36.65	62.1%	1499909	34.43	58.4%
26	LOW DENSITY GREEN STREET OLDER/C	169	3.69	842052	688351	45593	1232285	208349	3016630	69.25	41.0%	2174578	49.92	29.5%
27	VERY LOW DENSITY RURAL RES/C	38	3.85	180366	119688	11383	300149	53379	664965	15.27	40.2%	484599	11.12	29.3%
28	HILLTOP B	67	0.98	103969	138507	3082	138447	36481	420486	9.65	14.4%	316517	7.27	10.8%
29	SCHOOL	23	0	0	86422	871	74510	32222	194025	4.45	19.4%	194025	4.45	19.4%
30	VLOWDENSITY RURAL RES/HTA	356	1.91	737104	847087	36664	998834	234628	2854317	65.53	18.4%	2117213	48.60	13.7%
31	VERY LOW DENSITY RURAL RES/ESTATE	205	1.29	401021	477716	23634	454256	127676	1484303	34.07	16.6%	1083282	24.87	12.1%
32	RESIDENTIAL C	105	4.8	623512	394126	190157	1101392	158008	2467195	56.64	53.9%	1843683	42.33	40.3%
33	SCHOOL	43	0	0	268231	28357	222037	39891	558516	12.82	29.8%	558516	12.82	29.8%
34	MIXED USE APART/COMMERCIAL/ASF	10	11.17	11556	153465	20978	112049	3419	301467	6.92	69.2%	289911	6.66	66.6%
35	CORNER STORE	0.3	0	0	4347	0	2754	0	7101	0.16	54.3%	7101	0.16	54.3%
36	NON-URBAN PLAN A	1590	0.25	781701	692195	23035	616141	141300	2254372	51.75	3.3%	1472671	33.81	2.1%
37	PARK	55	0	45048	63273	34501	3934	31329	178085	4.09	7.4%	133037	3.05	5.6%
38	FARM/FOREST	75	0.01	26094	20002	80	19708	1691	67575	1.55	2.1%	41481	0.95	1.3%

WES BMP Sizing Report

Project Information

Project Name	Pleasant Valley / North Carver
Project Type	Addition
Location	
Stormwater Management Area	0
Project Applicant	
Jurisdiction	CCSD1NCSA

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
A-Ex Imp	369,631	Impervious	Roofs	D	Pond A
A-Per	3,132,095	Grass	LandscapeDsoil	D	Pond A
A- New Imp	2,250,893	Grass	Roofs	D	Pond A
B - Ex Imp	707,975	Impervious	Roofs	C	Pond B
B - Per	2,843,719	Grass	LandscapeCsoil	C	Pond B
B - New Imp	2,516,330	Grass	Roofs	C	Pond B
D - Ex Imp	20,714	Impervious	Roofs	D	Pond D
D - Per	708,122	Grass	LandscapeDsoil	D	Pond D
D - New Imp	800,213	Grass	Roofs	D	Pond D
E- Ex Imp	105,136	Impervious	Roofs	D	Pond E
E - Per	465,864	Grass	LandscapeDsoil	D	Pond E
E- New Imp	661,852	Grass	Roofs	D	Pond E
G - Ex Imp	308,458	Impervious	Roofs	C	Pond G
G - Per	2,641,165	Grass	LandscapeCsoil	C	Pond G
G - New Imp	3,194,740	Grass	Roofs	C	Pond G
I - Ex Imp	520,659	Impervious	Roofs	D	Pond I
I - Per	3,043,579	Forested	LandscapeDsoil	D	Pond I
I - New Imp	2,522,920	Forested	Roofs	D	Pond I
J - Ex Imp	86,899	Impervious	Roofs	D	Pond J
J - Per	818,284	Grass	LandscapeDsoil	D	Pond J
J - New Imp	752,030	Grass	Roofs	D	Pond J
K - Ex Imp	333,435	Impervious	Roofs	D	Pond K
K - Per	1,723,062	Forested	LandscapeDsoil	D	Pond K

K - New Imp	1,640,738	Forested	Roofs	D	Pond K
L - Ex Imp	86,855	Impervious	Roofs	C	Pond L
L - Per	1,714,539	Grass	LandscapeCsoil	C	Pond L
L - New Imp	1,627,685	Grass	Roofs	C	Pond L
F - Forested Slopes	2,169,907	Forested	Forested	C	Pond F
F - Ex Imp	318,247	Impervious	Roofs	C	Pond F
F - Per	1,955,647	Grass	LandscapeCsoil	C	Pond F
F - New Imp	1,385,077	Grass	Roofs	C	Pond F
H - Forested Slopes	656,507	Forested	Forested	C	Pond H
H - Ex Imp	81,596	Impervious	Roofs	C	Pond H
H - Per	739,810	Grass	LandscapeCsoil	C	Pond H
H - New Imp	560,202	Grass	Roofs	C	Pond H
C - Ex Imp	107,899	Impervious	Roofs	C	Pond C
C - Per	547,853	Grass	LandscapeCsoil	C	Pond C
C - New Imp	809,807	Grass	Roofs	C	Pond C

LID Facility Sizing Details

Pond Sizing Details

Pond ID	Design Criteria(1)	Facility Soil Type	Max Depth (ft)(2)	Top Area (sq-ft)	Side Slope (1:H)	Facility Vol. (cu-ft)(3)	Water Storage Vol. (cu-ft)(4)	Adequate Size?
Pond A	FCWQT	D1	7.00	41,079.0	3	232,081.5	180,208.7	Yes
Pond B	FCWQT	D1	7.00	72,906.0	3	435,074.5	333,912.3	Yes
Pond D	FCWQT	D1	7.00	14,126.0	3	68,053.8	54,738.5	Yes
Pond E	FCWQT	D1	7.00	13,567.0	3	64,841.1	52,249.0	Yes
Pond G	FCWQT	D1	7.00	85,827.0	3	518,773.5	397,080.2	Yes
Pond I	FCWQT	D1	7.00	62,798.0	3	370,027.0	284,752.5	Yes
Pond J	FCWQT	C3	7.00	14,170.0	3	68,309.6	54,936.2	Yes
Pond K	FCWQT	D1	7.00	40,823.0	3	230,475.0	178,988.0	Yes
Pond L	FCWQT	C3	7.00	43,873.0	3	249,644.4	193,548.6	Yes
Pond F	FCWQT	D1	7.00	39,090.0	3	219,617.9	170,735.6	Yes
Pond H	FCWQT	D1	7.00	17,292.0	3	86,499.0	68,986.8	Yes
Pond C	FCWQT	D1	7.00	26,111.0	3	139,387.7	109,575.1	Yes

1. FCWQT = Flow control and water quality treatment, WQT = Water quality treatment only

2. Depth is measured from the bottom of the facility and includes the three feet of media (drain rock, separation layer and growing media).

3. Maximum volume of the facility. Includes the volume occupied by the media at the bottom of the facility.
4. Maximum water storage volume of the facility. Includes water storage in the three feet of soil media assuming a 40 percent porosity.

Simple Pond Geometry Configuration

Pond ID: Pond A

Design: FlowControlAndTreatment

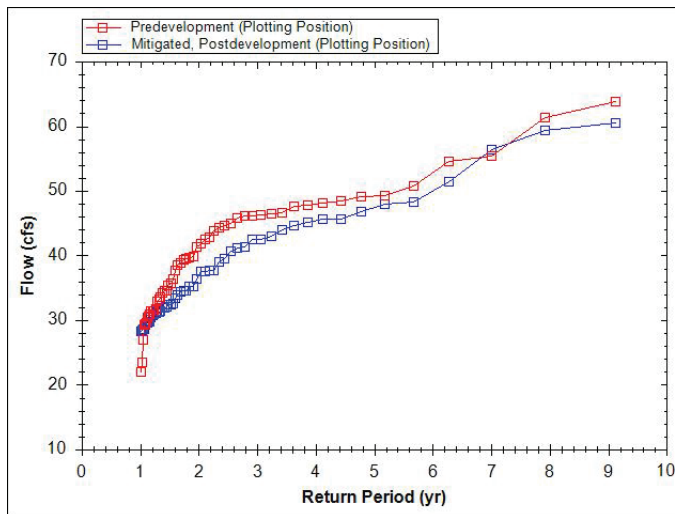
Shape Curve

Depth (ft)	Area (sq ft)
7.0	41,079.0

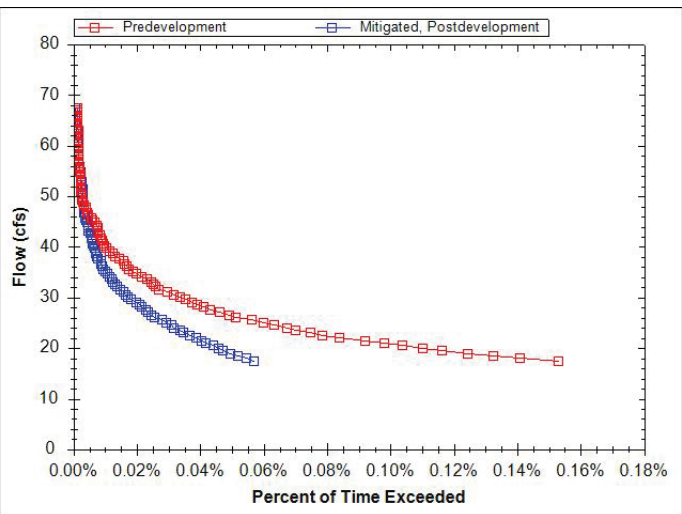
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	15.8
Upper Orifice Invert(ft)	4.7
Upper Orifice Dia (in)	35.6
Overflow Weir Invert(ft)	6.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



Simple Pond Geometry Configuration

Pond ID: Pond B

Design: FlowControlAndTreatment

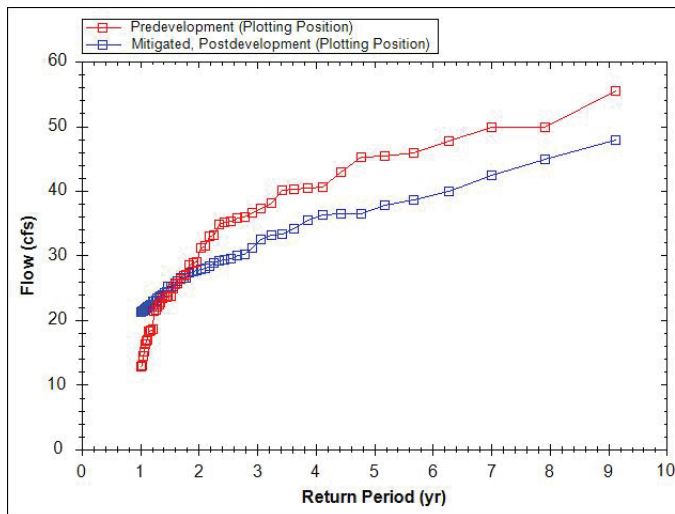
Shape Curve

Depth (ft)	Area (sq ft)
7.0	72,906.0

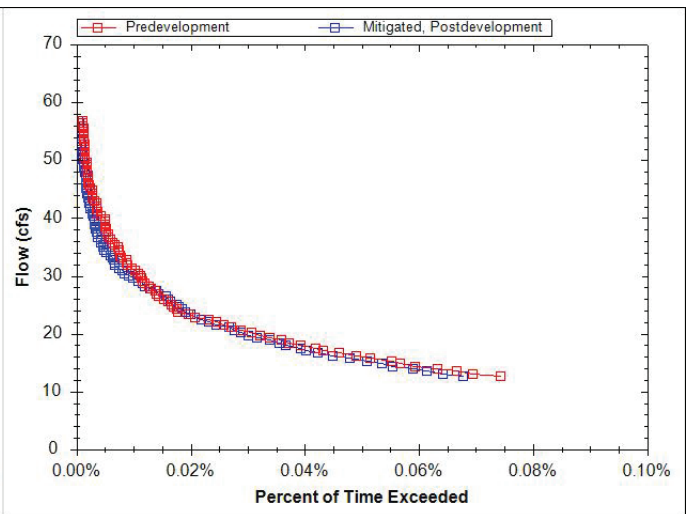
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	13.5
Upper Orifice Invert(ft)	4.7
Upper Orifice Dia (in)	33.4
Overflow Weir Invert(ft)	6.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



Simple Pond Geometry Configuration

Pond ID: Pond D

Design: FlowControlAndTreatment

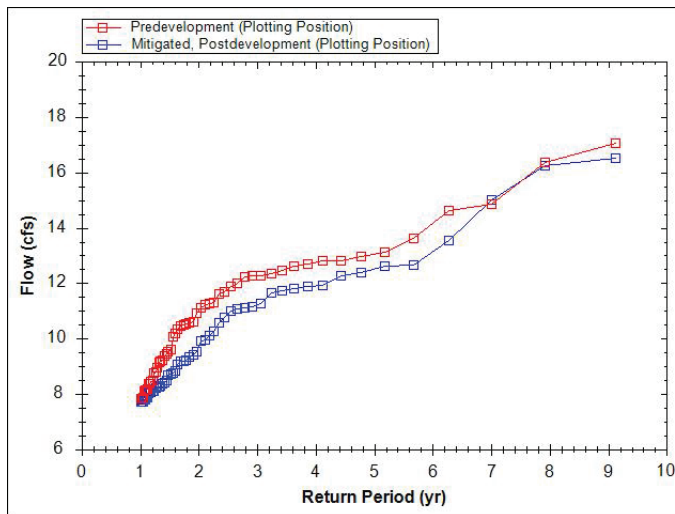
Shape Curve

Depth (ft)	Area (sq ft)
7.0	14,126.0

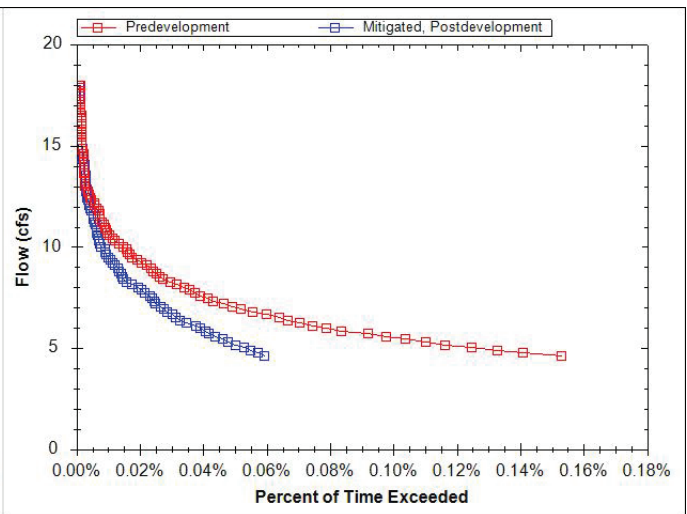
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	8.2
Upper Orifice Invert(ft)	4.7
Upper Orifice Dia (in)	18.4
Overflow Weir Invert(ft)	6.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



Simple Pond Geometry Configuration

Pond ID: Pond E

Design: FlowControlAndTreatment

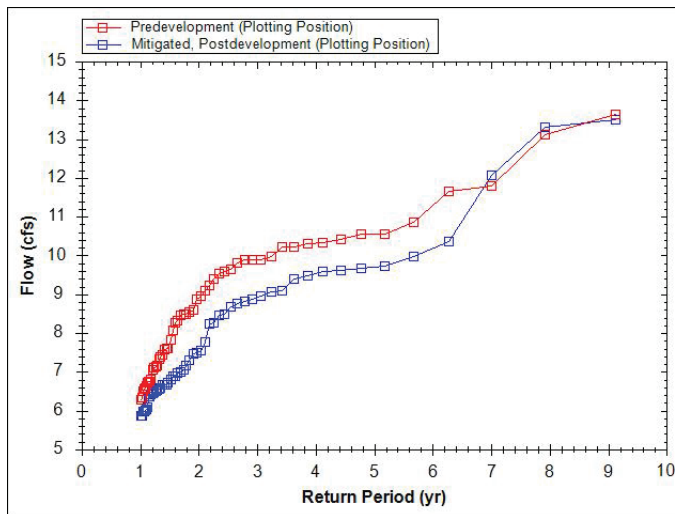
Shape Curve

Depth (ft)	Area (sq ft)
7.0	13,567.0

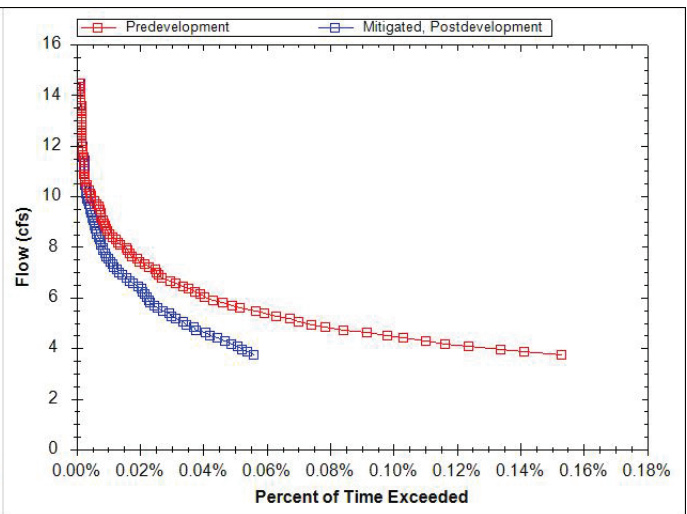
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	7.3
Upper Orifice Invert(ft)	4.7
Upper Orifice Dia (in)	16.5
Overflow Weir Invert(ft)	6.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



Simple Pond Geometry Configuration

Pond ID: Pond G

Design: FlowControlAndTreatment

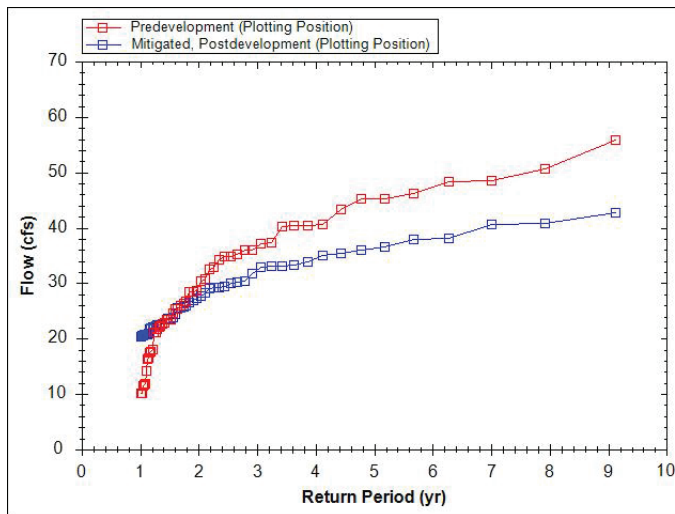
Shape Curve

Depth (ft)	Area (sq ft)
7.0	85,827.0

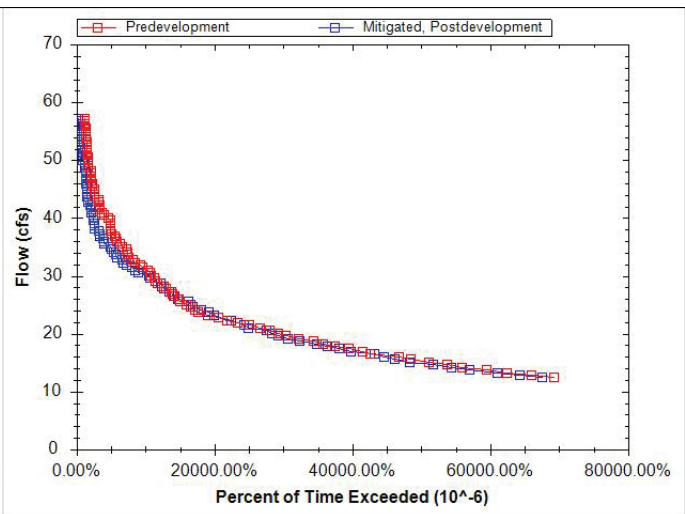
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	13.3
Upper Orifice Invert(ft)	4.7
Upper Orifice Dia (in)	33.7
Overflow Weir Invert(ft)	6.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



Simple Pond Geometry Configuration

Pond ID: Pond I

Design: FlowControlAndTreatment

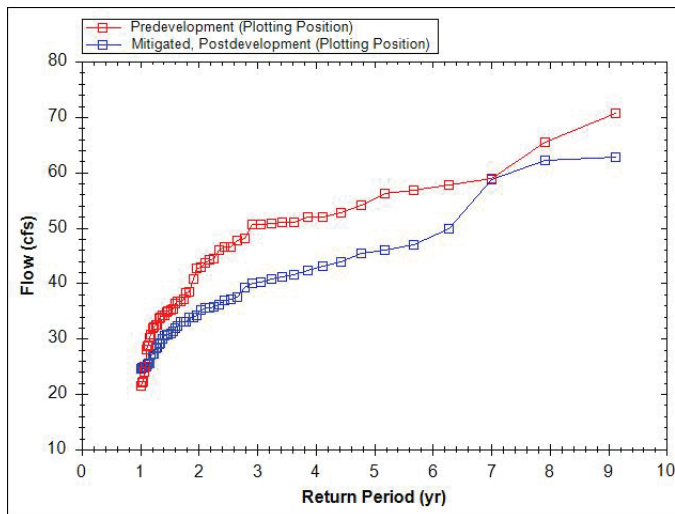
Shape Curve

Depth (ft)	Area (sq ft)
7.0	62,798.0

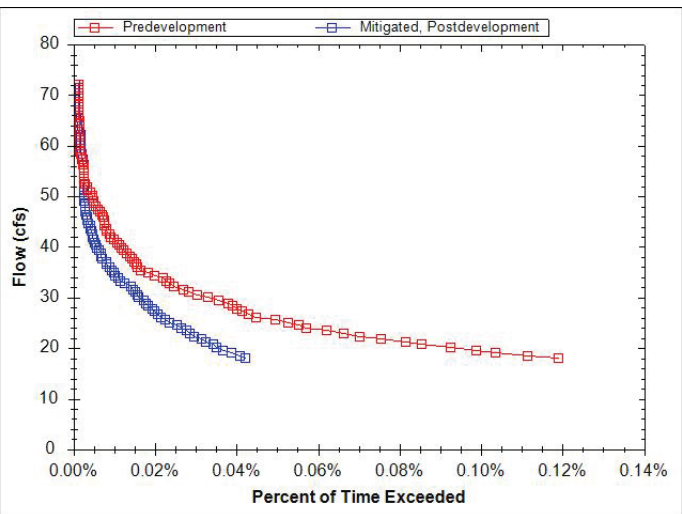
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	16.1
Upper Orifice Invert(ft)	4.7
Upper Orifice Dia (in)	37.0
Overflow Weir Invert(ft)	6.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



Simple Pond Geometry Configuration

Pond ID: Pond J

Design: FlowControlAndTreatment

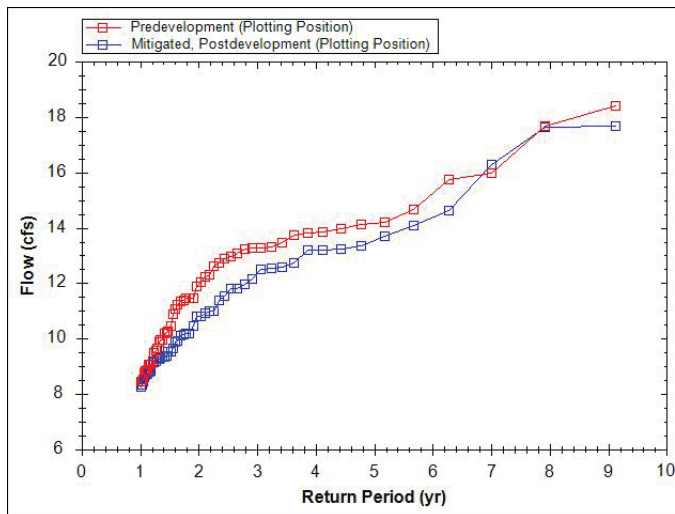
Shape Curve

Depth (ft)	Area (sq ft)
7.0	14,170.0

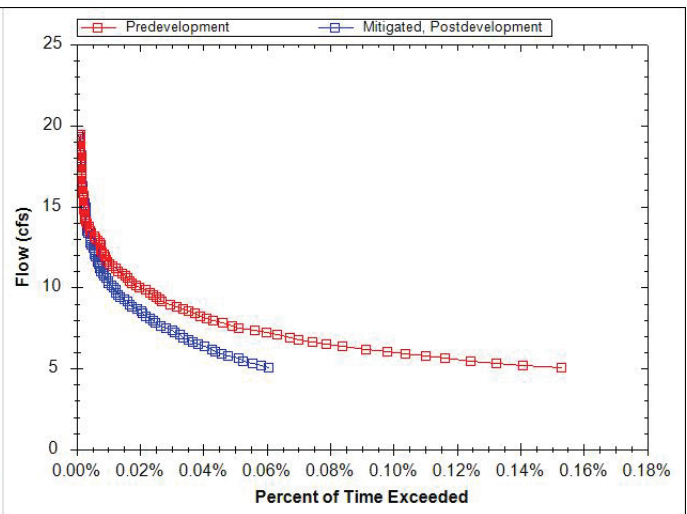
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	8.5
Upper Orifice Invert(ft)	4.7
Upper Orifice Dia (in)	19.1
Overflow Weir Invert(ft)	6.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



Simple Pond Geometry Configuration

Pond ID: Pond K

Design: FlowControlAndTreatment

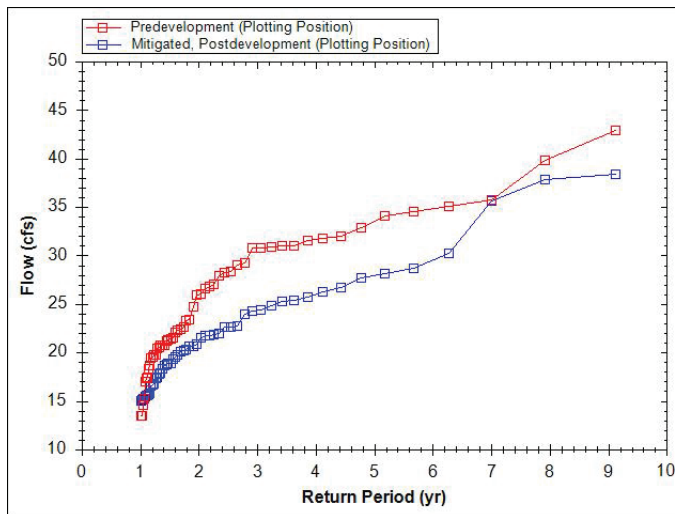
Shape Curve

Depth (ft)	Area (sq ft)
7.0	40,823.0

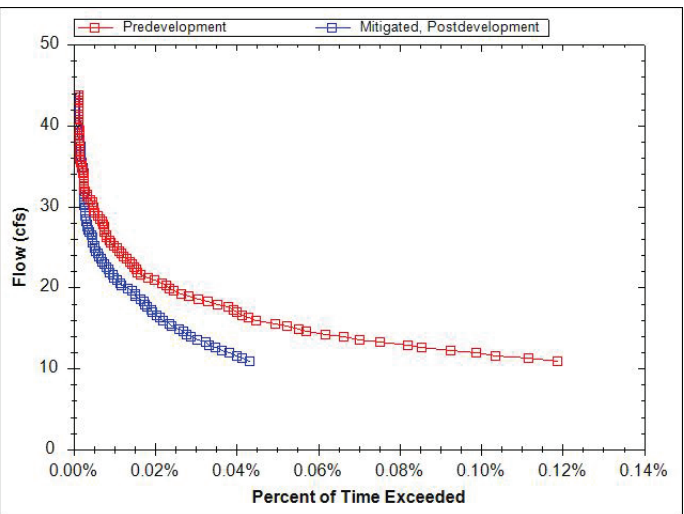
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	12.5
Upper Orifice Invert(ft)	4.7
Upper Orifice Dia (in)	28.8
Overflow Weir Invert(ft)	6.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



Simple Pond Geometry Configuration

Pond ID: Pond L

Design: FlowControlAndTreatment

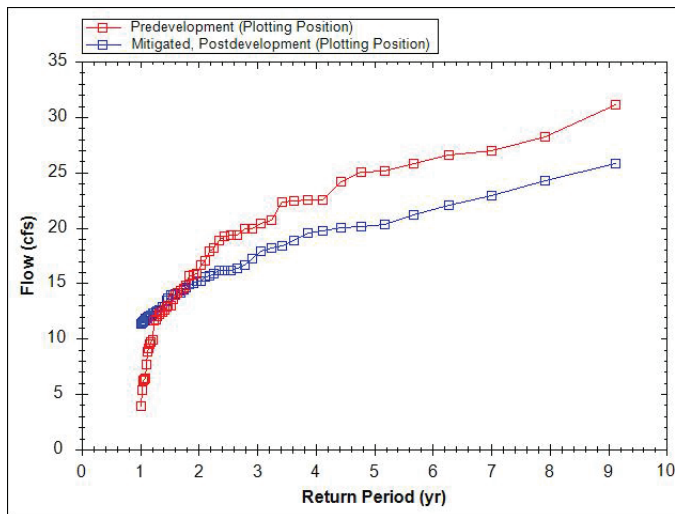
Shape Curve

Depth (ft)	Area (sq ft)
7.0	43,873.0

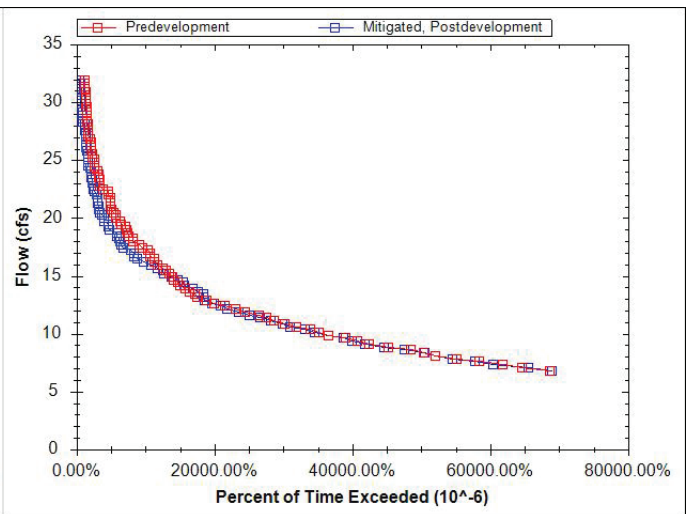
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	9.9
Upper Orifice Invert(ft)	4.7
Upper Orifice Dia (in)	25.2
Overflow Weir Invert(ft)	6.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



Simple Pond Geometry Configuration

Pond ID: Pond F

Design: FlowControlAndTreatment

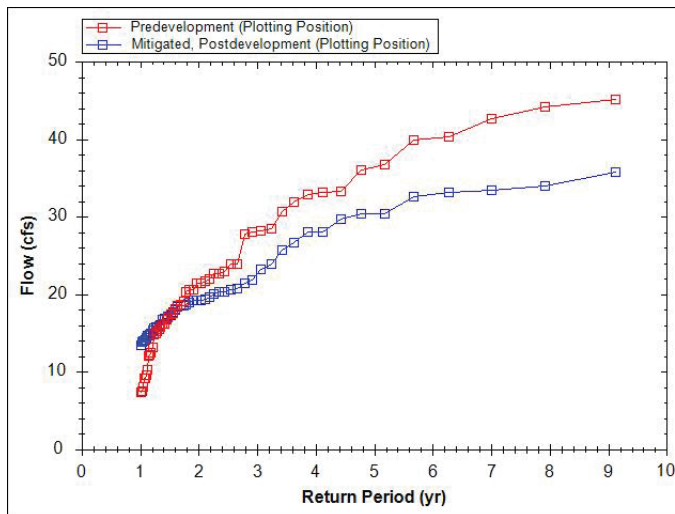
Shape Curve

Depth (ft)	Area (sq ft)
7.0	39,090.0

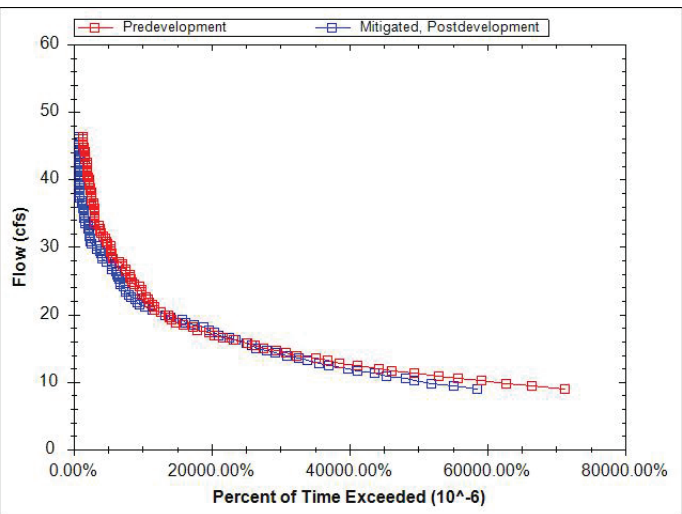
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	11.4
Upper Orifice Invert(ft)	4.7
Upper Orifice Dia (in)	30.7
Overflow Weir Invert(ft)	6.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



Simple Pond Geometry Configuration

Pond ID: Pond H

Design: FlowControlAndTreatment

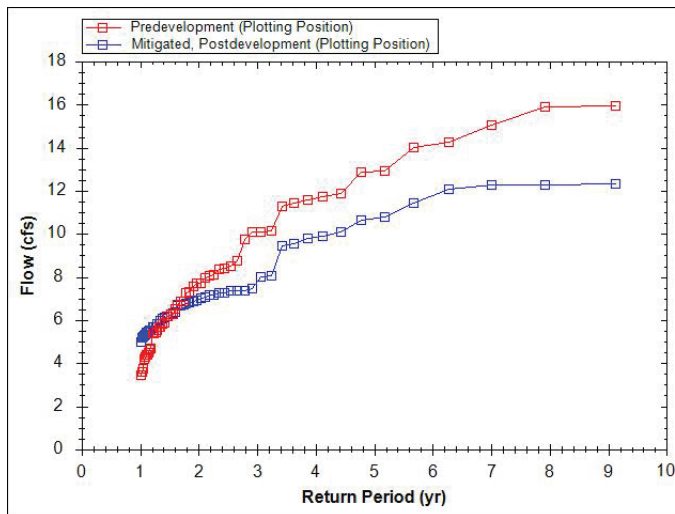
Shape Curve

Depth (ft)	Area (sq ft)
7.0	17,292.0

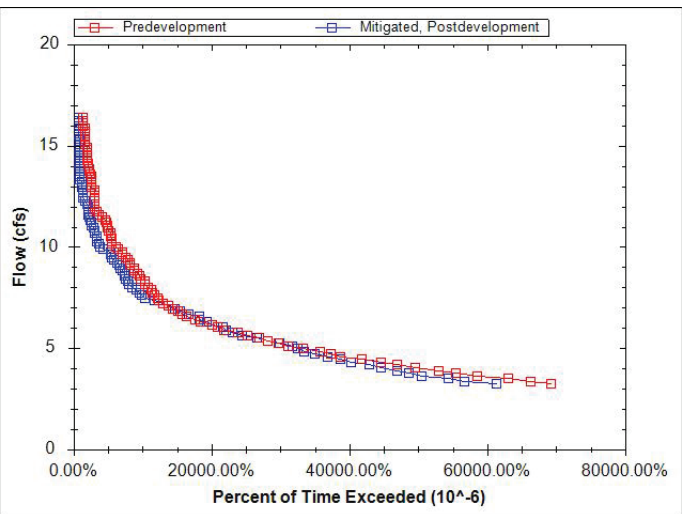
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	6.8
Upper Orifice Invert(ft)	4.7
Upper Orifice Dia (in)	18.2
Overflow Weir Invert(ft)	6.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



Simple Pond Geometry Configuration

Pond ID: Pond C

Design: FlowControlAndTreatment

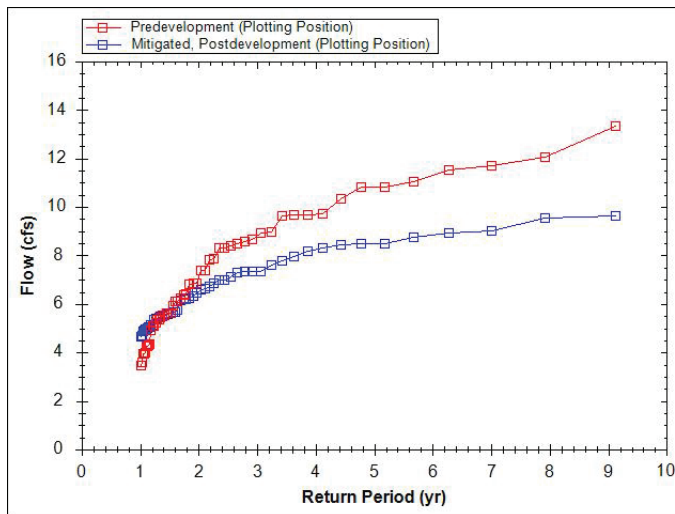
Shape Curve

Depth (ft)	Area (sq ft)
7.0	26,111.0

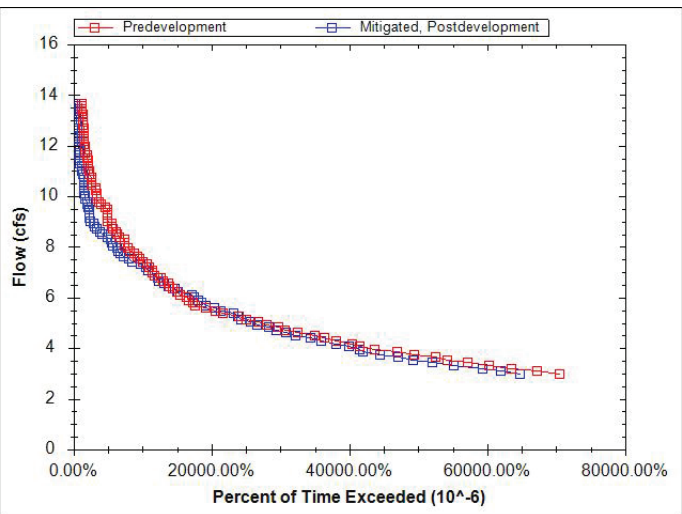
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	6.6
Upper Orifice Invert(ft)	4.7
Upper Orifice Dia (in)	16.4
Overflow Weir Invert(ft)	6.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



MEMORANDUM

Pleasant Valley Downtown District - Update Pleasant/Valley North Carver Comprehensive Plan

DATE January 13, 2020
TO Project Committees
FROM Project Team

Attachment A of this memorandum is an updated graphic for the Pleasant Valley Downtown District. This graphic is an update to the illustration previously prepared and shown in committee meetings to date. The updates include:

- Updated land use to match the draft Land Use Map (also included as **Attachment B**).
- Additional illustrated connectivity to better convey the walkable blocks needed for a successful downtown district.
- Pictures that illustrate important downtown elements, such as a “civic anchor”.

The graphic is intended as an illustrated concept, not a required and specific plan. It is an illustration of the following policy, approved by the CAC in December.

LU-7.3: Pleasant Valley Downtown District

The Pleasant Valley/North Carver Comprehensive Plan identified a new mixed-use center located southwest of Hemrich Road and Foster Road. The vision for this center is that it is the future home of Happy Valley’s downtown, known as the Pleasant Valley Downtown District.

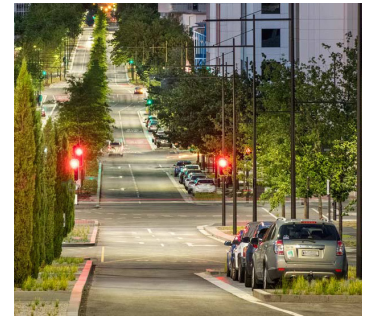
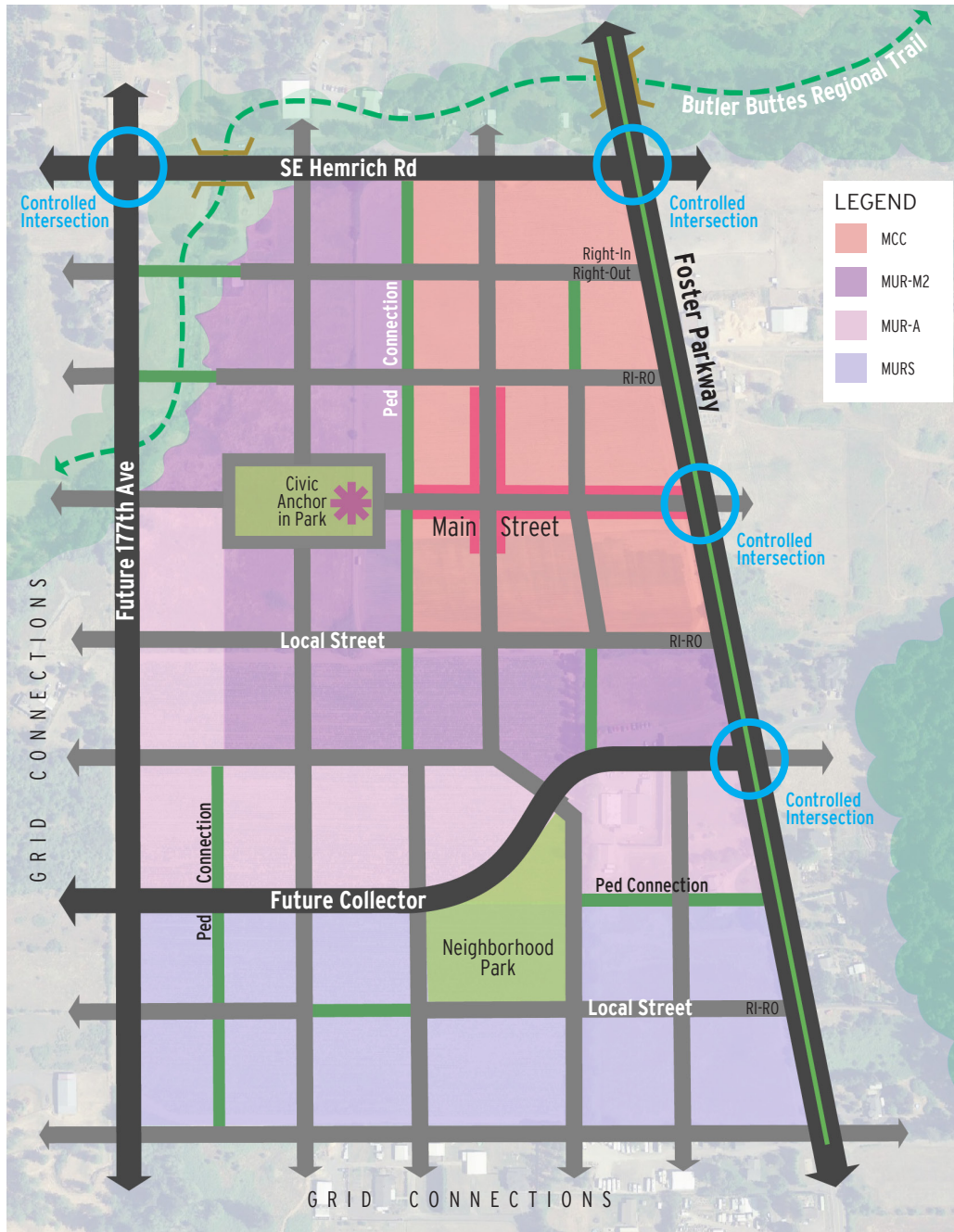
The Pleasant Valley Downtown District will include:

- A new Overlay Zone that guides the land uses, urban design, public spaces, local circulation, transition between uses and neighboring areas, community amenities, and other elements needed for a successful downtown.
- The requirements for a master plan for the downtown district properties.
- A mix of commercial, residential, employment and public uses.
- A mix of medium, high density and mixed use housing, such as apartments, condominiums, townhomes, triplexes and duplexes, and cottage clusters. The master plan will include a well-designed configuration of different housing types and densities, to emphasize variety and avoid concentrations of any particular housing type in any one location.

- Public uses. When the City is locating a new public use (e.g. library), or working with community partners to find a site for one, the City will consider the Pleasant Valley Downtown District. If possible, a public use shall serve as an “anchor” use for the Downtown.
- A Main Street. The Main Street will be a highly pedestrian-oriented and walkable street, through the heart of the downtown, implementing design guidelines described in the Overlay.
- Community gathering spaces such as plazas and parks.
- A network of walkable blocks, with on-street parking and buildings oriented to streets with ground floors well-designed for pedestrian activity.
- Safe, direct and convenient street and pedestrian connections to facilitate easy access to and from adjacent neighborhoods.
- Connections to the trail network.
- “Happy Valley Style” architectural design.

ATTACHMENT A

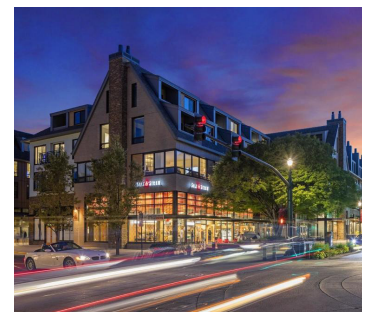
Pleasant Valley Downtown District



Parkway Edge



Gateway/Roundabout



Mixed-Use Main Street



Commercial Anchor



Integrated Neighborhood Park

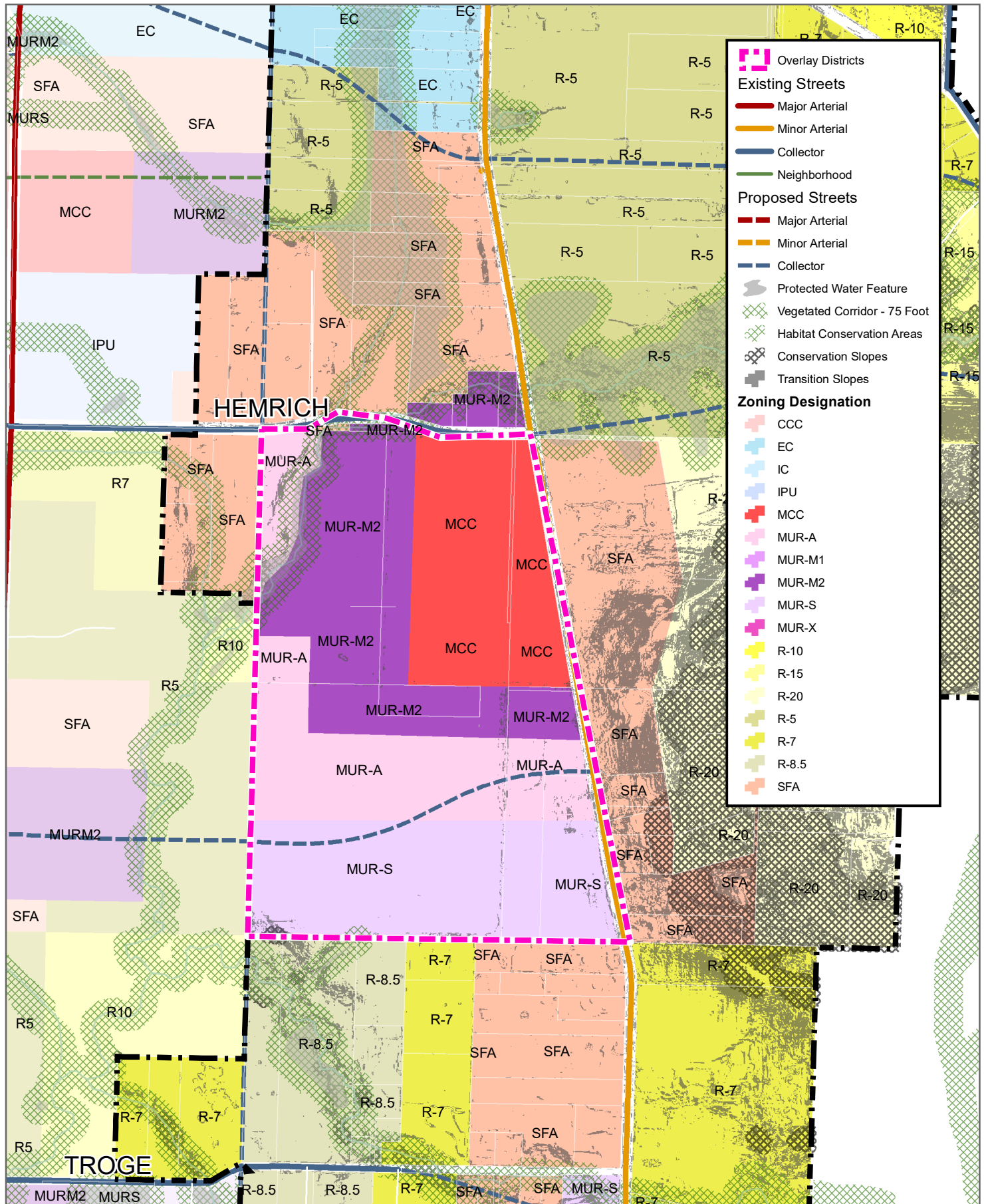


Multi-modal Walkability



Civic Anchor in Park

ATTACHMENT B



MEMORANDUM

Foster Parkway

Pleasant/Valley North Carver Comprehensive Plan

DATE January 6, 2020
TO Project Committees
FROM Project Team

This memorandum describes the recommended design concept for Foster Parkway. The Parkway design option with a multi-path on one side of Foster Road was supported by the Community Advisory Committee (CAC) at its June 20, 2019 meeting, with several design elements and comments unresolved at that time. This memo addresses those design elements and comments, and provides the guidance needed for the inclusion of the Parkway in the Happy Valley Transportation System Plan.

POLICY AND INTENDED OUTCOME

At its December meeting, the CAC approved the following Comprehensive Plan policy:

T-2.2: Foster Parkway

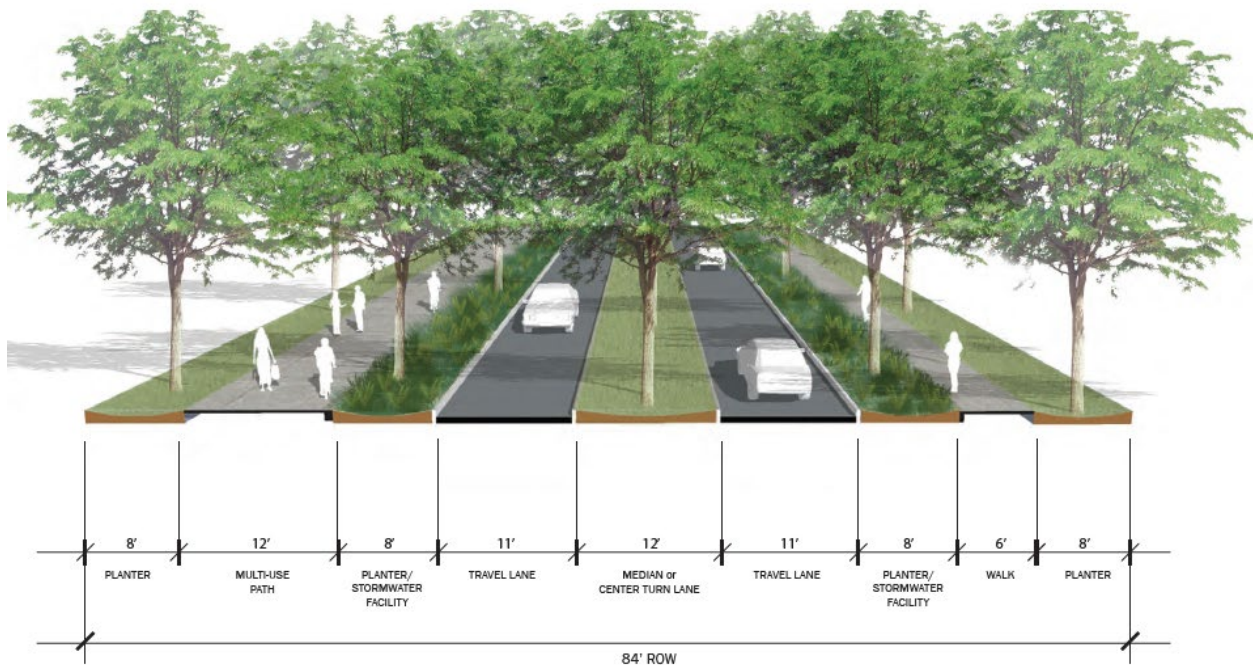
Foster Road, from approximately the 172nd-190th Connector to Vogel Road, will be designed and developed as a “Parkway” street. Foster Parkway is intended to accommodate all modes of travel along a safe and attractive street adjacent to the Pleasant Valley Downtown District and neighborhoods along Foster Road. Per the classification and cross-section adopted in the Transportation System Plan, it will be a three-lane Minor Arterial facility with additional landscaping, a planted median where feasible, and a separated multi-use trail. The section adjacent to the Pleasant Valley Downtown District will have features that support the more active pedestrian-oriented character of the area, as defined by the Pleasant Valley Downtown District Overlay. For example, sidewalks may include trees in tree wells, pedestrian-scale lighting and other pedestrian amenities.

The goal of the parkway design is to leverage Foster Road’s role as a gateway into the Pleasant Valley area and a special street that connects the neighborhoods in the area. The design will create a comfortable environment for walking, a safe facility for biking, and an aesthetically appealing experience for drivers. The parkway can also help to contribute to a unique identity for the Pleasant Valley area.

RECOMMENDED CONCEPT DESIGN AND RESPONSES TO COMMENTS RECEIVED

The recommended concept design is shown in Figure 1 below.

Figure 1. Recommended Foster Road Cross Section



The following statements describe the Parkway design concept, and address comments received to date.

1. "3-lane" Minor Arterial classification

- Traffic modeling confirmed two travel lanes are the roadway width needed for project traffic volumes. A 4-5 lane cross-section is not justified by the volumes, would increase costs significantly, and would reduce safety due to increased speeds.
- The center lane will be a planted median or turn pocket, as needed for site specific conditions. The final design will be coordinated with emergency service providers to ensure the ability to cross the median adequately.
- Based on its functional class, full-access intersections or driveways are allowed every 600' (300' for a right-in-right-out intersection).

2. Emergency parking areas

- Vehicle “pull-over” areas will be included to accommodate breakdowns and other emergency needs.

3. Extents of Parkway Section

- Northern Terminus: Approximately Childelin Road/city limits to provide a northern gateway into Happy Valley.
- South Terminus: Damascus Parkway/Vogel Road due to steep topography south of that key intersection.

4. Multi-use path

- A 12-foot (minimum) multi-use path will be provided on the west side of the Parkway. The west side provides a safe and convenient location for the majority of land uses (and path users) in the Pleasant Valley area.
- Final designs will consider the visibility and visual clearance for path users, particularly for vehicular right turns.

5. Travel lane width

- 12 feet to accommodate larger vehicles (e.g. trucks, buses) and shy distance next to the curb.

6. Flexibility in design, depending on land use context

- Adjacent to the Downtown District, the planter and sidewalk area will be an “urban” design to support pedestrian activity and visibility to adjacent commercial and mixed-use development. This may take the form of a wider sidewalk, trees in tree wells, pedestrian amenities, and pedestrian scale lighting. The design will be determined as part of the development of the Downtown District Overlay.
- At stream crossings, a reduced cross-section width may be considered to reduce the impact of crossings on natural resources. This may be accomplished by removing turn lanes (not needed at stream crossings) and/or street trees.
- Other adjustments may be made in response to topography and other site-specific conditions.

7. Storm water management

- To be determined.

MEMORANDUM

Options Considered for Employment Lands and North Carver Road Connections

Pleasant/Valley North Carver Comprehensive Plan

DATE January 6, 2020
TO Technical Advisory and Community Advisory Committees
FROM Project Team

This memorandum summarizes the options considered for two plan concepts for the Pleasant Valley/North Carver (PV/NC) Concept Plan:

1. Employment lands
2. North Carver area road connections

The intent of this memo is to document the options considered by the project committees and summarize the opinions that were voiced on these issues.

EMPLOYMENT LANDS

A Thorough Evaluation – Steps in the Process

The amount and location of employment lands, specifically lands for industrial and flex-space uses, was a challenging topic for the Community Advisory Committee (CAC). The CAC discussed the topic over many meetings, and, it was presented for community input at the April 2019 community workshops. The following is a brief summary of the steps in the process:

- **12/13/19:** The CAC¹ reviewed land needs projections.
- **1/24/19:** The CAC discussed locational considerations (north along Foster Road and south along Hwy 212) in relation to the overall need for jobs.
- **3/7/19:** The CAC reviewed initial land use designations and directed the project team to reconsider employment lands east of Foster Road, and look at additional lands in the Hwy 212 area.
- **April 2019 Community Workshops:** Three options for additional lands in the Hwy 212 area were shared with workshop participants.

¹ The Technical Advisory Committee (TAC) also reviewed the land needs projections, and, supported the CAC at each step.

- **6/20/19:** The CAC discussed options. They voted to: (1) not designate lands east of Foster Road as employment; and (2) not include lands outside the study area in the “Damascus triangle” area.
- **9/19/19:** Two CAC members noted for the record their concern with the amount of employment land decided in June, and their continued support for sufficient employment lands as an important part of the plan.

Key Issues Considered – Clear Employment Need, Challenging Locations

The employment need forecast, options considered, and issues associated with the options was summarized for the CAC in the packet for their 6/20/19 meeting. Excerpts from this packet are attached as an appendix to this memorandum. The key issues are summarized below:

- a. There was strong agreement regarding the general need and value of employment lands.
- b. There was agreement that the Metro 2040 Growth Concept Map was out of date and showed far too much industrial land, and in the wrong locations.
- c. Prior to evaluating locational options, the CAC supported the middle choice of a range of forecasted employment land need – “Scenario B” forecast of 134 net acres of industrial and flex-space needed.² Scenario B assumes construction of the Sunrise Expressway Phase 2 by 2040, and that it will be a catalyst for the development of employment lands along the corridor.
- d. The most challenging issue for the CAC was the location for employment lands.
 - CAC members generally agreed that the Hwy 212 corridor has better transportation access than the North Foster Road corridor/172-190th Avenue arterial corridor.
 - Some members felt strongly that the land on the east side of Foster Road, adjacent to the future 172nd-190th Avenue arterial was too close to future neighborhoods and would be incompatible with those residential uses.
 - It was stated that the northern end of Foster Road was a gateway to Happy Valley and that employment uses were not a good choice for the gateway.
 - Some members were supportive of the employment lands east of Foster Road, emphasizing that the uses can and will be compatible, due to changing employment trends and Happy Valley’s zoning and design standards.
 - Of the three southern options evaluated, there was little support for the Bel Air north area (many ownerships, currently low density residential) and Damascus Triangle area (outside of study area). The Richardson View area also had little support (difficult transportation access, isolated from Hwy 212).
- e. The members supporting more employment emphasized the importance of a jobs-housing balance and adopting strategies to reduce the “out-commuting” that takes place in Happy Valley and Clackamas County.

² Pleasant Valley/North Carver Comprehensive Plan, Employment Land Needs Projection, FCS Group, December 5, 2019. The range of industrial and flex-space scenarios were: Scenario A – 33 acres, Scenario B – 134 acres, and Scenario C – 194 acres.

NORTH CARVER ROAD CONNECTIONS

The two options illustrated in the maps below were suggested at several CAC meetings, but not included in the recommended plan. They show SE Tong disconnected from Highway 212 at its current (unsafe) intersection. New streets would provide connections to Hwy 212 at Anderegg/172nd and/or 187th. Figure X shows the refined land use plan of the southern half of the PV/NC area for context, and Figure X shows the alternate alignments.

Figure 1. North Carver Road Connections Context (Refined Land Use Plan)

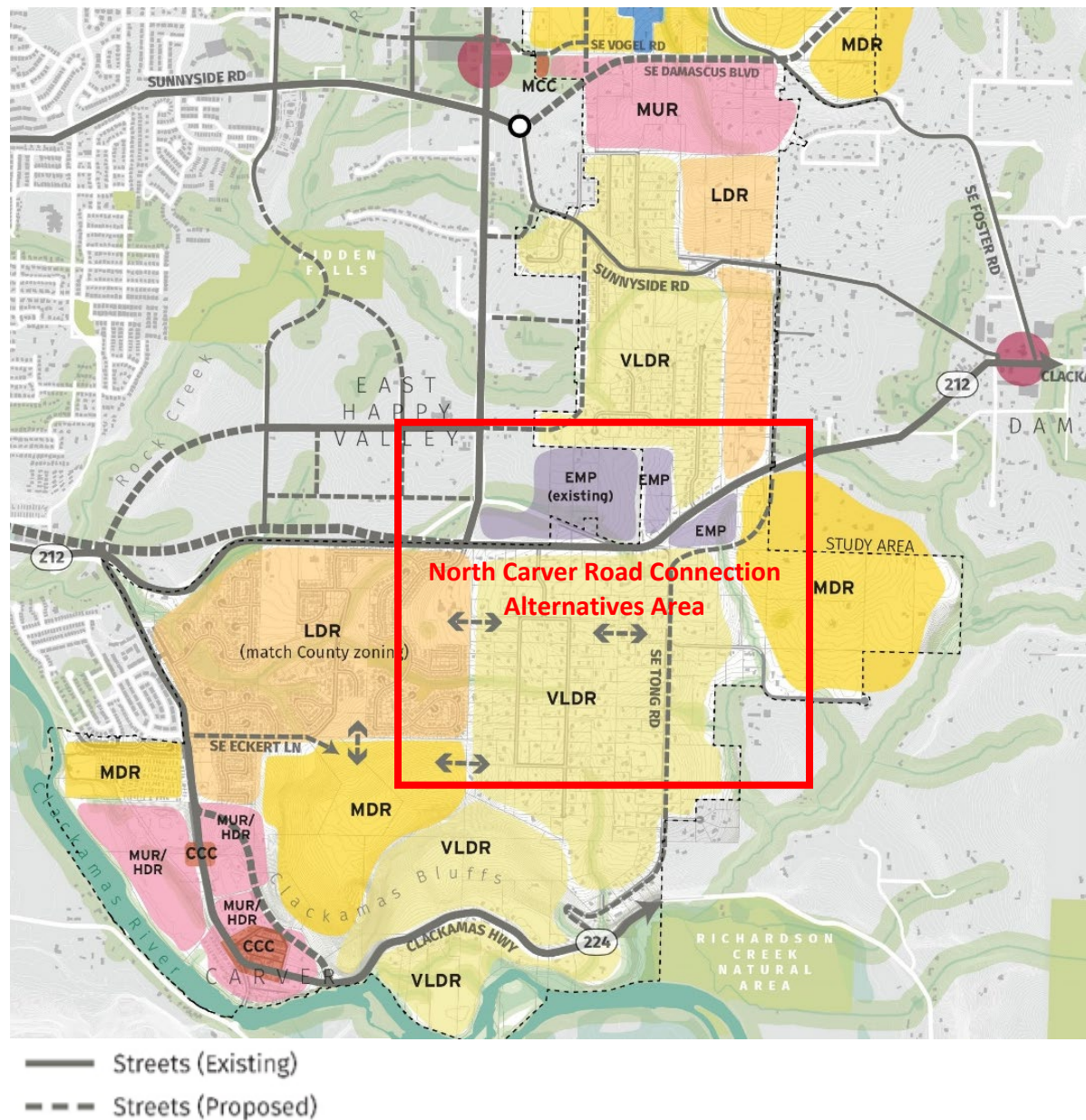
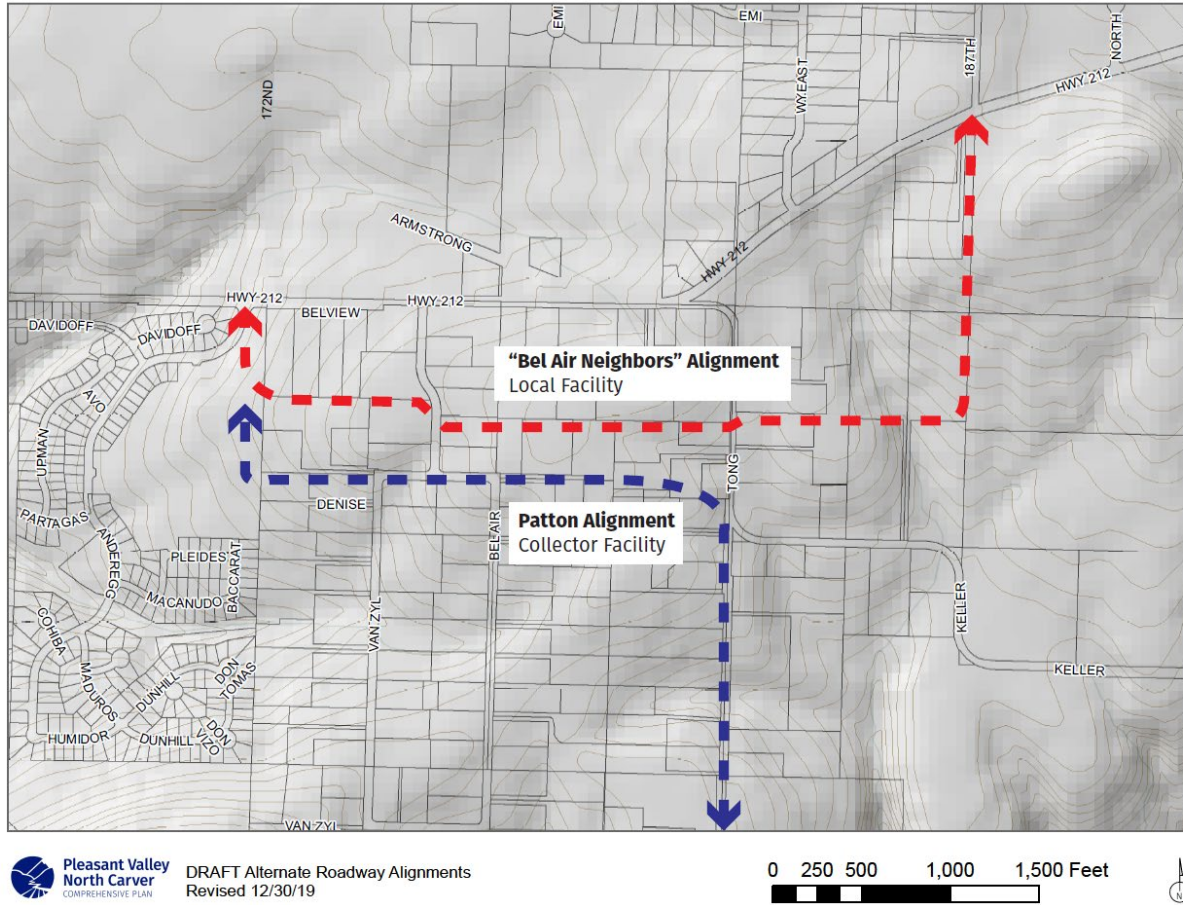


Figure 2. North Carver Road Connection Alternatives



APPENDIX A

Summary of Employment Lands Information

(Excerpt from June 20, 2019 CAC Packet)

Local Jobs and Commutes

Office and industrial developments in the PV/NC plan area are also needed to foster local jobs and economic development and allow for shorter commute distances for local residents. Today, most Happy Valley residents must travel outside the City, and perhaps for long distances, to access employment centers in other parts of the region. This commuting pattern contributes to traffic congestion and can reduce livability for local residents. By designating land in the PV/NC plan area for employment uses, it will eventually provide more opportunities for residents to find employment near where they live, which can reduce commute distances and associated traffic volumes.

Land need projection

The PV/NC Employment Land Needs Projection—completed by FCS Group and discussed at the advisory committee meetings on December 13, 2018—presented three scenarios for projected demand for employment land in the plan area through 2040. The scenarios represented a range of growth rates in local employment, from 3.9% under Scenario A, 7% under Scenario B, and 10.1% under Scenario C.

Scenario B, the midpoint of the range, was selected by the Community Advisory Committee as a planning target for the PV/NC plan on the recommendation of FCS group. Scenario B is most consistent with emerging market conditions, due to increasingly limited industrial development opportunities in Clackamas County and other employment areas. Scenario B reflects enhanced business attraction that would be afforded by completion of the Sunrise Expressway Phase 2 improvements to Highway 212.

The Scenario B growth projection equates to a need for approximately 133 net buildable acres of employment land in the PV/NC plan area (see Table 1, employment uses correspond to “General Industrial & Flex”). A minor adjustment is necessary to account for a change in the boundary of the plan area that occurred after the land needs projection. Accordingly, the remaining need for employment land in the plan area is approximately 116 net buildable acres.

Table 1. Employment Land Needs Projections

Land Use Classification	Scenario A	Scenario B	Scenario C
Commercial (retail, office, lodging)	23.7	27.2	39.5
General Industrial & Flex	33.0	133.6	193.5
Public & Education (excl. open space & parks)	23.0	41.8	60.3
Total (unconstrained acres)	79.7	202.6	293.4

Source: FCS Group, Employment Land Needs Projections Memo (December 5, 2018)

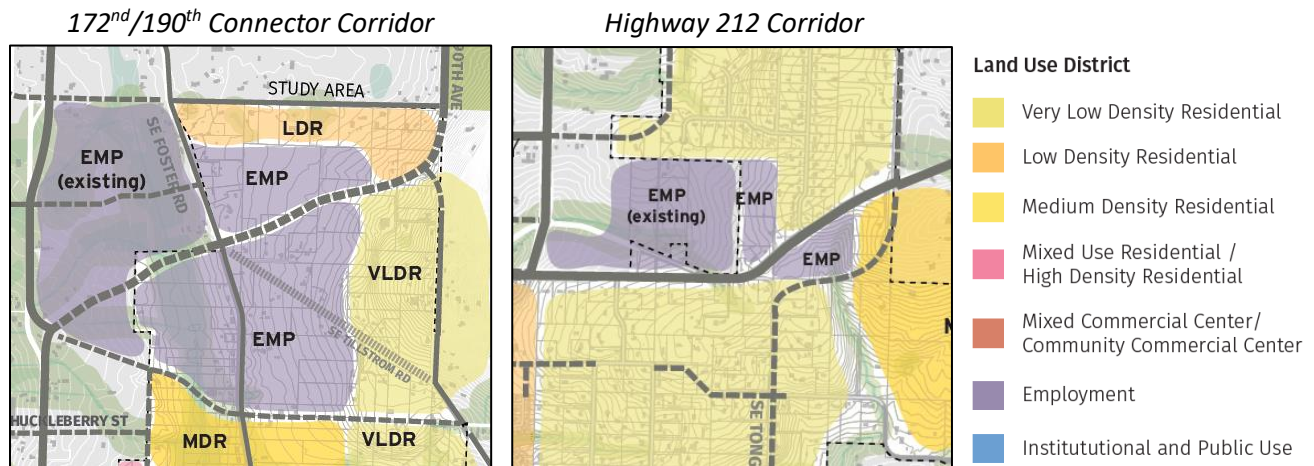
Alternative employment areas considered to date

The project team has worked with the advisory committees to identify potential employment areas in the PV/NC plan area, guided by the Metro Title 4 map, the land need projection, and consideration for the features that make lands suitable for employment development.

An initial employment area alternative was presented to the advisory committees at the March 7, 2019 meetings (Figure 2). This alternative designated the majority of the employment areas in the northern portion of the plan area, centered on the future 172nd/190th connector corridor. A small amount of

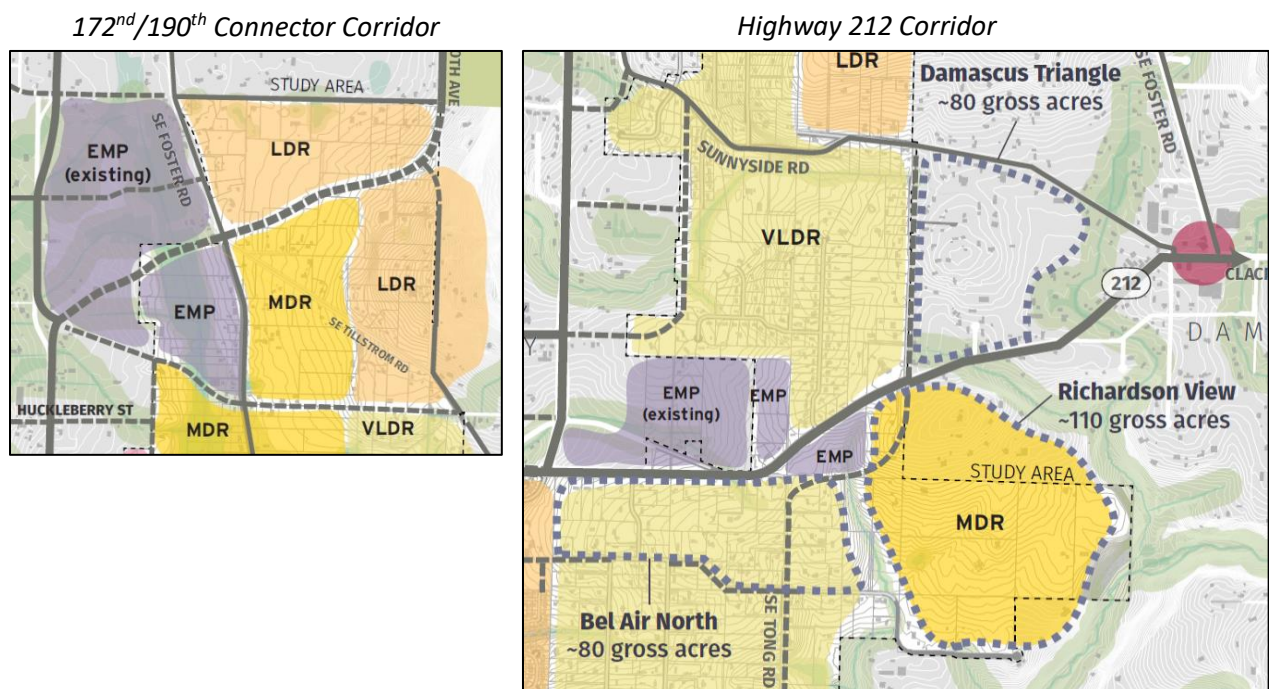
employment land was designated along the Highway 212 corridor to the south. The consensus of the CAC was that the area around 172nd/190th and Foster Road was less suitable for employment uses than areas to the south, which had better transportation access from Highway 212. The direction was to prepare a revised alternative that focused on areas to the south with access to Highway 212.

Figure 2. Alternative 1 - Northern Area Focus (March 2019)



A revised alternative was presented to the community at the public workshops and online workshops in April of 2019 (Figure 3). This alternative included a smaller employment area in the north and identified three options for a larger employment area in the south along Highway 212.

Figure 3. Alternative 2 – Southern Area Focus (April 2019)



Workshop participants were asked about their level of support for each of the three options for employment areas in the Highway 212 corridor. At the in-person workshops, there was the highest level of support for the Damascus Triangle area, followed by Richardson View. The Bel Air North area had the least support among workshop participants. The majority of respondents to the online workshop opposed employment uses in any of the three areas. Among those who did support employment uses in one of the three areas, the support was relatively evenly divided among the three options.

Options for CAC Consideration

The project team has considered the feedback from the public workshops and created two options for the CAC to consider related to employment lands.

Option A

Option A proposes to designate a total of approximately 150 gross acres of employment land, with 120 acres along the 172nd/190th Connector and 20 acres along Highway 212 (Figure 5). This option is similar to the option proposed at the March 7th committee meetings, but the northern area is slightly smaller and focused on the 172nd/190th Connector corridor.

Option B

Option B proposes to designate a total of approximately 150 gross acres of employment land, with 85 acres along the 172nd/190th Connector and 65 acres along Highway 212 (Figure 6). This option involves expanding the plan area boundary to include a portion of the Damascus Triangle area. As illustrated in Figure 4, the employment area is shaped to apply to lands that are (1) relatively flat and less constrained by stream corridors or wetlands and (2) concentrated into larger parcels, which make the land more likely to develop for employment uses.

Figure 4. Proposed Damascus Triangle Employment Area (Option B)

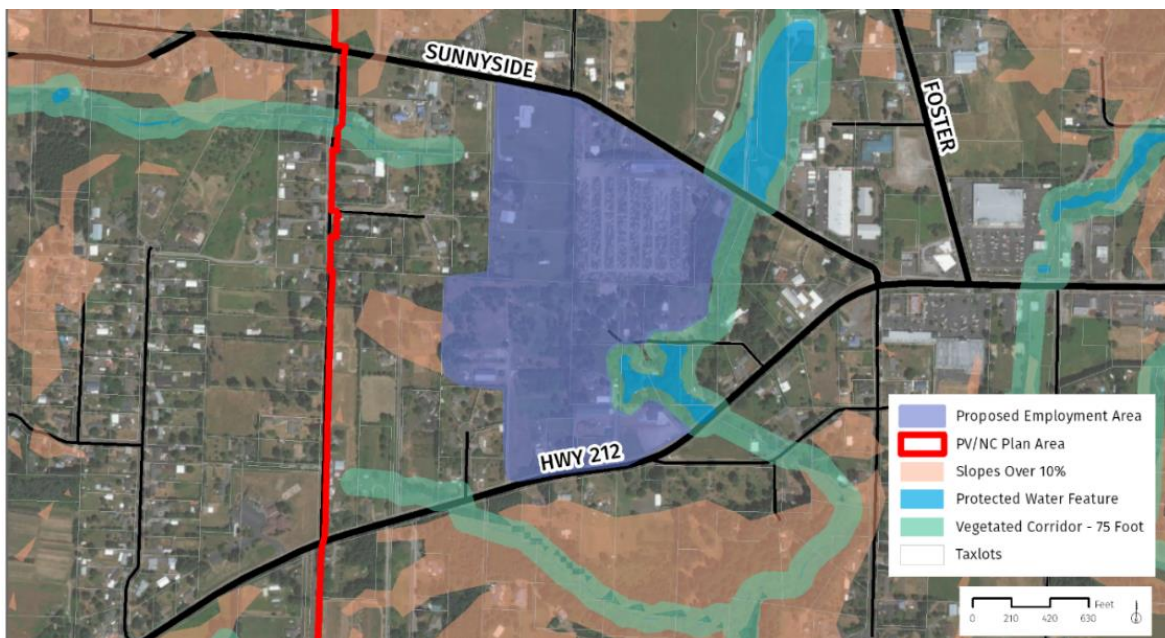


Figure 5. Option A - Proposed Employment Areas

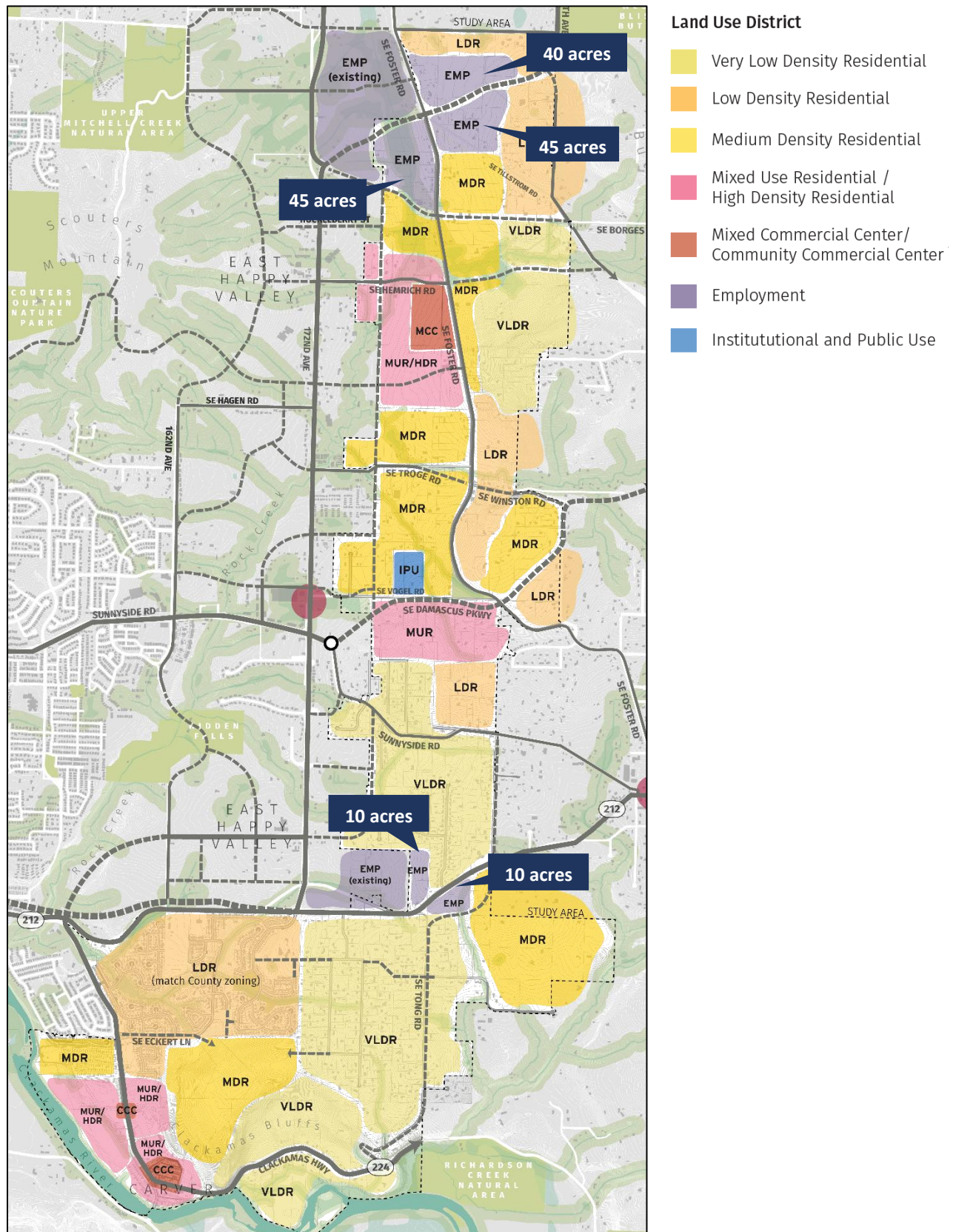
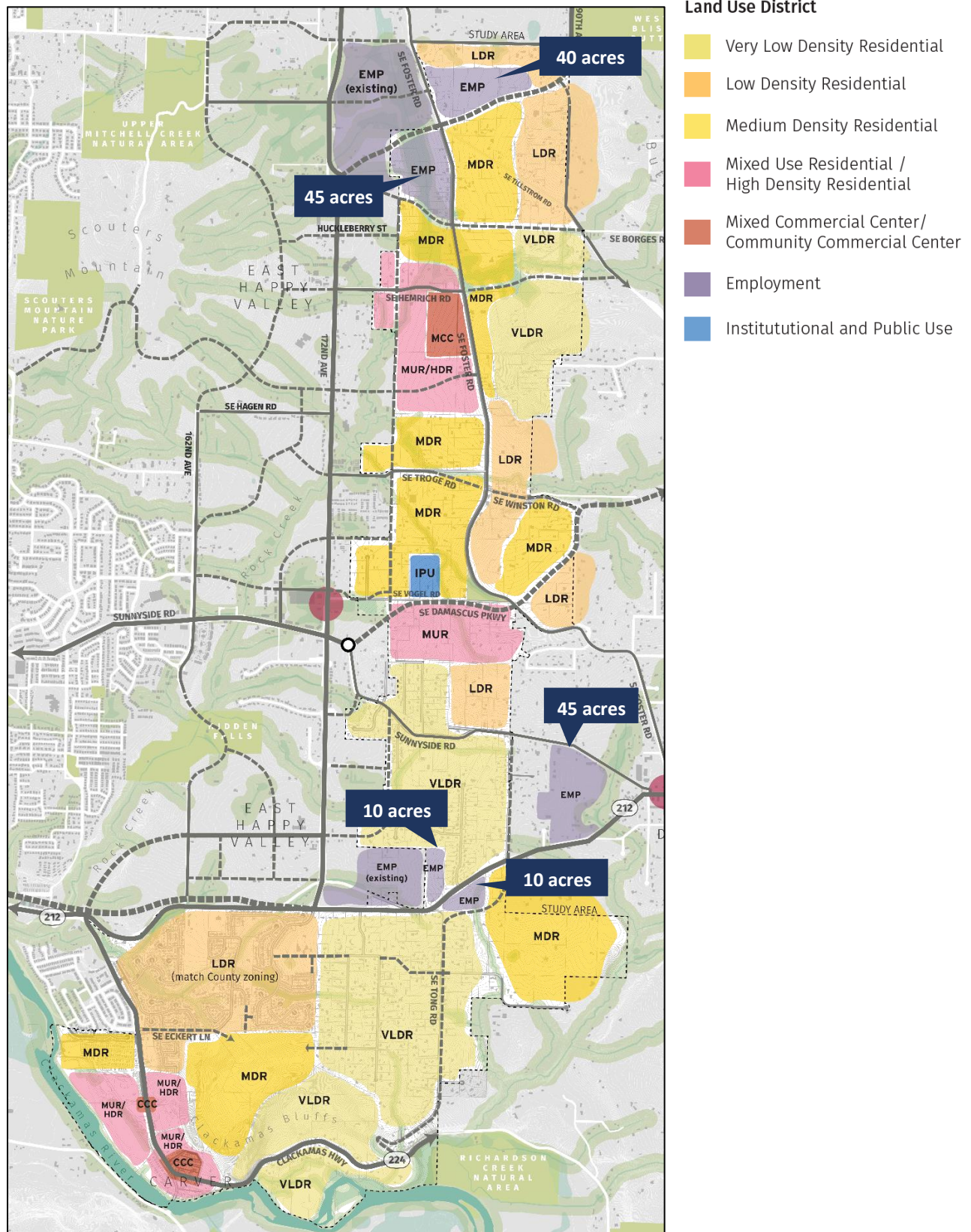


Figure 6. Option B – Proposed Employment Areas



Assessment

The size of each employment area, in gross acres, is identified in Figure 5 and Figure 6. In total, both options would provide approximately 150 gross acres of employment lands. Considering land that is constrained by natural resources or slopes and land needed for public facilities, we estimate this would provide approximately 90-110 net buildable acres of employment lands. As described above, the planning target for the area, based on the Scenario B growth forecast, was 116 net buildable acres. The project team recommends accepting the acreage under either Option A or Option B as a reasonable fulfillment of this target given the challenges associated with identifying suitable employment lands in the plan area and long-range nature of the employment growth forecast.

The key difference between Option A and Option B is whether 45 acres of employment land is designated in the Damascus Triangle area, outside the current plan area boundary, or along the 172nd/190th Connector, near the current intersection of Foster Rd. and Tillstrom Rd. (we refer to this area as “Tillstrom Area” below). An assessment of the relative advantages and disadvantages of each of these areas is provided in the table below.

Criteria	Option A – Tillstrom Area	Option B – Damascus Triangle
Road Access	<ul style="list-style-type: none">• Adjacent to 172nd/190th Connector, which is part of long-term regional north-south route (“Columbia to Clackamas” corridor).• Further from existing industrial areas and major roadways.	<ul style="list-style-type: none">• Adjacent to Highway 212, which is planned for major improvements as part of the Sunrise project.• Closer to existing industrial areas along Highway 224.
Development Feasibility	<ul style="list-style-type: none">• Very few areas with >10% slope• No natural resource constraints.• Approximately 15 properties, average parcel size of 3.8 acres.	<ul style="list-style-type: none">• Very few areas with >10% slope• Some natural resource constraints along the eastern edge of area.• Approximately 20 properties, average parcel size of 2.5 acres, two large properties (9 and 12 acres) account for about 45% of the area.
Land Use Compatibility	<ul style="list-style-type: none">• Adjacent to proposed employment areas in East Happy Valley and within PVNC plan area.• Adjacent to planned MDR and LDR areas to east and south. Slopes to the east may provide some natural buffer.	<ul style="list-style-type: none">• Not adjacent to any planned employment areas but includes a larger existing commercial/industrial use (salvage yard).• Adjacent to properties to the west that would likely be designated residential.
Other		Outside the current plan area boundary. If the CAC supports this option, the project team recommends: (1) increasing the project area boundary; (2) initiation of public information and involvement by residents in the expanded area; and, (3) consideration of Very Low Density Residential zoning in the area between the current boundary and the proposed employment area