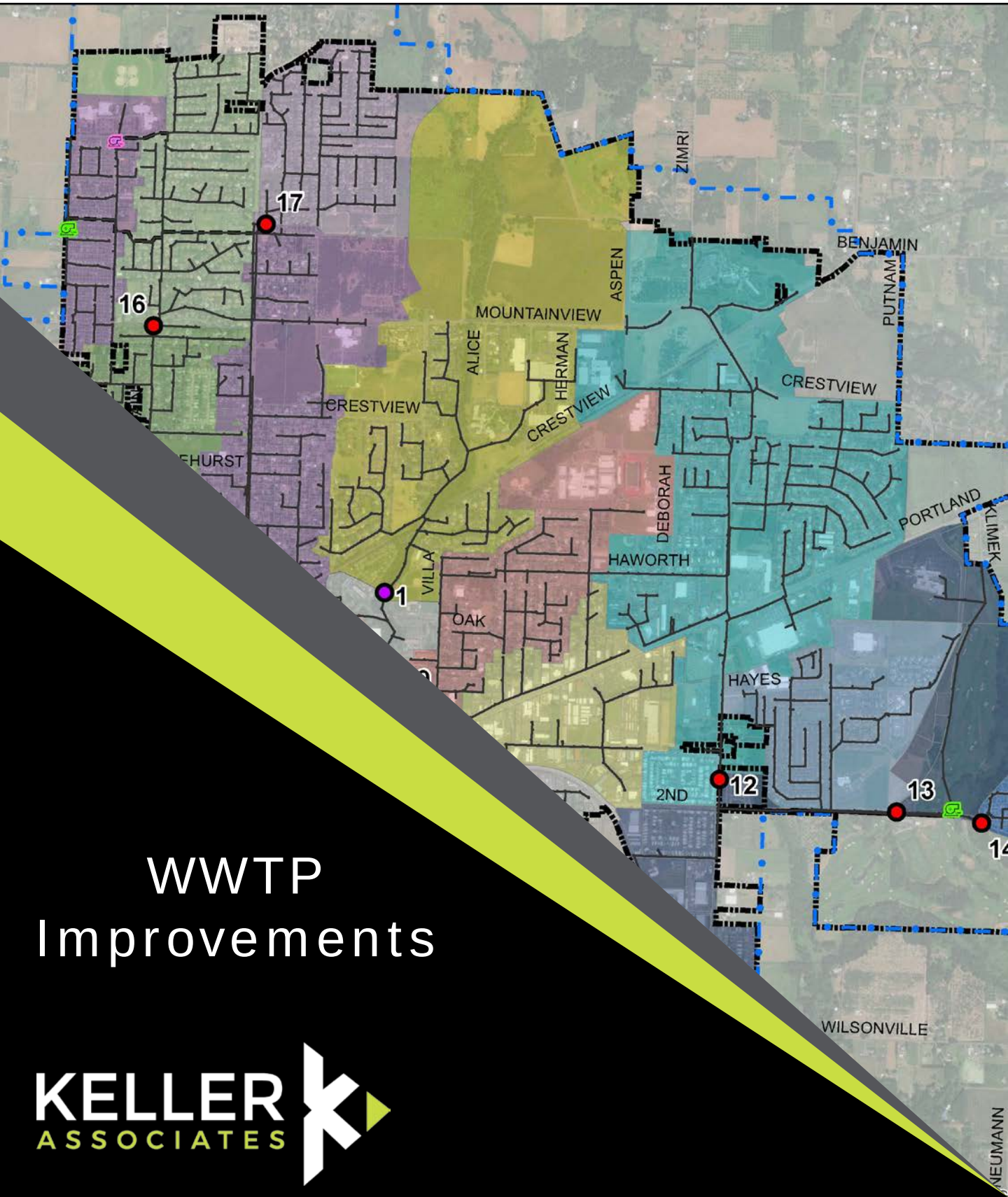
City of Newberg
OREGON

Appendix I



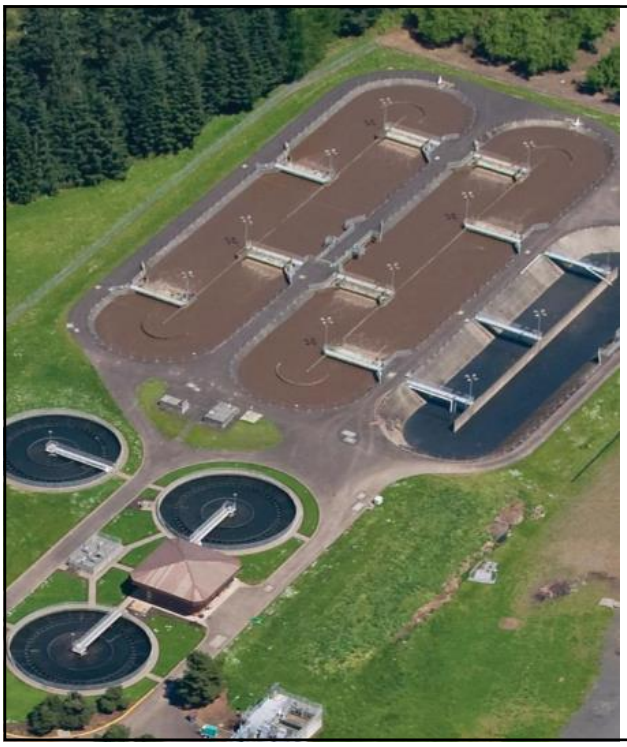
WWTP Improvements

KELLER ASSOCIATES

SECONDARY PROCESS DISCUSSION

City of Newberg WWTP
Wastewater Master Plan

Monday April 24, 2017



01 Recap

02 Flows and Loads

03 Technology Options

PURPOSE OF WORKSHOP

- Provide an overview of numerous secondary treatment alternatives to meet planning period
- Shortlist 3 alternatives to detail for Master Plan

01 RECAP

HISTORICAL TIMELINE

- Sewerage Master Plan Update, June 2007
- Facilities Plan Update, Revised October 2007

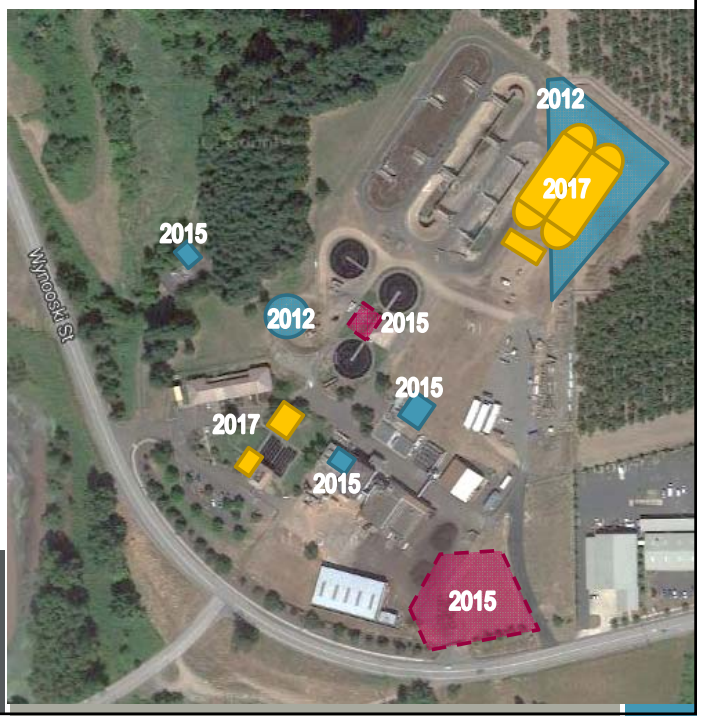
- Technologies Considered 2007

Alternative 1: Conventional oxidation ditch
Alternative 2: Vertical loop reactors (VLR) oxidation ditch
Alternative 3: Cannibal
Alternative 4: Membrane bioreactors (MBRs)

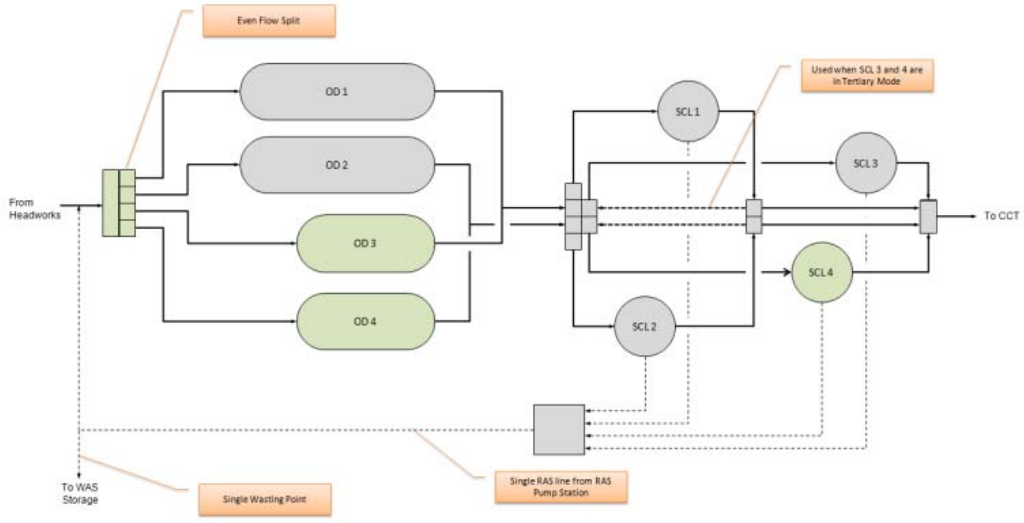
Newberg City 2040 Wastewater Expansion Pr

HISTORICAL TIMELINE

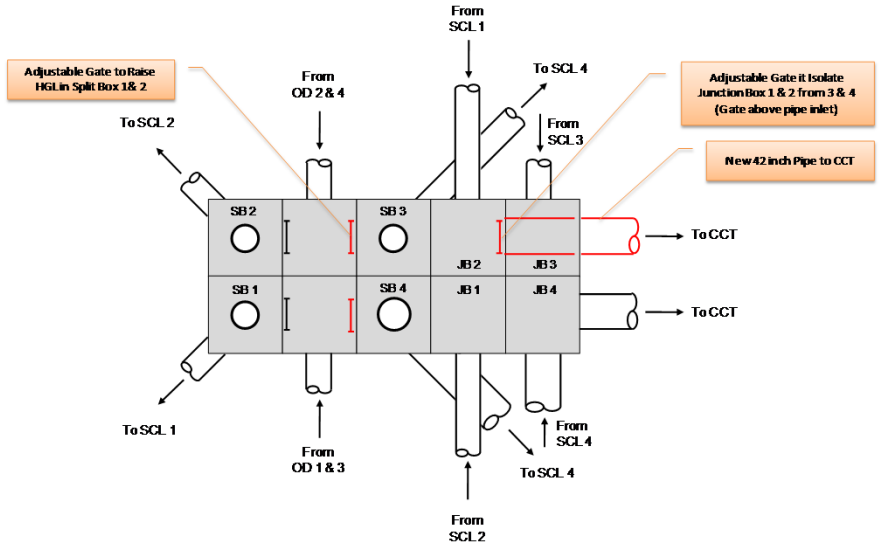
- Sewerage Master Plan Update, June 2007
- Facilities Plan Update, Revised October 2007
- Preliminary Design Report, July 2012
  - 2 new straight wall oxidation ditches
  - New RDS/RAS split box
  - New blower building
  - 2012 Cost = $14,650,000



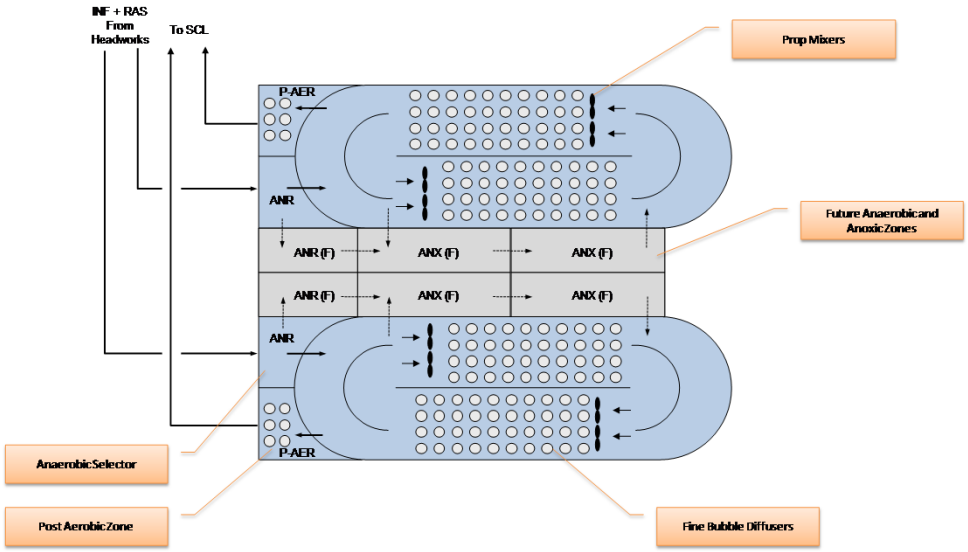
EXISTING LIMITATIONS



EXISTING LIMITATIONS



EXISTING LIMITATIONS



EXISTING LIMITATIONS

- Oxidation Ditches
  - Original Design Capacity
  - Today operated as Conventional Activated Sludge
- Secondary Clarifiers
  - Typical peak loading rate of 1,200 gal/sf/d (max. 24.1 mgd)
  - Max solids load limits MLSS
- Equalization basin leaking
- Reliability and resiliency
- Peak flow management

EXISTING LIMITATIONS

- Clarifiers:
  - 5,000 sf each
  - 24 mgd peak flow @ 1,200 gal/sf/d
  - Max MLSS @ 700 gal/sf/d and 25 lb/sf/d = 2000 mg/L
- Oxidation ditches
  - Max BOD Load @ 2000 mg/L and 12 day SRT = 8,000 lb/d
  - Max Oxygen supply: 2 lb/hp/hr = 19,000 lb/d

02 FLOW AND LOADING PROJECTIONS

WW MASTER PLAN PROJECTIONS

- Uses current flows/loadings and recent population growth projections

Parameter	Unit	2017				2037			
		AAD	**MMDW**	**MMWW**	**PD**	**AAD**	**MMDW**	**MMWW**	**PD**
INF Flow	MGD	3.50	4.73	9.98	21.9	5.28	7.13	13.0	**25.9**
INF TSS	lb/d	5,950	8,000	10,150	20,000	9,000	12,050	15,300	30,100
INF BOD	lb/d	3,300	4,300	6,550	7,450	4,950	6,500	**9,850**	11,250
INF NH4	lb/d	370	450	460	550	550	680	690	830

TREATMENT REQUIREMENTS

Parameters	Current Discharge Requirements	2037 Planning Period
Effluent Requirements		
Dry-Weather (May 1-October 31)		
$cBOD_5$, monthly/weekly averages (mg/L)	10/15	10/15
TSS, monthly/weekly averages (mg/L)	10/15	10/15
Wet-Weather (November 1 to April 30)		
$cBOD_5$, monthly/weekly averages (mg/L)	25/40	25/40
TSS, monthly/weekly averages (mg/L)	30/45	30/45
Year-Round Requirements		
cBOD5 and TSS Removal Efficiency	85% Removal	85% Removal
Total Phosphorus (mg/L)	NA	1.0
Toxics (mg/L)	NA	NA[2]

03 TECHNOLOGY OPTIONS

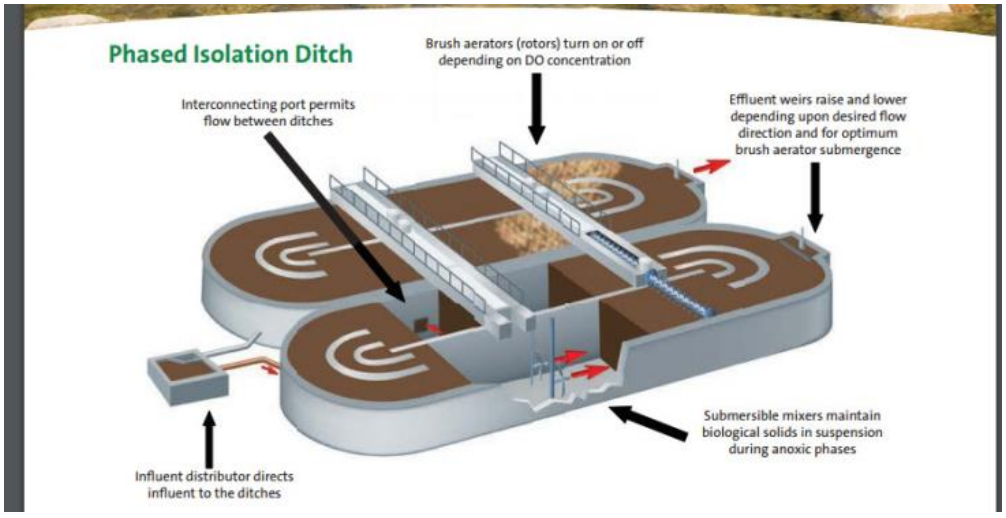
OXIDATION DITCH

- OD = Operated as activated sludge with long SRT (>20 days) and long HRT (24 - 48 hours)
- Low yield
- Low oxygen update rate
- Low O&M requirements (hands-off operation)
- Surface aeration
- Shallow basins (12 ft)

OD – OXYSTREAM WESTECH

OXIDATION DITCH – ORBAL (EVOQUIA)

OD – PHASED ISOLATION D. (KRUGER)



OD – SCREIBER

OD – BIOLAC (PARSON)

OD – MORE OF THE SAME

- Add diffusers
- Contact stabilization options
- Equalization basin

CONVENTIONAL ACTIVATED SLUDGE

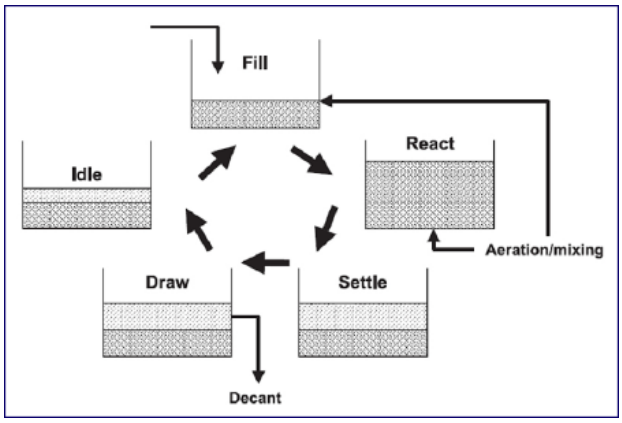
- SRT = f(effluent requirements or targets)
- Fine bubble diffusers
- Deeper basins
- Higher MLSS
- Higher yields
- Higher OUR
- Custom Solutions to fit site and effluent requirements

CAS – SILVERTON, OR

CAS – COLUMBIA FALLS, MT

SEQUENCING BATCH REACTORS (SBR)

- Activated sludge process
- No clarifiers needed
- Usually fill and draw cycles
- Square or round basins
- Fine bubble diffusers
- Longer sludge ages



SEQUENCING BATCH REACTORS (SBR)

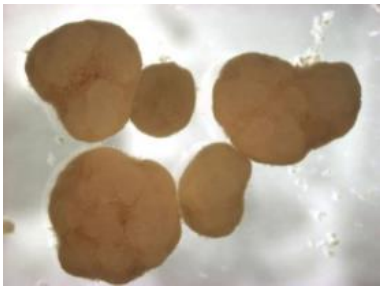
MOVING BED BIOFILM REACTOR (MBBR)

- Biofilm Process
- No EBPR
- No clarifiers, no RAS
- Filter or DAFT for solids retention
- Compact process
- Could take peak flows
- Capacity = f(fill rate)

MBBR

GRANULAR ACTIVATED SLUDGE

- Granular sludge
- No clarifier
- SBR operation
- Small footprint
- Good nutrient removal



GRANULAR ACTIVATED SLUDGE

OTHER OPTIONS

- Adding Primary Treatment (i.e. salsness filter)
- Large equalization basin/pond
- CAS with BOD removal only
- Control peak flows outside of plant
  - I&I control?

SUMMARY

- Clarifiers remain main bottleneck
- Rerating clarifiers can increase capacity up to hydraulic limit
- Brush aerators limiting oxygen supply
- Oxidation ditches operate well above original design capacity
- Decision – expanding existing or adding parallel process
- Adding parallel process simpler and easier to expand in the future

Meeting Minutes

Project:	City of Newberg Wastewater Master Plan Update
Subject:	Secondary Process Expansion
Date:	Monday, April 24, 2017
Location:	Newberg WWTP
Attendees:	Kaaren Hofmann, Newberg Craig Pack, Newberg Terry Hinzman, Newberg Ed Thomas, Newberg Sean Surcamp, Newberg April Catan, Newberg Karen Bill, HDR Mario Benisch, HDR

Meeting Purpose

The objective of this workshop was to discuss the development of alternatives for secondary treatment expansion. The goals of the meeting were 1) provide overview of numerous alternatives to meet planning period and 2) narrow alternatives to the top three for further analysis.

Meeting Summary

Overview:

- Provided recap of secondary treatment alternatives considered in 2007 Facilities Plan Update and 2012 Predesign Report
- Discussed existing limitations
    - Secondary clarifier hydraulic loading rate – recommend rerating
        - City comment that solids washout can occur at MLSS of 2,000-2,500 mg/L
    - Oxygen transfer limitation
    - City comment that oxidation ditch hydraulics is the biggest concern
- Review of planning projections and treatment requirements
- Operational considerations
    - City wants to continue to operate in nitrification mode
    - Expansion can either add a parallel plant (new technology) or integrate into the existing process (additional oxidation ditch)
    - Contact stabilization may

Technology Options:

- Oxidation ditch:
    - Reviewed many vendor provided systems compared to City's configuration
- Conventional activated sludge
    - City operates the existing oxidation ditches in a CAS-like mode
- Sequencing batch reactor (SBR)
    - Terry has experience with ABJ continuous flow SBR from previous job

        - Talked positively about the process
- MBBR
    - Biofilm process
    - Would operate as a separate from the existing oxidation ditches as a parallel process
    - Good alternative for peak flow treatment
    - City has some hesitation since they have no experience with it
- Granular Activate Sludge
    - Emerging technology in the US
    - Impacts to dewatering and composting are unknown at this time
    - SBR option could possibly be retrofitted with GAS in future
    - City has reservations do to the new technology in US and uncertain impacts to composting system
- A few other options were quickly discussed but were quickly dismissed (i.e. adding primary treatment or large equalization basin).

Decisions:

- Technologies shortlisted to:
    - Oxidation ditch expansion – expansion of existing process to maintain a single plant. Also will likely require additional secondary clarifiers.
    - SBR – Terry's past experience with the process is positive. SBR would eliminate the need for additional clarifiers, as it is an all-in-one approach.
    - MBBR – good option for peak flow management. OK, to keep in for evaluation.

CLASS 5 OPINION OF PROBABLE CONSTRUCTION COSTS

- Summary Sheet

Project	Newberg WW Master Plan Update	**Date**	13-Dec-17		
		Estimator	CLR		
Task	Cost Summary	**Checked By**	MB		
		Updated	KB	18-Jan-17	**HDR Engineering, Inc.**

Unit Prices updated based upon 20 City ENR Construction Cost Index Ratio — Ratio = 1.000

1.00 Future Date 1.00

			Total ($)
Alternative 1B Oxidation Ditch			
includes:			
Secondary Clarifier Rerating Study (added after construction Subtotals)			
Oxidation Ditch		$	4,630,000
Blower Building		$	1,540,000
Secondary Clarifier and RAS Pump Station		$	4,060,000
	Subtotal A	**$**	**10,230,000**
Mobilization, Bonds, and Insurance	**5%**	$	510,000
Contractor's Overhead and Profit	**15%**	$	1,530,000
	Subtotal B	$	12,270,000
Miscellaneous Items and Contingencies	**25%**	$	3,070,000
	Subtotal C	$	15,340,000
Design Engineering	**10%**	$	1,530,000
Engineering Services During Construction	**8%**	$	1,230,000
Construction Management and Inspection	**5%**	$	770,000
Other Indirect Costs	**5%**	$	770,000
	Subtotal D	$	19,640,000
Sales Tax	**0%**	**$**	**-**
	Subtotal E	**$**	**19,640,000**
Secondary Clarifier Rerating Study		$	60,000
	Total	**$**	**19,700,000**
Alternative 2 Sequencing Batch Reactor			
includes:			
SBR		$	10,040,000
Blower Building		$	1,540,000
	Subtotal A	**$**	**11,580,000**
Mobilization, Bonds, and Insurance	**5%**	$	580,000
Contractor's Overhead and Profit	**15%**	$	1,740,000
	Subtotal B	$	13,900,000
Miscellaneous Items and Contingencies	**25%**	$	3,480,000
	Subtotal C	$	17,380,000
Design Engineering	**10%**	$	1,740,000
Engineering Services During Construction	**8%**	$	1,390,000
Construction Management and Inspection	**5%**	$	870,000
Other Indirect Costs	**5%**	$	870,000
	Subtotal D	$	22,250,000
Sales Tax	**0%**	**$**	**-**
	Total	**$**	**22,250,000**

Alternative No. 3			
Moving Bed Bioreactor			
includes:			
Secondary Clarifier Rerating Study (added after construction Subtotals)			
Fine Screenings Upgrades		$	498,000
MBBR		$	4,121,000
Blower Building		$	1,540,000
Equalization Basin Structural Rehab		$	500,000
	Subtotal A	**$**	**6,659,000**
Mobilization, Bonds, and Insurance	**5%**	$	330,000
Contractor's Overhead and Profit	**15%**	$	1,000,000
	Subtotal B	$	7,989,000
Miscellaneous Items and Contingencies	**25%**	$	2,000,000
	Subtotal C	$	9,989,000
Design Engineering	**10%**	$	1,000,000
Engineering Services During Construction	**8%**	$	800,000
Construction Management and Inspection	**5%**	$	500,000
Other Indirect Costs	**5%**	$	500,000
	Subtotal D	$	12,790,000
Sales Tax	**0%**	**$**	**-**
	Subtotal E	**$**	**12,790,000**
Secondary Clarifier Rerating Study		$	60,000
	Total	**$**	**12,850,000**

CLASS 5 OPINION OF PROBABLE CONSTRUCTION COSTS

Blower Building **HDR**

Project	Newberg WW Master Plan Update	**Date**	13-Dec-17	
		Estimator	CLR	
Task	Blower Building	**Checked By**	MB	
		Updated	KB	18-Jan-17

Ratio = 1.000

Description	Quantity	Unit	Base Unit Price ($/unit)	Adjusted Price ($/unit)	Total ($)
Division 01 - General Requirements					
Blower Building					
General Conditions, Bidding, Submittals, Start-up	1	LS	$ 15,195	$ 15,195	$ 15,195
Division 03 - Concrete					
Blower Building					
Concrete Slab on Grade - Building	9	CY	$ 850	$ 850	$ 7,870
Miscellaneous					
Equipment Bases	9	CY	$ 750	$ 750	$ 6,750
Division 04 - Masonry					
Blower Building					
CMU Walls	1000	SF	$ 12	$ 12	$ 12,000
Division 05 - Metals					
Blower Building					
Miscellaneous (pipe supports, etc.)	1	LS	$ 10,000	$ 10,000	$ 10,000
Division 07 - Thermal and Moisture Protection					
Blower Building					
Vapor Barrier/Damp Proofing	250	SF	$ 1	$ 1	$ 250
Roof Insulation	250	SF	$ 2	$ 2	$ 500
Sealants and Caulking	1	LS	$ 1,200	$ 1,200	$ 1,200
Membrane Roofing System	250	SF	$ 25	$ 25	$ 6,250
Division 08 - Openings					
Blower Building					
Doors	1	LS	$ 10,000	$ 10,000	$ 10,000
Roll-up Doors	2	EA	$ 6,000	$ 6,000	$ 12,000
Division 09 - Finishes					
Blower Building					
Painting	1050	SF	$ 25	$ 25	$ 26,250
Division 13 - Special Construction					
Blower Building					
Identification, Stenciling and Tagging	1	LS	$ 5,000	$ 5,000	$ 5,000
Division 23 - HVAC					
Blower Building					
Exhaust Fans and Ducts	250	SF	$ 4	$ 4	$ 1,000
Louvers and Vents	2.5	SF	$ 25	$ 25	$ 63
Division 26 - Electrical					
Blower Building					
Electrical	1	LS	$ 360,000	$ 360,000	$ 360,000
Division 31 - Earthwork					
Blower Building					
Excavation	28	CY	$ 12	$ 12	$ 333
Backfill	7	CY	$ 25	$ 25	$ 174
Cast Auger Piles and Installation	250	SF	$ 120	$ 120	$ 30,000

CLASS 5 OPINION OF PROBABLE CONSTRUCTION COSTS

Blower Building **HDR**

Project	Newberg WW Master Plan Update	**Date**	13-Dec-17	
		Estimator	CLR	
Task	Blower Building	**Checked By**	MB	
		Updated	KB	18-Jan-17

Ratio = 1.000

Description	Quantity	Unit	Base Unit Price ($/unit)	Adjusted Price ($/unit)	Total ($)
Division 40 - Process Interconnections					
Blower Building					
SST LPA Piping	840	LF	$ 288	$ 288	$ 241,920
Piping Installation	1	LS	$ 241,920	$ 241,920	$ 241,920
Instrumentation	1	LS	$ 175,000	$ 175,000	$ 175,000
Division 41 - Materials Processing and Handling Equipment					
Blower Building					
Monorail System	1	LS	$ 40,000	$ 40,000	$ 40,000
Installation	1	LS	$ 16,000	$ 16,000	$ 16,000
Division 46 - Water and Wastewater Equipment					
Blowers					
HST Blowers - 75 HP	3	EA	$ 75,000	$ 75,000	$ 225,000
Installation	1	LS	$ 90,000	$ 90,000	$ 90,000
				Subtotal A	**$ 1,535,000**
				Mobilization, Bonds, and Insurance 5%	$ 77,000
				Contractor's Overhead and Profit 15%	$ 230,000
				Subtotal B	**$ 1,842,000**
				Miscellaneous Items and Contingencies 25%	$ 461,000
				Subtotal C	**$ 2,303,000**
				Design Engineering 10%	$ 230,000
				Engineering Services During Construction 8%	$ 184,000
				Construction Management and Inspection 5%	$ 115,000
				Other Indirect Costs 5%	$ 115,000
				Subtotal D	**$ 2,947,000**
				Sales Tax 0%	$ -
				Total Estimated Probable Project Cost	**$ 2,947,000**

CLASS 5 OPINION OF PROBABLE CONSTRUCTION COSTS

Secondary Clarifier Expansion **HDR**

Project	Newberg WW Master Plan Update	**Date**	13-Dec-17	
		Estimator	CLR	
Task	Secondary Clarifier Expansion	**Checked By**	MB	
	and RAS Pump Station	**Updated**	KB	18-Jan-17

Ratio = 1.000

Description	Quantity	Unit	Base Unit Price ($/unit)	Adjusted Price ($/unit)	Total ($)
Division 01 - General Requirements					
Secondary Clarifier Expansion					
General Conditions, Bidding, Submittals, Start-up	1	LS	$ 40,182	$ 40,182	$ 40,182
Division 03 - Concrete					
Secondary Clarifier Expansion					
Concrete Footing and Slab	372	CY	$ 850	$ 850	$ 316,486
Concrete Walls	279	CY	$ 950	$ 950	$ 265,290
RAS Pump Station					
Concrete Footing and Slab	15	CY	$ 850	$ 850	$ 12,593
Concrete Basement Walls	9	CY	$ 950	$ 950	$ 8,444
Equipment Bases	10	CY	$ 750	$ 750	$ 7,500
Concrete Elevated Slab	15	CY	$ 950	$ 950	$ 14,074
SE Junction Box	10	CY	$ 750	$ 750	$ 7,500
Division 04 - Masonry					
RAS Pump Station					
CMU Blocks Walls	3360	SF	$ 12	$ 12	$ 40,320
Division 05 - Metals					
Secondary Clarifier Expansion					
Catwalk	1	EA	$ 50,000	$ 50,000	$ 50,000
RAS Pump Station					
Metal Stairs	100	SF	$ 60	$ 60	$ 6,000
Miscellaneous Metals (handrails, grating, etc.)	1	LS	$ 10,000	$ 10,000	$ 10,000
Division 07 - Thermal and Moisture Protection					
RAS Pump Station					
Vapor Barrier/Damp Proofing	600	SF	$ 1	$ 1	$ 600
Roof Insulation	600	SF	$ 2	$ 2	$ 1,200
Sealants and Caulking	1	LS	$ 2,500	$ 2,500	$ 2,500
Membrane Roofing System	600	SF	$ 25	$ 25	$ 15,000
Division 08 - Openings					
RAS Pump Station					
Doors	1	LS	$ 15,000	$ 15,000	$ 15,000
Division 09 - Finishes					
Secondary Clarifier Expansion					
Coatings	1	LS	$ 60,000	$ 60,000	$ 60,000
Division 13 - Special Construction					
Secondary Clarifier Expansion					
Identification, Stenciling and Tagging	1	LS	$ 10,000	$ 10,000	$ 10,000

CLASS 5 OPINION OF PROBABLE CONSTRUCTION COSTS

Secondary Clarifier Expansion **HDR**

Project	Newberg WW Master Plan Update	**Date**	13-Dec-17	
		Estimator	CLR	
Task	Secondary Clarifier Expansion	**Checked By**	MB	
	and RAS Pump Station	**Updated**	KB	18-Jan-17

Ratio = 1.000

Description	Quantity	Unit	Base Unit Price ($/unit)	Adjusted Price ($/unit)	Total ($)
Division 23 - HVAC					
RAS Pump Station					
Exhaust Fans and Ducts	600	SF	$ 4	$ 4	$ 2,400
Louvers and Vents	6	SF	$ 25	$ 25	$ 150
Division 26 - Electrical					
Secondary Clarifier Expansion and RAS Pump Station					
Electrical	1	LS	$ 640,000	$ 640,000	$ 640,000
Division 31 - Earthwork					
Secondary Clarifier Expansion					
Excavation	2234	CY	$ 12	$ 12	$ 26,808
Dewatering	1	EA	$ 125,000	$ 125,000	$ 125,000
Backfill	800	CY	$ 25	$ 25	$ 20,000
General Site Work	1	LS	$ 91,664	$ 91,664	$ 91,664
Cast Auger Piles and Installation	6100	SF	$ 120	$ 120	$ 732,000
Junction/Split Boxes					
Excavation	500	CY	$ 12	$ 12	$ 6,000
Division 40 - Process Interconnections					
Secondary Clarifier Piping					
36-IN ML Piping	85	LF	$ 432	$ 432	$ 36,720
24-IN SE Piping	300	LF	$ 288	$ 288	$ 86,400
14-IN RAS Piping	250	LF	$ 168	$ 168	$ 42,000
Piping Installation	1	LS	$ 165,120	$ 165,120	$ 165,120
RAS Pump Room					
14-IN RAS Piping	150	LF	$ 168	$ 168	$ 25,200
Plug valves	6	EA	$ 2,500	$ 2,500	$ 15,000
Check valves	2	EA	$ 3,000	$ 3,000	$ 6,000
Water piping and valves	1	LS	$ 15,000	$ 15,000	$ 15,000
Miscellaneous piping (floor drains, etc.)	1	LS	$ 10,000	$ 10,000	$ 10,000
Piping and Valve Installation	1	LS	$ 71,200	$ 71,200	$ 71,200
SE Piping between CDB and CCB					
24-IN SE Piping	250	LF	$ 288	$ 288	$ 72,000
Piping Installation	1	LS	$ 72,000	$ 72,000	$ 72,000
RDS Split Box					
Weir Gates	3	EA	$ 20,000	$ 20,000	$ 60,000
RAS Split Box Weir Gates	3	EA	$ 20,000	$ 20,000	$ 60,000
Instrumentation	1	LS	$ 200,000	$ 200,000	$ 200,000
Division 43 - Process Gas and Liquid Handling, Purification, and Storage Equipment					
RAS Pump Station					
Centrifugal Pumps	2	EA	$ 50,000	$ 50,000	$ 100,000
Equipment Installation	1	LS	$ 40,000	$ 40,000	$ 40,000

CLASS 5 OPINION OF PROBABLE CONSTRUCTION COSTS

Secondary Clarifier Expansion **HDR**

Project	Newberg WW Master Plan Update	**Date**	13-Dec-17	
		Estimator	CLR	
Task	Secondary Clarifier Expansion	**Checked By**	MB	
	and RAS Pump Station	**Updated**	KB	18-Jan-17

Ratio = 1.000

Description	Quantity	Unit	Base Unit Price ($/unit)	Adjusted Price ($/unit)	Total ($)
Division 46 - Water and Wastewater Equipment					
Secondary Clarifier Expansion					
Mechanism (304L SST)	1	EA	$ 250,000	$ 250,000	$ 250,000
Launders	1	EA	$ 75,000	$ 75,000	$ 75,000
Equipment Installation	1	LS	$ 130,000	$ 130,000	$ 130,000
				Subtotal A	**$ 4,058,000**
				Mobilization, Bonds, and Insurance 5%	$ 203,000
				Contractor's Overhead and Profit 15%	$ 609,000
				Subtotal B	**$ 4,870,000**
				Miscellaneous Items and Contingencies 25%	$ 1,217,500
				Subtotal C	**$ 6,087,500**
				Design Engineering 10%	$ 609,000
				Engineering Services During Construction 8%	$ 487,000
				Construction Management and Inspection 5%	$ 304,000
				Other Indirect Costs 5%	$ 304,000
				Subtotal D	**$ 7,792,000**
				Sales Tax 0%	$ -
				Total Estimated Probable Project Cost	**$ 7,792,000**

CLASS 5 OPINION OF PROBABLE CONSTRUCTION COSTS

Oxidation Ditch **HDR**

Project	Newberg WW Master Plan Update	**Date**	13-Dec-17	
		Estimator	CLR	
Task	Oxidation Ditch	**Checked By**	MB	
		Updated	KB	18-Jan-17

Ratio = 1.000

Description	Quantity	Unit	Base Unit Price ($/unit)	Adjusted Price ($/unit)	Total ($)
Division 01 - General Requirements					
New Ox ditch					
General Conditions, Bidding, Submittals, Start-up	1	LS	$ 45,865	$ 45,865	$ 45,865
Division 03 - Concrete					
New Ox ditch					
Concrete Outside Walls	385	CY	$ 950	$ 950	$ 365,926
Concrete Footing and Slab	990	CY	$ 850	$ 850	$ 841,751
RDS Split Box Expansion					
Concrete	48	CY	$ 750	$ 750	$ 35,741
RAS Split Box Expansion					
Concrete	48	CY	$ 750	$ 750	$ 35,741
ML Control Box 1	15	CY	$ 750	$ 750	$ 11,250
ML Junction Box 2	10	CY	$ 750	$ 750	$ 7,500
Division 05 - Metals					
New Ox ditch					
Above ground AA pipe supports	1	LS	$ 20,000	$ 20,000	$ 20,000
Miscellaneous Metals (handrails, grating, etc.)	1	LS	$ 60,000	$ 60,000	$ 60,000
Division 13 - Special Construction					
New Ox ditch					
Identification, Stenciling and Tagging	1	LS	$ 15,000	$ 15,000	$ 15,000
Division 26 - Electrical					
New Ox ditch					
Electrical	1	LS	$ 700,000	$ 700,000	$ 700,000
Division 31 - Earthwork					
New Ox ditch					
Excavation	9903	CY	$ 12	$ 12	$ 118,835
Dewatering	1	EA	$ 100,000	$ 100,000	$ 100,000
Backfill	1000	CY	$ 25	$ 25	$ 25,000
Cast Auger Piles and Installation	13369	SF	$ 120	$ 120	$ 1,604,278
Division 40 - Process Interconnections					
New Ox ditch 24-IN RDS Piping	350	LF	$ 288	$ 288	$ 100,800
36-IN ML Effluent Piping	85	LF	$ 432	$ 432	$ 36,720
16-IN AA Piping	100	LF	$ 192	$ 192	$ 19,200
Miscellaneous piping and valves	1	LS	$ 20,000	$ 20,000	$ 20,000
Piping Installation	1	LS	$ 176,720	$ 176,720	$ 176,720
Instrumentation	1	LS	$ 250,000	$ 250,000	$ 250,000

CLASS 5 OPINION OF PROBABLE CONSTRUCTION COSTS

Oxidation Ditch **HDR**

Project	Newberg WW Master Plan Update	**Date**	13-Dec-17	
		Estimator	CLR	
Task	Oxidation Ditch	**Checked By**	MB	
		Updated	KB	18-Jan-17

Ratio = 1.000

Description		Quantity	Unit	Base Unit Price ($/unit)	Adjusted Price ($/unit)	Total ($)
Division 43 - Process Gas and Liquid Handling, Purification, and Storage Equipment						
New Ox ditch	Mixers	2	EA	$ 15,000	$ 15,000	$ 30,000
	Mixer Installation	1	LS	$ 12,000	$ 12,000	$ 12,000
					Subtotal A	**$ 4,632,000**
					Mobilization, Bonds, and Insurance 5%	$ 232,000
					Contractor's Overhead and Profit 15%	$ 695,000
					Subtotal B	**$ 5,559,000**
					Miscellaneous Items and Contingencies 25%	$ 1,389,750
					Subtotal C	**$ 6,948,750**
					Design Engineering 10%	$ 695,000
					Engineering Services During Construction 8%	$ 556,000
					Construction Management and Inspection 5%	$ 347,000
					Other Indirect Costs 5%	$ 347,000
					Subtotal D	**$ 8,894,000**
					Sales Tax 0%	$ -
					Total Estimated Probable Project Cost	**$ 8,894,000**

CLASS 5 OPINION OF PROBABLE CONSTRUCTION COSTS

SBR **HDR**

Project	Newberg WW Master Plan Update	**Date**	13-Dec-17	
		Estimator	CLR	
Task	SBR	**Checked By**	MB	
		Updated	KB	18-Jan-17

Ratio = 1.000

Description	Quantity	Unit	Base Unit Price ($/unit)	Adjusted Price ($/unit)	Total ($)
Division 01 - General Requirements					
SBR					
General Conditions, Bidding, Submittals, Start-up	1	LS	$ 99,368	$ 99,368	$ 99,368
Division 03 - Concrete					
SBR					
Concrete Outside Walls	809	CY	$ 950	$ 950	$ 768,444
Concrete Footing and Slab	1886	CY	$ 850	$ 850	$ 1,603,335
Equalization Tank Concrete Outside Walls	202	CY	$ 950	$ 950	$ 192,111
Equalization Tank Concrete Footing and Slab	472	CY	$ 850	$ 850	$ 400,834
RDS Split Box Expansion	48	CY	$ 750	$ 750	$ 36,000
SE Junction Box	10	CY	$ 750	$ 750	$ 7,500
Division 05 - Metals					
SBR					
Above ground AA pipe supports	1	LS	$ 20,000	$ 20,000	$ 20,000
Miscellaneous Metals (handrails, grating, etc.)	1	LS	$ 60,000	$ 60,000	$ 60,000
Division 13 - Special Construction					
SBR					
Identification, Stenciling and Tagging	1	LS	$ 15,000	$ 15,000	$ 15,000
Division 26 - Electrical					
SBR					
Electrical	1	LS	$ 1,000,000	$ 1,000,000	$ 1,000,000
Division 31 - Earthwork					
SBR					
Excavation	19950	CY	$ 12	$ 12	$ 239,399
Dewatering	1	EA	$ 100,000	$ 100,000	$ 100,000
Backfill	2043	CY	$ 25	$ 25	$ 51,075
Cast Auger Piles and Installation	25465	SF	$ 120	$ 120	$ 3,055,768
Division 40 - Process Interconnections					
SBR 24-IN RDS INF Piping	250	LF	$ 288	$ 288	$ 72,000
24-IN SE Piping	420	LF	$ 288	$ 288	$ 120,960
10-WAS Piping	100	LF	$ 120	$ 120	$ 12,000
16-IN AA Piping	100	LF	$ 192	$ 192	$ 19,200
Miscellaneous piping and valves	1	LS	$ 20,000	$ 20,000	$ 20,000
Piping Installation	1	LS	$ 244,160	$ 244,160	$ 244,160
SE Piping between CDB and CCB					
24-IN SE Piping	250	LF	$ 288	$ 288	$ 72,000
Piping Installation	1	LS	$ 72,000	$ 72,000	$ 72,000
Miscellaneous Instrumentation	1	LS	$ 150,000	$ 150,000	$ 150,000
Division 43 - Process Gas and Liquid Handling, Purification, and Storage Equipment					
SBR					
Slide gates	4	EA	$ 10,000	$ 10,000	$ 40,000
RDS Split Box					
Weir Gates	3	EA	$ 20,000	$ 20,000	$ 60,000

CLASS 5 OPINION OF PROBABLE CONSTRUCTION COSTS

	SBR				HDR
Project	Newberg WW Master Plan Update	**Date**	13-Dec-17		
		Estimator	CLR		
Task	SBR	**Checked By**	MB		
		Updated	KB	18-Jan-17	

Ratio = 1.000

Description	Quantity	Unit	Base Unit Price ($/unit)	Adjusted Price ($/unit)	Total ($)
Division 46 - Water and Wastewater Equipment					
SBR Vendor Equipment and Insturmentation	1	EA	$ 1,075,000	$ 1,075,000	$ 1,075,000
Equipment Installation	1	LS	$ 430,000	$ 430,000	$ 430,000
				Subtotal A	**$ 10,036,000**

Design Details and Assumptions:			
Vendor equipment includes blowers and all process equipment and instrumentation	**Mobilization, Bonds, and Insurance**	**5%**	$ 502,000
For estimate, the vendor cost of the blower was removed and the 'Blower Building'	**Contractor's Overhead and Profit**	**15%**	$ 1,505,000
	Subtotal B		**$ 12,043,000**
estimate form is used.	**Miscellaneous Items and Contingencies**	**25%**	$ 3,010,750
	Subtotal C		**$ 15,053,750**
	Design Engineering	**10%**	$ 1,505,000
	Engineering Services During Construction	**8%**	$ 1,204,000
	Construction Management and Inspection	**5%**	$ 753,000
	Other Indirect Costs	**5%**	$ 753,000
	Subtotal D		**$ 19,269,000**
	Sales Tax	**0%**	$ -
	Total Estimated Probable Project Cost		**$ 19,269,000**

CLASS 5 OPINION OF PROBABLE CONSTRUCTION COSTS

Fine Screening **HDR**

Project	Newberg WW Master Plan Update	**Date**	13-Dec-17	
		Estimator	CLR	
Task	Fine Screening	**Checked By**	MB	
		Updated	KB	18-Jan-17

Ratio = 1.000

Description	Quantity	Unit	Base Unit Price ($/unit)	Adjusted Price ($/unit)	Total ($)
Division 01 - General Requirements					
Fine Screening					
General Conditions, Bidding, Submittals, Start-up	1	LS	$ 4,935	$ 4,935	$ 4,935
Division 05 - Metals					
Fine Screening					
Miscellaneous (pipe supports, etc.)	1	LS	$ 23,450	$ 23,450	$ 23,450
Division 13 - Special Construction					
Fine Screening					
Identification, Stenciling and Tagging	1	LS	$ 1,000	$ 1,000	$ 1,000
Division 26 - Electrical					
Fine Screening					
Electrical	1	LS	$ 75,000	$ 75,000	$ 75,000
Division 40 - Process Interconnections					
Fine Screening					
Miscellaneous piping and vales	1	LS	$ 15,000	$ 15,000	$ 15,000
Instrumentation	1	LS	$ 50,000	$ 50,000	$ 50,000
Division 46 - Water and Wastewater Equipment					
Fine Screening					
Plate Replacement	2	EA	$ 30,000	$ 30,000	$ 60,000
Third Mechanical Screen	1	EA	$ 175,000	$ 175,000	$ 175,000
Installation	1	LS	$ 94,000	$ 94,000	$ 94,000
				Subtotal A	**$ 498,000**
				Mobilization, Bonds, and Insurance 5%	$ 25,000
				Contractor's Overhead and Profit 15%	$ 75,000
				Subtotal B	**$ 598,000**
				Miscellaneous Items and Contingencies 25%	$ 150,000
				Subtotal C	**$ 748,000**
				Design Engineering 10%	$ 75,000
				Engineering Services During Construction 8%	$ 60,000
				Construction Management and Inspection 5%	$ 37,000
				Other Indirect Costs 5%	$ 37,000
				Subtotal D	**$ 957,000**
				Sales Tax 0%	$ -
				Total Estimated Probable Project Cost	**$ 957,000**

CLASS 5 OPINION OF PROBABLE CONSTRUCTION COSTS

MBBR **HDR**

Project	Newberg WW Master Plan Update	**Date**	13-Dec-17	
		Estimator	CLR	
Task	MBBR	**Checked By**	MB	
		Updated	KB	18-Jan-17

Ratio = 1.000

Description	Quantity	Unit	Base Unit Price ($/unit)	Adjusted Price ($/unit)	Total ($)
Division 01 - General Requirements					
MBBR					
General Conditions, Bidding, Submittals, Start-up	1	LS	$ 40,799	$ 40,799	$ 40,799
Division 03 - Concrete					
MBBR					
Nitrification basin	207	CY	$ 950	$ 950	$ 197,037
Nitrification slab	74	CY	$ 850	$ 850	$ 62,963
Carbon reactor basin	172	CY	$ 950	$ 950	$ 163,259
Carbon reactor slab	136	CY	$ 850	$ 850	$ 115,432
RDS Split Box Expansion	48	CY	$ 750	$ 750	$ 36,000
MBBR Eff Control Box 1	15	CY	$ 750	$ 750	$ 11,250
MBBR Eff Junction Box 2	10	CY	$ 750	$ 750	$ 7,500
SE Junction Box 3	10	CY	$ 750	$ 750	$ 7,500
Division 05 - Metals					
MBBR					
Above ground AA pipe supports	1	LS	$ 20,000	$ 20,000	$ 20,000
Miscellaneous Metals (handrails, grating, etc.)	1	LS	$ 60,000	$ 60,000	$ 60,000
Division 13 - Special Construction					
MBBR					
Identification, Stenciling and Tagging	1	LS	$ 15,000	$ 15,000	$ 15,000
Division 26 - Electrical					
MBBR					
Electrical	1	LS	$ 700,000	$ 700,000	$ 700,000
Division 31 - Earthwork					
MBBR					
Excavation	1889	CY	$ 12	$ 12	$ 22,667
Dewatering	1	EA	$ 100,000	$ 100,000	$ 100,000
Backfill	189	CY	$ 25	$ 25	$ 4,722
Cast Auger Piles and Installation	3000	SF	$ 120	$ 120	$ 360,000
Junction/Split Boxes Excavation	219	CY	$ 12	$ 12	$ 2,628
Backfill	55	CY	$ 25	$ 25	$ 1,369
Division 40 - Process Interconnections					
MBBR					
24-IN RDS INF Piping	240	LF	$ 288	$ 288	$ 69,120
24-IN SE Piping	420	LF	$ 288	$ 288	$ 120,960
16-IN AA Piping	100	LF	$ 192	$ 192	$ 19,200
Miscellaneous piping and valves	1	LS	$ 50,000	$ 50,000	$ 50,000
Piping Installation	1	LS	$ 259,280	$ 259,280	$ 259,280
SE Piping between CDB and CCB					
24-IN SE Piping	250	LF	$ 288	$ 288	$ 72,000
Piping Installation	1	LS	$ 72,000	$ 72,000	$ 72,000

CLASS 5 OPINION OF PROBABLE CONSTRUCTION COSTS

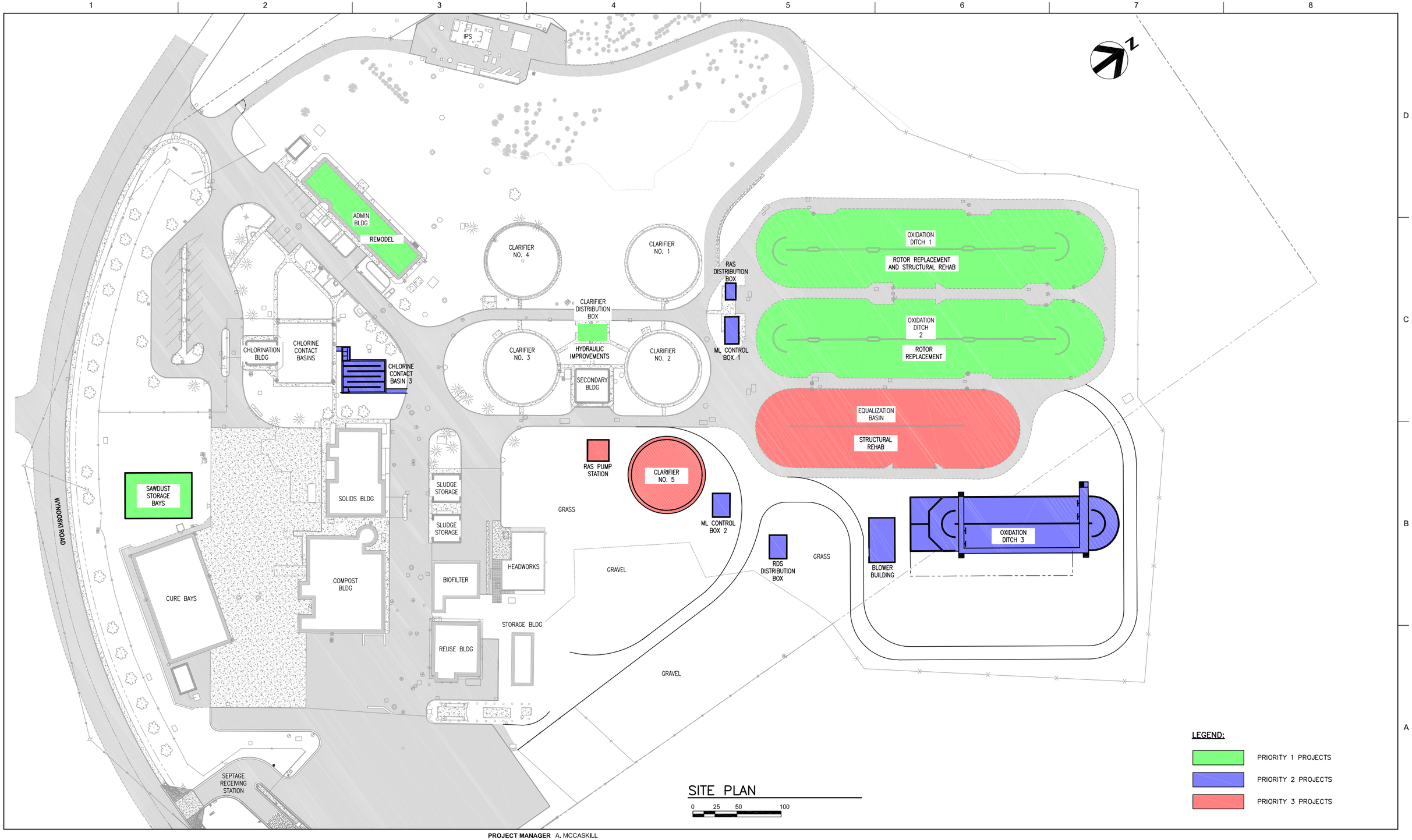
MBBR **HDR**

Project	Newberg WW Master Plan Update	**Date**	13-Dec-17	
		Estimator	CLR	
Task	MBBR	**Checked By**	MB	
		Updated	KB	18-Jan-17

Ratio = 1.000

Description		Quantity	Unit	Base Unit Price ($/unit)	Adjusted Price ($/unit)	Total ($)
Division 43 - Process Gas and Liquid Handling, Purification, and Storage Equipment						
RDS Split Box						
	Weir Gates	3	EA	$ 20,000	$ 20,000	$ 60,000
Division 46 - Water and Wastewater Equipment						
MBBR	Vendor Equipment and Insturmentation	1	EA	$ 1,050,000	$ 1,050,000	$ 1,050,000
	Equipment Installation	1	LS	$ 420,000	$ 420,000	$ 420,000
					Subtotal A	**$ 4,121,000**

Design Details and Assumptions:	**Mobilization, Bonds, and Insurance**	**5%**	$ 206,000
Vendor equipment includes media, aeration system, not blowers	**Contractor's Overhead and Profit**	**15%**	$ 618,000
Includes instruments and controls	**Subtotal B**		**$ 4,945,000**
	Miscellaneous Items and Contingencies	**25%**	$ 1,236,250
	Subtotal C		**$ 6,181,250**
	Design Engineering	**10%**	$ 618,000
	Engineering Services During Construction	**8%**	$ 495,000
	Construction Management and Inspection	**5%**	$ 309,000
	Other Indirect Costs	**5%**	$ 309,000
	Subtotal D		**$ 7,912,000**
	Sales Tax	**0%**	$ -
	Total Estimated Probable Project Cost		**$ 7,912,000**



SITE PLAN

0 25 50 100

ISSUE	DATE	DESCRIPTION
1	MARCH 2018	WASTEWATER MASTER PLAN

PROJECT MANAGER	A. MCCASKILL
PROCESS	K. BILL
HDR PROJECT NUMBER	10047939

NEWBERG WASTEWATER MASTER PLAN

PROPOSED SITE LAYOUT

0 1" 2"

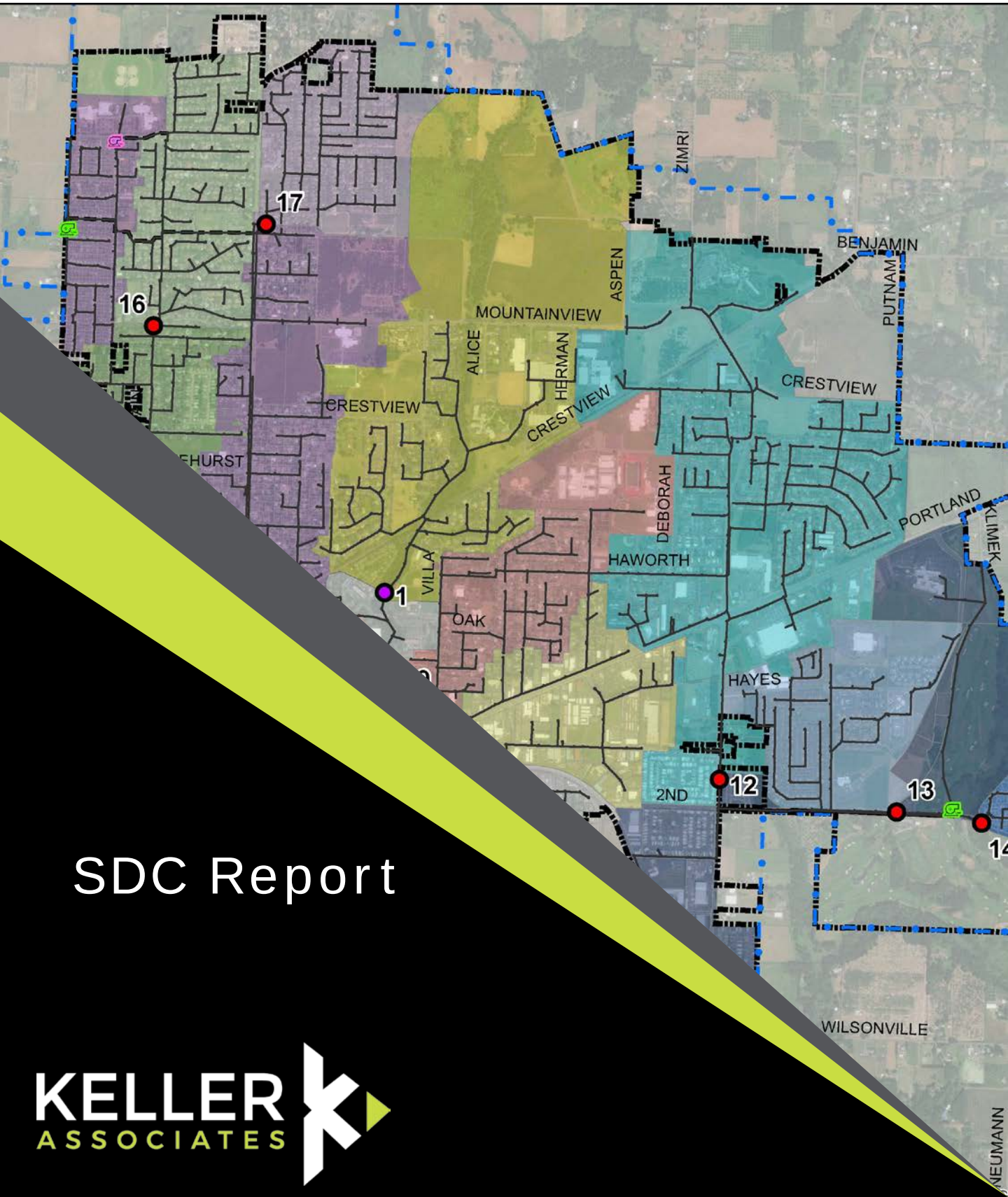
FILENAME C-01.dwg

SCALE AS NOTED

SHEET C-01

City of Newberg
OREGON

Appendix J



SDC Report

KELLER ASSOCIATES

FINAL REPORT

City of Newberg Wastewater System Development Charge Study

May 2018

March 25, 2018

Ms. Kaaren Hofmann
Newberg City Hall
414 E. First Street
Newberg, OR 97132

Subject: City of Newberg Wastewater System Development Charge Final Report

Dear Ms. Hofmann:

Enclosed please find HDR's final report regarding the system development charges for the City of Newberg's wastewater utility. The conclusions and recommendations contained within this report should enable the City to implement cost-based system development charges that meet the City's objectives for their wastewater utility.

This report has been prepared using generally accepted financial, rate, and engineering principles. The City's financial, budgeting, planning, and engineering data were the primary sources for much of the information contained in this report. HDR would recommend that prior to implementing the charges, the City have the charges reviewed by their legal counsel for compliance with Oregon State law.

HDR appreciates the opportunity to assist the City in this matter. We look forward to future opportunities to work with the City.

Sincerely yours,
HDR Engineering, Inc.

Shawn Koorn
Associate Vice President

hdrinc.com

1001 SW 5th Avenue, Suite 1800, Portland, OR 97204-1134
T 503 423 3700 **F** 503 423 3737

Table of Contents

Technical Appendix – Wastewater System Development Charge

Executive Summary

Introduction

HDR was retained by Keller Associates, Inc. to assist the City of Newberg (the "City") to update its wastewater system development charges (SDCs). The purpose of SDCs is to bring equity between existing customers and new customers connecting to the City's wastewater system. The objective of this study was to update the cost-based charges for new customers connecting to, or requesting additional capacity to, the City's wastewater system. By establishing cost-based SDCs, the City attempts to have "growth pay for growth" and existing utility customers will, for the most part, be sheltered from the financial impacts of growth.

The City has a current SDC of $6,533 for the first 18 fixture units. The SDC has not been reviewed since 2007. However, the SDC has been updated a number of times using industry accepted indices since 2007. .

General industry recommendations are to adjust these charges annually for changes in construction costs and to update the charges every three to five years, or whenever comprehensive planning documents for the systems have been updated. Given the time since the last update and the availability of the Master Plan for the wastewater utility, it is timely to update the charges for the wastewater utility at this time. The City has undertaken this study to determine parity between existing and new utility customers.

Summary and Conclusions

In developing this study, the SDCs have been calculated in a manner which conforms to generally accepted rate making practices and are based on the City's wastewater system planning and design criteria. The calculations also take into account the financing mechanisms of capital improvements. Based on the sum of the component costs, the "net allowable" SDC is determined. "Net" refers to the "gross" SDC, net of any credits for future debt service principal to be paid within a customer's rates. "Allowable" refers to the concept that the calculated SDC is the City's cost-based (i.e., maximum) charge. The City, as a matter of policy, may charge any amount up to the cost-based SDC, but not over that amount. Charging an amount greater than the allowable SDC would not meet the "nexus" test of charging cost-based SDCs which are proportionally related to the benefit derived by the customer.

SDCs must be implemented according to the capacity requirement or impact each new development has on the utility system. This way, the SDC is related to the impact the customer places on the system, and to the benefit they derive from the service provided.

The City's current wastewater SDC is based on the number of fixture units. The updated analysis resulted in a proposed fee of $5,704 for the first 18 fixture units. Details of the development of the wastewater SDC are discussed in greater detail in Section 4 and the technical analysis is included in the Technical Appendix. Shown below in Table ES-1 are the present and the maximum wastewater system development charge.

Table ES – 1
Existing and Maximum Allowable Wastewater System Development Charge

Customer Class	Existing SDC Fee	Reimbursement SDC	Improvement SDC	Total SDC or Maximum Allowable
For the first 18 fixture units	$6,533	$1,131	$4,573	$5,704
Per each fixture unit over 18	$364			$317
Efficiency Dwelling Unit	$364			$317

The SDC as calculated in this study is lower then the existing SDC. The lower calculated fee is primarily a result of a reduced capital plan in this planning period. The 2007 SDC study included $37 million in capital projects through 2040, which included SDC eligible extension and upgrade collection projects, which are no longer included in the current Master Plan. The amounts shown in Table ES-1 have been rounded for ease of administration. Table ES-1 shows the wastewater SDC for the first 18 fixture units is $5,704.

Conclusions and Recommendations

Based on our review and analysis of the City's wastewater system, capital plans from the Master Plan, and financing approach for the development of the system development charges, HDR makes the following recommendations:

- ✓ The City should adopt the wastewater system development charges for new connections to these respective systems which are no greater than the net allowable system development charges as set forth in this report.
- ✓ The adopted system development charges should be updated annually by using industry accepted indices such as the local construction cost index from the Engineering New Record Construction Cost Index (ENR-CCI) for no more than five years before a complete update of the charge is again undertaken. This industry practice can keep the charge relatively current with construction pricing practices.
- ✓ The City should update the actual calculations for the system development charges at such time when a new capital improvement plan, public facilities plan, comprehensive system plan, or a comparable plan is approved or updated by the City.

Summary

The wastewater system development charges developed and presented in this report are based on the planning and engineering design criteria of the City's wastewater system, the value of the existing assets, past financing of the system and generally accepted ratemaking principles. The system development charges will provide multiple benefits to the City and will continue the City's practice of establishing equitable and cost-based SDCs for new customers connecting to the City's wastewater system.

2. Overview of System Development Charges

2.1 Introduction

An important starting point in establishing system development charges is to have a basic understanding of the purpose of these charges, along with the criteria and general methodology that are used to establish cost-based system development charges. This section of the report presents an overview of the methodology that was used to update the City's SDCs to cost-based levels. It should be noted that the City has historically used these same generally accepted methodologies to establish their utility SDCs.

2.2 Defining System Development Charges

The first step in establishing cost-based SDCs is to gain a better understanding of the definition of a SDC or sometimes referred to as "system development charges". For the purposes of this report, an SDC (system development charge) is defined as follows:

> *"System development charges are one-time charges paid by new development to finance construction of public facilities needed to serve them."*[1]

Simply stated, system development charges are a contribution of capital to either reimburse current customers for the available capacity in the existing system, or help finance planned future growth-related capacity improvements. At some utilities, system development charges may be referred to as capital facility fees, capacity fees, impact fees, capacity reserve charges, infrastructure investment fees, etc. Regardless of the label used to identify them, their objective is the same. That is, these charges are intended to provide funds to the utility to finance all or a part of the capital improvements needed to serve and accommodate new customer growth. Absent those fees, many utilities would likely be unwilling to build growth-related facilities (i.e., burden existing rate payers with the entire cost of growth-related capacity expansion).

2.3 Economic Theory and System Development Charges

System development charges are generally imposed as a condition of service. The objective of system development charge is not to generate money for a utility, but to create fiscal balance between existing customers and new customers so that all customers seeking to connect to the utility's system bear an equitable share of the cost of capacity that is invested in both the existing and any future growth-related expansions. Through the implementation of equitable

[1] Arthur C. Nelson, System Development Charges for Water, Sewer, and Stormwater Facilities, Lewis Publishers, New York, 1995, p. 1,

system development charges, existing customers will not be unduly burdened with the cost of new development.

By updating the system development charges, the City continues an important step in providing adequate infrastructure to meet growth-related needs while providing this infrastructure to new customers in a cost-based, fair, and equitable manner.

2.4 System Development Charge Criteria

In determining system development charges, a number of different criteria are utilized. Criteria most often used by utilities to establish system development charges include the following:

- State/local laws
- System planning criteria
- Financing criteria
- Customer understanding

Many states and local communities have enacted laws that govern the calculation and imposition of system development charges. These laws must be followed in the development of the system development charges. Most states require a "reasonable relationship" between the charge and the cost associated with providing service (capacity) to the customer. The charges do not need to be mathematically exact, but must bear a reasonable relationship to the cost burden imposed. The utilization of the planning criteria, the actual costs of construction and the planned costs of construction provide the nexus for the reasonable relationship requirement. For utilities in Oregon, Oregon Revised Statue ORS 223.297 to 223.314 provides the approach to establishing SDCs. This will be further discussed in the next chapter.

The use of system planning criteria is one of the more important aspects in the determination of the system development charges. System planning criteria provide the "rational nexus" between the amount of infrastructure necessary to provide service and the charge to the customer. The rational nexus test requires: (a) establishing a system development (nexus) between new development and the existing or expanded facilities required to accommodate new development, and (b) apportioning appropriate cost to the new development in relation to benefits reasonably received. An example using system planning criteria is the determination that a single dwelling unit or equivalent dwelling unit (EDU) generates an annual average daily wastewater flow of so many gallons per day, per EDU. The system development charge methodology then charges the customer per equivalent dwelling unit (EDU) for the cost of the system.

One of the driving forces behind establishing cost-based system development charges is that "growth pays for growth." Therefore, system development charges are typically established as a means of having new customers pay an equitable share of the cost of their required capacity (infrastructure). The financing criteria for establishing system development charges relates to

the method used to finance infrastructure on the system to show that customers are not paying twice for infrastructure – once through system development charges and again through rates. The double payment can come in through the imposition of system development charges and then the requirement to pay debt service within a customer's rates. The financing criteria also reviews the basis under which main line and collection line extensions were provided such that the customer is not charged for infrastructure that was provided (contributed) by developers.

The component of customer understanding implies that the charge is easy to understand. This criterion has implications for the way that the fee is implemented and assessed to the customer. For a wastewater system, the fee is generally based on the projection of wastewater flow for the time period under review. This makes it easy for the customer to understand that the level of fee is based on the projection of demand (flow) required to provide service. Use of an equivalent dwelling unit (EDU) is a method to bring wastewater flow from nonresidential customers into an equivalent measure with residential customers. An EDU is defined as generating average dry weather flow of a system specific measure of gallons per day per EDU. This will be defined for the City later in this report. The other implication of this criterion is that the methodology is clear and concise in its calculation of the amount of infrastructure necessary to provide service.

2.5 Overview of the System Development Charge Methodology

There are "generally accepted" methodologies that are used to establish system development charges. Within the "generally accepted" system development charge methodologies, there are a number of different steps undertaken. These steps are as follows:

1. Determination of system planning criteria
2. Determination of equivalent dwelling units (EDU, RCE, or ERU)
3. Calculation of system component costs
4. Determination of any credits

The first step in establishing a system development charge is the determination of the system planning criteria. For the wastewater system, average flow per equivalent dwelling unit is used.

Once the system planning criteria is determined, the number of equivalent dwelling units (EDUs) can be determined.

This analysis requires the EDUs be determined for the current period and each year to projected build out of the system. Current period EDUs were determined by taking 2017 average dry weather flow (ADWF) at the treatment plant in million gallons per day and dividing by the average household dry weather flow per day use. Future EDUs were determined in a similar fashion by dividing projected ADWF plant flows, taken from the Master Plan, and dividing by the same average household per day use.

Once the number of EDUs has been determined, a component-by-component (e.g., treatment, collection, etc.) analysis is undertaken to determine the component system development charge in cost ($) per EDU. Individual system components are analyzed separately for the wastewater system given that the planning criteria differ for the development of the various system components. The calculation of the component system development charge includes both historical assets (reimbursement fee) and planned future assets (improvement fee). The reimbursement to existing customers is accomplished by the fact that without system development charges, rates would otherwise be higher than they are with system development charges. Once the total cost of the capital infrastructure is determined, it is then divided by the appropriate number of EDUs the infrastructure will serve to develop the cost per EDU for the specific system component.

Each system component has two elements, a reimbursement and an improvement. The reimbursement element consists of the existing system components while the improvement element consists of future system upgrades to meet future growth/expansion needs. After each system component is analyzed and a cost per EDU is determined, the cost per EDU for each of the system components is added together to determine the reimbursement and improvement system development charge. The combined reimbursement and improvement SDC provides the "gross system development charge" calculated before any credits for debt service.

Wastewater systems are typically built with reserve capacity to accommodate future growth. This reserved capacity is funded by existing rate payers. The reimbursement portion of the SDC is intended to pay back, or reimburse, existing rate payers for future customers capacity requirements. The improvement portion of the SDC is intended to provide funding for future capital projects that provide additional capacity for new customers. The Oregon Revised Statute that dictates how the reimbursement and improvement portions of the SDC must be used is provided below.

The Oregon Revised Statute (ORS) 223.307 states: *"Authorized expenditure of system development charges. (1) Reimbursement fees may be spent on capital improvements associated with the system for which the fees are assessed including expenditures relating to repayment of indebtedness. (2) Improvement fees maybe spent only on capacity increasing capital improvements, including expenditures related to repayment of debt for such improvements. An increase in system capacity may be established if a capital improvement increases the level of performance or service provided by existing facilities or improves new facilities. The portion of the improvements funded by improvement fees must be related to the need for increased capacity to provide service for future users."*

The last step in the calculation of the system development charge is the determination of any credits. This is generally a calculation to show that customers are not paying twice, once through system development charges and again through debt service included within the wastewater rates.

The final system development charge is determined by taking the "gross system development charge" and subtracting any credits. This results in a "net system development charge" stated in dollars per EDU. For the wastewater system, an EDU can be defined as a single dwelling unit, which the City currently defines as the first 18 fixture units.

2.6 Disclaimer

HDR, in its calculation of the SDCs for the City's wastewater utility, as presented in this report, has used "generally accepted" engineering and ratemaking principles. This should not be construed as a legal opinion with respect to Oregon law. HDR recommends that the City have its legal counsel review the wastewater system development charges as set forth in this report for compliance with Oregon State law.

2.7 Summary

This section of the report has provided an overview of system development charges; the basis for establishing the charges, considerations in establishing a system development charge, and the connection (nexus) which must be established between new development and the new or expanded facilities required to accommodate new development, and appropriate apportionment of the cost to the new development in relation to benefits reasonably to be received. The next section of the report will provide a brief discussion of the legal considerations associated with system development charges.

3. Legal Considerations in Establishing System Development Charges

3.1 Introduction

An important consideration in establishing system development charges is review of legal requirements at the state or local level. The legal requirements often establish the methodology around which the system development charges must be calculated or how the funds must be used. Given that, it is important for the City to understand these legal requirements. This section of the report provides an overview of the legal requirements for establishing system development charges under Oregon State law. This summary represents HDR's understanding of the relevant Oregon State law as it relates to establishing system development charges. It in no way constitutes a legal interpretation of the state's law by HDR.

3.2 Requirements Under Oregon State Law

In establishing system development charges, an important requirement is that they be developed and implemented in conformance with local laws. In particular, many states have established specific laws regarding the establishment, calculation, and implementation of system development charges. The main objective of most state laws is to make sure that these charges are established in such a manner that they are fair, equitable, and cost-based. In other cases, state legislation may have been needed to provide the legislative powers to the utility to establish the charges.

The purpose of Oregon law for the determination of SDCs is to provide a uniform framework for the imposition of SDCs by local governments for specified purposes, and to establish that such fees be used only for capital improvements. Specifically, the requirement for the calculation of SDCs in Oregon is found in ORS 223.297 to 223.314. Capital improvements as defined under Oregon law are as follows:

- Water supply, treatment and distribution;
- Wastewater collection, transmission, treatment and disposal;
- Drainage and flood control;
- Transportation; and
- Parks and recreation.

An SDC means a reimbursement fee, an improvement fee, or a combination thereof. As defined under Oregon law, "improvement fee" means a fee for the costs associated with capital improvements to be constructed. "Reimbursement fee" means a fee for costs association with capital improvements already constructed or under construction.

As defined under Oregon law, the methodology setting forth the calculations for reimbursement fees and improvement fees must make the following considerations:

"233.304 Determination of amount of system development charges; methodology; credit allowed against charge; limitation of action contesting methodology for imposing charge; notification request.

(1)(a) Reimbursement fees must be established or modified by ordinance or resolution setting forth a methodology that is, when applicable, based on:

(A) Ratemaking principles employed to finance publicly owned capital improvements;

(B) Prior contributions by existing users;

(C) Gifts or grants from federal or state government or private persons;

(D) The value of unused capacity available to future system users or the cost of the existing facilities; and

(E) Other relevant factors identified by the local government imposing the fee.

(b) The methodology for establishing or modifying a reimbursement fee must:

(A) Promote the objective of future system users contributing no more than an equitable share to the cost of existing facilities.

(B) Be available for public inspection.

(2) Improvement fees must:

(a) Be established or modified by ordinance or resolution setting forth a methodology that is available for public inspection and demonstrates consideration of:

(A) The projected cost of the capital improvements identified in the plan and list adopted pursuant to ORS 223.309 that are needed to increase the capacity of the systems to which the fee is related; and

(B) The need for increased capacity in the system to which the fee is related that will be required to serve the demands placed on the system by future users.

(b) Be calculated to obtain the cost of capital improvements for the projected need for available system capacity for future users.

(3) A local government may establish and impose a system development charge that is a combination of a reimbursement fee and an improvement fee, if the methodology demonstrates that the charge is not based on providing the same system capacity."

The Oregon law further defines the ability to adjust the fee based on a documented index.

(8) A change in the amount of a reimbursement fee or an improvement fee is not a modification of the system development charge methodology if the change in amount is based on:

(a) A change in the cost of materials, labor or real property applied to projects or project capacity as set forth on the list adopted pursuant to ORS 223.309; or

(b) The periodic application of one or more specific cost indexes or other periodic data sources. A specific cost index or periodic data source must be:

(A) A relevant measurement of the average change in prices or costs over an identified time period for materials, labor, real property or a combination of the three;

(B) Published by a recognized organization or agency that produces the index or data source for reasons that are independent of the system development charge methodology; and
(C) Incorporated as part of the established methodology or identified and adopted in a separate ordinance, resolution or order."

In addition to the definitive requirements of the establishment of a SDC as an improvement fee and/or reimbursement fee, other requirements under Oregon law are as follows:

- The SDC must be based on an approved capital improvement plan, public facilities plan, master plan, or comparable plan which lists the capital improvements that may be funded with the improvement fee revenues and the estimated costs and timing for each improvement.
- Proper administrative review procedures must be followed in the enactment of an SDC resolution or ordinance.
- SDC funds must be spent only on facilities for which they were collected.
- A proper accounting system must be established which provides for an annual accounting of SDCs showing the total amount of revenue collected and the projects that were funded.
- The SDC may be annually adjusted based on an annual, recognized, published index if incorporated as part of methodology and in a separate ordinance.

3.3 Summary

This section of the report reviewed the legal basis for establishing system development charges in the State of Oregon and in particular for a City. The next section of the report provides a detailed discussion of the specific calculation of the wastewater system development charges for the City.

4. Development of the Wastewater System Development Charge

4.1 Introduction

This section of the report presents the key assumptions and details used in calculating the City's wastewater system development charge. The calculation of the City's wastewater system development charge is based upon City-specific accounting and planning information. Specifically, the system development charges are based upon the City's fixed asset records, capital improvement plan (CIP), and planning data from the 2018 Wastewater Master Plan (Hereafter referred to as City's Master Plan). The City provided additional relevant financial and accounting information that was used within this analysis.

The wastewater SDC calculation is based on the value of the system in place with capacity available for growth (i.e. the reimbursement component), and future or incremental capacity projects. (i.e. the Improvement fee component). The reimbursement component and the future component are added together, including a debt credit, resulting in the total "net allowable system development charge".

To the extent that the cost and timing of future capital improvements change, then the system development charges presented in this section of the report should be updated to reflect the changes. This section of the report presents the key assumptions and details used in calculating the City's wastewater SDC.

4.2 Overview of the City's Wastewater System

The City owns and operates a secondary WWTP. The City currently provides wastewater collection and treatment services to its residents, commercial establishments, institutional customers, and a number of industries. Sewer service is provided only to customers within the city limits, with the exception of a few residences outside of the City.

The City of Newberg provides wastewater collection services to over 23,500 people spread across an area of approximately 5.2 square miles. This service is provided via the sanitary sewer collection system that is owned, operated, and maintained by the City. Currently, the sanitary collection system connects to over 6,462 residential and nearly 468 commercial and industrial customers.

4.3 Present Wastewater System Development Charge

The City's wastewater system development charge is based on one dwelling unit is equal to the first 18 fixture units. The City's wastewater system development charge was last reviewed in 2007, and has been updated a number of times using industry accepted indices since 2007. The

most recent update is Resolution 2018-3454, Exhibit A. The City's present wastewater system development charges are shown below in Table 4-1.

Table 4-1
Summary of the Present Wastewater System Development Charge

Customer Class	Existing Fee Reimbursement & Improvement
For the first 18 fixture units	$6,533
Per each fixture unit over 18	$364
Efficiency Dwelling Unit	$364

As shown in Table 4-1, the City's wastewater system development charge is based on one unit equal to 18 fixture units.

4.4 Calculation of the City's Wastewater System Development Charge

As discussed in Section 2, the process of calculating system development charges is based upon a four-step process. In summary form, these steps are as follows:

- Determination of system planning criteria
- Determination of equivalent dwelling units (EDUs)
- Calculation of the system development charge for system component costs
- Determination of any system development charge credits

Each of these steps is discussed in more detail below.

4.4.1 System Planning Criteria

System planning criteria are used to establish the capacity needs of an equivalent dwelling unit (EDU). Based upon the City's Master Plan, a volume of 425.0 gallons per capita, per day, which includes both average dry weather flow and peak instantaneous flow, was established based on planning information in the Master Plan. The average household size of 2.72 persons was based on the US Census Bureau for 2012 to 2016 for the Newberg area. This results in 1,156 gals/day/EDU total daily household unit flow. Table 4-2 provides a summary of the planning criteria used to establish the City's wastewater system development charges.

Table 4-2 Summary of the Wastewater System Planning Criteria	
Planning Criteria Description	**Gallons/Day/EDU**
Average Dry Weather Flow ADWF	99.0 gallons/capita/day
Peak Instantaneous Flow PIF	326.0 gallons/capita/day
Total	425.0 gallons/capita/day
Average Household Size	2.72 persons
Total Daily Household Unit Flow	1,156.0 gallons/EDU

The system planning criteria shown above were used to determine the number of existing and future EDUs.

4.4.2 Equivalent Dwelling Units

The planning horizon of this analysis was 2017 to 2037, which aligns with the planning period of the Master Plan. As a part of this study, a projection of the total number of Equivalent Dwelling Units (EDUs) at 2037 must be determined. The City's total number of existing EDUs was determined by dividing the existing projected design flow at the plant of 28.20 MGD by the total daily household unit flow of 1,156.0 gallons per EDU. Future 2037 EDUs were calculated based on projected plant design flows of 32.6 MGD and the total daily household unit flow of 1,156.0 gallons per EDU.

A summary of the EDUs for 2017 and 2037 are presented below in Table 4-3. Details of the determination of EDUs are provided in Exhibit S-5 of the Technical Appendix.

Table 4-3 Wastewater System Equivalent Dwelling Units	
Description	**Calculated EDUs**
Equivalent Dwelling Units – 2017	24,394 EDUs
Equivalent Dwelling Units – 2037	28,201 EDUs

(1) One EDU is defined as 18 fixture units.

Given the development of the total wastewater EDUs for existing and future of the planning period, the focus can shift to the calculation of the system development charge for each system component.

4.4.3 Calculation of the Wastewater System Development Charges

The next step of the analysis is to review each major functional component of the system in service such as treatment plant and the collection system and determine the wastewater system development charge for that component. In calculating the wastewater SDC, both existing system assets, along with planned future CIP were included within the calculation. The major components of the City's wastewater system that were reviewed for purposes of calculating the system development charge were as follows:

- Treatment
- Collection

A brief discussion of the SDC calculated for each of the functional wastewater system components is provided below.

REIMBURSEMENT FEE **–** To calculate the value of the existing assets for the reimbursement fee component, the City's methodology considered the original cost of each asset. The objective of the reimbursement methodology is that the future users contribute an equitable share of the cost of the utility's existing facilities. The use of an original cost methodology complies with the legal requirements for the establishment of the reimbursement component of the fee. It should be noted that this is the same methodology the City used in the previous wastewater SDC analysis and also the recent water SDC analysis.

The City provided an asset listing for the various existing components and their installation dates. The original cost of the asset was then adjusted by the Engineering News Record (ENR) Construction Cost Index for January 2018 based on the installation date of the asset. The adjustment of original cost by the Engineering News Record, based on asset installment date and the current ENR, follows the City's current methodology of updating the SDC fee by using industry accepted indices since 2007. A more detailed discussion of the calculation of the reimbursement fee is provided below.

TREATMENT –

To determine the system development charge for treatment plant, the reimbursement portion of the existing system was reviewed based on the City's existing asset listing. The previous SDC analysis showed the majority of the original WWTP prior to 2007 was funded by grants. In addition several components of the system prior to 2007 were at capacity and were not included in the SDC. The cost of the existing treatment plant of $58.6 million was adjusted for SDC eligible to a total of $37.3 million. The $37.3 million was then adjusted to account for replacement value for a total of $42.2 million existing SDC eligible treatment plant. To accomplish this, the original cost of each asset was escalated to current, January, 2018 dollars, based on the Engineering News-Record (ENR), 20-City average Construction Cost Index (CCI) and the installation date for each asset. The total eligible existing treatment plant was divided

by the number of EDUs in 2037, resulting in a reimbursement system development charge for existing treatment plant of $1,659 per EDU.

COLLECTION –

Collection –The value of the existing collection system is $19.5 million according to City asset records. The original value was adjusted for contributions, where applicable, to a total of $14.2 million. Of the total, after being reduced for capital contributions and SDC eligible, $8.3 million were determined to be eligible for the SDC calculation. The $8.3 million was then adjusted to account for replacement value for a total of $11.8 million existing SDC eligible collection system. To accomplish this, the original cost of each asset was escalated to current, January, 2018 dollars, based on the Engineering News-Record (ENR), 20-City average Construction Cost Index (CCI) and the installation date for each asset. The total eligible existing collection system was divided by the number of EDUs in 2037, resulting in a reimbursement system development charge for the existing collection system of $466 per EDU.

IMPROVEMENT FEE **–** An important requirement for a capacity fee study is the connection between the anticipated future growth on the system and the needed facilities required to accommodate that growth. For purposes of this study, the City's Master Plan was provided. The Master Plan provided the detail for projects that were SDC eligible and the percentage eligible to meet demand for the wastewater system. A more detailed discussion of the calculation of the improvement fee is provided below.

TREATMENT –

The Master Plan provided listing of future treatment projects and the percentage capacity related or SDC eligible. The cost of the future treatment plant upgrades of $26.0 million was adjusted for SDC eligibility to a total of $4.8 million. The total eligible future treatment plant amount was divided by the number of EDUs added from 2017 to 2037, resulting in an improvement fee system development charge $1,274 per EDU.

COLLECTION –

The Master Plan provided listing of future collection system projects and the percentage capacity related or SDC eligible. The cost of the future collection system of $40.8 million was adjusted for SDC eligible to a total of $12.5 million. The total eligible future collection system was divided by the number of EDUs added from 2017 to 2037, resulting in an improvement system development charge $3,299 per EDU.

The total system development charge eligible future projects for wastewater totaled $17.4 million. The total treatment plant and collection system improvement fee is $4,573 per EDU. Exhibit S-1 and 6 of the Technical Appendix contains the details of this portion of the charge.

DEBT SERVICE COMPONENT – DEBT SERVICE COMPONENT - The final step in calculating the wastewater system development charge was to determine if a credit for payment on debt service is applicable for the utility's outstanding and future planned loans and bonds. The wastewater utility currently has five loans as outstanding debt.

Credits for debt service payments paid through customer rate revenue are determined to prevent charging the customer twice for debt, once through rates and once through system development charges. By determining a debt credit, customers pay for debt financed infrastructure through their monthly utility rates and those costs are removed from the SDC calculation. The remaining principal portion of the debt associated with the assets was deducted from the total eligible asset value prior to calculating the system development charge. This inclusion of a "debt service credit" avoids double charging the customer for the asset value in the existing or buy-in component of the system development charge, and also in the debt service component of the rates. The principal portion of the debt service balance on existing assets, offset by cash reserves, is removed from the value prior to calculating the reimbursement fee portion of the charge. The debt service credit was determined to be $994/EDU. Details of the calculations are provided in Exhibit 2 in the Technical Appendix.

4.5 Net Allowable Wastewater System Development Charge

The methodology used to establish the wastewater system development charge is a "combined approach". The combined approach adds the reimbursement fee component and the improvement fee component together, and accounts for any existing debt credit resulting in a "net allowable system development charge".

In total, the wastewater system development charge was determined to be $5,704 for the first 18 fixture units. A summary of these calculations is provided in Table 4-4.

Table 4-4
Calculated Wastewater SDC by System Component ($/1,000)

System Component	SDC by Component $/EDU
Reimbursement Fee	
Existing System	
Treatment Plant	$42,234
Collection System	11,873
General Assets	0
Less: Contributed Capital	0
Total Eligible Existing System	$54,107
Less Net SDC Eligible Outstanding Debt Principal	(28,040)
Plus: Cash Reserves	5,830
Net Existing System	$31,897
Existing and Future Equivalent Dwelling Units	28,201
Total Reimbursement Fee per EDU	**$1,131**
Improvement Fee	
Future System	
Treatment Plant	$4,851
Collection System	12,558
Total Future System	$17,409
Future Equivalent Dwelling Units	3,807
Total Improvement Fee per EDU	**$4,573**
Total Reimbursement and Improvement Fee per EDU	**$5,704**

Based on the sum of the component costs calculated above, the net allowable wastewater system development charge can be determined. "Net" refers to the "gross" system development charge, net of any debt service credits. "Allowable" refers to the concept that the calculated system development charge shown in Table 4-5 is the City's cost-based system development charge. The City, as a matter of policy, may charge any amount up to the allowable system development charge, but not over that amount. Charging an amount greater than the allowable system development charge would not meet the nexus test of a cost-based system development charge related to the benefit derived by the customer. A summary of the calculated net allowable wastewater system development charge for the City is shown below in Table 4-5.

Table 4-5 Calculated Net Allowable Wastewater System Development Charge			
System Component	**Reimbursement SDC**	**Improvement SDC**	**Total SDC or Maximum Allowable**
Treatment Plant	$1,659	$1,274	$2,933
Collection System	466	3,299	3,765
Debt Service Credit	(994)	0	(994)
System Development Charge per EDU	**$1,131**	**$4,573**	**$5,704**

(1) One EDU equals the first 18 fixture units

The net allowable charge per EDU is $5,704 for the first 18 fixture units. This compares to the City's current system development charge of $6,533 per EDU. The calculated SDC, as developed in this study, is lower then the existing SDC. The lower calculated fee is primarily a result of a reduced capital plan in this planning period. The 2007 SDC study included $37 million in capital projects through 2040, which included SDC eligible extension and upgrade collection projects, which are no longer included in the current master plan. A detail of the net allowable system development charge for the City is shown in Exhibit 6 of the Technical Appendix.

4.6 Key Assumptions

In developing the system development charges for the City's wastewater system, a number of key assumptions were utilized. These are as follows:

- The City's asset records, as of June 2017, were used to determine the existing system assets.
- The methodology used is the "combined" methodology. The reimbursement fee and expansion fee component are added together for a net allowable system development charge.
- The ENR construction cost index was based on the January 2018 index.
- The City's Master Plan provided the CIP for future improvements.
- The City's Master Plan CIP costs are in 2018 dollars.
- The City's Master Plan determined the portion of future improvements that were growth related.

4.7 Consultant's Recommendations

Based on our review and analysis of the City's wastewater system, HDR recommends the following:

- ✓ The City should adopt wastewater system development charges for new connections to the wastewater system that are no greater than the net allowable system development charges as set forth in this report.
- ✓ The adopted wastewater system development charges should be updated annually by industry accepted indices such as the local construction cost index from the Engineering New Record Construction Cost Index (ENR-CCI) for no more than five years before a complete update of the fee is undertaken. This best industry practice can keep the fee relatively current with construction pricing practices.
- ✓ The City should update the actual calculation for the system development charges at such time when a new capital improvement plan, public facilities plan, comprehensive system plan, or a comparable plan is approved or updated by the City, or every five years or when a major infrastructure project is completed.

4.8 Summary

The wastewater system development charges developed and presented in this section of the report are based on the planning and engineering design criteria of the City's Master Plan for the wastewater system, the value of the existing assets, future capital improvements, and "generally accepted" ratemaking principles. Adoption of the calculated net allowable system development charges will create equitable and cost-based charges for new customers connecting to the City's wastewater system.

Technical Appendix

City of Newberg
Exhibit 1
Development of the Wastewater SDC Per EDU

System Description	Original Cost (1)	SDC Eligible Original Cost (2)	SDC Eligible Replacement Cost New (3)
Reimbursement Fee			
Treatment Plant	$58,657,335	$37,363,629	$42,234,191
Less: Contributed Capital (4)	0	0	0
Total Treatment Plant	$58,657,335	$37,363,629	$42,234,191
Collection System	$16,341,122	$5,862,581	$8,783,002
Pump Stations	3,178,185	2,403,689	2,918,335
Lift Station	72,216	42,381	171,897
Less: Contributed Capital (4)	(5,381,449)	0	0
Total Collection System	$14,210,074	$8,308,651	$11,873,235
General Assets	$1,302,161	$0	$0
Total Reimbursement Fee	**$74,169,569**	**$45,672,280**	**$54,107,426**
Less: Outstanding Debt Principal (5)	($28,041,128)	($28,041,128)	($28,041,128)
Plus: Reserves (6)	$5,830,987	$5,830,987	$5,830,987
Total Net Reimbursement Fee	**$51,959,428**	**$23,462,139**	**$31,897,285**
Equivalent Dwelling Units (7)			28,201
Reimbursement Fee per EDU			**$1,131**
Improvement Fee			
Treatment Plant (8)	$26,004,000	$4,851,000	$4,851,000
Collection System (8)	40,836,500	12,558,000	12,558,000
Total Improvement Fee	**$66,840,500**	**$17,409,000**	**$17,409,000**
Future Equivalent Dwelling Units (7)			3,807
Improvement Fee per EDU			**$4,573**
Total Wastewater SDC per EDU (9)			**$5,704**

NOTES:

(1) Asset list based on original cost as of June 30, 2017. 2007 SDC analysis eliminated treatment plant assets due to grant funding, Clarifiers were 3% eligible, pump stations based on analysis Table 3, page 8 of Exhibit "B" Resolution No. 2007-2740.
(2) Net of assets that are not SDC eligible.
(3) Replacement based on specific "in service" date of asset and January 1, 2018 Engineering News Record, 20 City construction cost index.
(4) Based on June 2017 listing of contributed capital.
(5) Principal balance as of June 30, 2017 and only rate related debt. See Exhibit 2.
(6) Cash reserves as of June 2017 which are SDC eligible. See Exhibit 3.
(7) Existing and future equivalent dwelling units. See Exhibit 5.
(8) Treatment and Collection CIP based on 2018 Wastewater Master Plan. See Exhibit 4.
(9) Based on City definition of on sewer equivalent dwelling unit as 18 fixture units.

City of Newberg
Exhibit 2
Development of Outstanding Debt Principal

Debt Name	Composter Loan - Refunding	US Bank Loan-Baker Rock	WWTP RRE - R68820	WWTP RRE - R68821	WWTP RRE - R68820 (2)	EFFLUENT REUSE-Final (3)	Total Principal
I. Debt Status:							
Original Debt							
# of Years/Rate							
Sewer SDF Eligible	100.00%	100.00%	100.00%	100.00%	0.00%	63.70%	
II. Outstanding Principal Payments: (1)							
2018	$239,974	$193,000	$483,409	$550,175	$0	$235,790	$1,702,348
2019	248,095	193,000	497,432	563,736	0	243,820	1,746,083
2020	0	0	511,861	577,633	0	255,210	1,344,704
2021	0	0	526,709	591,871	0	266,790	1,385,370
2022	0	0	541,987	606,462	0	278,226	1,426,675
2023	0	0	557,709	621,411	0	290,226	1,469,346
2024	0	0	573,886	636,728	0	305,534	1,516,148
2025	0	0	590,533	652,424	0	317,245	1,560,202
2026	0	0	607,662	668,506	0	332,789	1,608,957
2027	0	0	625,290	684,984	0	351,805	1,662,079
2028	0	0	643,427	701,869	0	370,829	1,716,125
2029	0	0	662,091	719,170	0	390,170	1,771,431
2030	0	0	681,297	736,898	0	0	1,418,195
2031	0	0	1,069,419	755,063	0	0	1,824,482
2032	0	0	721,395	773,676	0	0	1,495,071
2033	0	0	742,321	792,746	0	0	1,535,067
2034	0	0	361,402	812,287	0	0	1,173,689
2035	0	0	0	832,311	0	0	832,311
2036	0	0	0	852,846	0	0	852,846
Total	**$488,069**	**$386,000**	**$10,397,830**	**$13,130,796**	**$0**	**$3,638,433**	**$28,041,128**
Equivalent Dwelling Units (7)							28,201
Debt Service Credit per EDU							**$994**

NOTES:
(1) Principal balance as of June 30, 2017 and rate related debt.
(2) Principal balance as of June 30, 2017 and Water and Wastewater SDC revenue source.
(3) Principal balance as of June 30, 2017 and Water SDC and Sewer Rate revenue source.

City of Newberg
Exhibit 3
Development of Cash Reserves

Reserve Fund Balance (1)			
	June 30, 2017	**% SDC (1)**	**Include in SDC**
Wastewater Fund	$7,706,382	76%	$5,830,987
Wastewater SDC Fund	3,766,802	0%	0
Total	**$11,473,184**		**$5,830,987**

Notes:
(1) Based on City information for June 2017.

City of Newberg
Exhibit 4
Development of Future Wastewater Capital Improvements

Component/Process		Total Estimated Cost (2018) (1)	SDC Growth % (2)	SDC Growth $	City $
TREATMENT					
Priority 1 Improvements					
T1.a Oxidation Ditch Rotor Replacement	Condition	$595,000	0.0%	$0	$595,000
T1.b Sawdust Bays	Capacity	350,000	0.0%	0	350,000
T1.c Operations Remodel Project	Condition	300,000	0.0%	0	300,000
T1.d Oxidation Ditch 1 Rehabilitation	Capacity/Condition	700,000	11.1%	78,000	622,000
T1.e Roofing Replacement at the WWTP	Condition	220,000	0.0%	0	220,000
T1.f WWTP Hydraulic Improvements	Capacity	480,000	14.4%	69,000	411,000
T1.g Secondary Clarifier Rerating Study	Capacity	60,000	23.3%	14,000	46,000
Total Priority 1 Improvements		$2,705,000		$161,000	$2,544,000
Priority 2 Improvements					
T2.a Oxidation Ditch Expansion	Capacity/Reduncancy	$11,841,000	22.1%	$2,617,000	$9,224,000
T2.b Chlorine Contact Expansion	Capacity	2,938,000	14.1%	415,000	2,523,000
T2.c PLC Control System Replacement Evaluation	Condition	40,000	0.0%	0	40,000
Total Priority 2 Improvements		$14,819,000		$3,032,000	$11,787,000
Priority 3 Improvements					
T3.a Secondary Clarifier #5	Capacity	$7,500,000	22.1%	$1,658,000	$5,842,000
T3.b Equalization Basin Rehabilitation	Capacity/Conditon	$980,000	0.0%	0	980,000
Total Priority 3 Improvements		$8,480,000		$1,658,000	$6,822,000
Total Wastewater Treatment Priority Improvements Costs		**$26,004,000**		**$4,851,000**	**$21,153,000**

City of Newberg
Exhibit 4
Development of Future Wastewater Capital Improvements

Component/Process		Total Estimated Cost (2018) (1)	SDC Growth % (2)	SDC Growth $	City $
COLLECTION					
Priority 1 Improvements					
C1.a Hess Creek Phase 1 - CIPP	Capacity	$1,000,000	2.0%	$20,000	$980,000
C1.b Hess Creek Phase 2 - Parallel Gravity Line	Capacity	6,649,000	2.0%	131,000	6,518,000
C1.c Springbrook Road	Capacity	3,812,000	19.7%	751,000	3,061,000
C1.d Pinehurst Court	Capacity	258,000	0.0%	0	258,000
C1.e Maintenance Yard Improvements	Capacity/Condition	737,500	20.1%	148,000	589,500
C1.f Lift Station Improvements (short term)	Condition	1,429,000	1.0%	14,000	1,415,000
C1.g I/I Projects	Capacity/Condition	2,700,000	50.0%	1,350,000	1,350,000
C1.h 5th Street	Capacity/Condition	350,000	15.7%	55,000	295,000
Total Priority 1 Improvements		$16,935,500		$2,469,000	$14,466,500
Priority 2 Improvements					
C2.a Hess Creek Phase 3 - Lift Station	Capacity	$2,121,000	2.0%	$42,000	$2,079,000
C2.b River Street	Capacity	2,764,000	12.3%	341,000	2,423,000
C2.c HWY 240 Lift Station Upsize	Capacity	454,000	19.2%	87,000	367,000
C2.d Main and Wynooski Streets	Capacity	328,000	1.2%	4,000	324,000
C2.e Lift Station Improvements (long-term)	Condition	375,000	10.9%	41,000	334,000
C2.f I/I Projects	Capacity/Condition	3,150,000	50.0%	1,575,000	1,575,000
C2.g Wastewater Master Plan	Planning	300,000	100.0%	300,000	0
Total Priority 2 Improvements		$9,492,000		$2,390,000	$7,102,000
Priority 3 Improvements					
C3.a Chehalem Drive Phase 1 - 20-year Infrastructure	Future Development	$1,619,000	93.0%	$1,506,000	$113,000
C3.b Riverfront Infrastructure	Future Development	2,411,000	91.3%	2,202,000	209,000
C3.c Providence Infrastructure	Future Development	1,527,000	100.0%	1,527,000	0
C3.d Chehalem Drive Phase 2 - Buildout Infrastructure	Future Development	888,000	0.0%	0	888,000
C3.e I/I Projects	Capacity/Condition	3,150,000	50.0%	1,575,000	1,575,000
Total Priority 3 Improvements		$9,595,000		$6,810,000	$2,785,000
Priority 4 Improvements					
C4.a Chehalem and Creekside LS Displacement/Future Trunkline	LS Consolidation	$3,492,000	25.5%	$889,000	$2,603,000
C4.b Charles and Andrew LS Displacement	LS Consolidation	1,322,000	0.0%	0	1,322,000
Total Priority 4 Improvements		$4,814,000		$889,000	$3,925,000
Total Wastewater Collection Priority Improvements Costs		**$40,836,500**		**$12,558,000**	**$28,278,500**

City of Newberg
Exhibit 4
Development of Future Wastewater Capital Improvements

Component/Process	Total Estimated Cost (2018) (1)	SDC Growth % (2)	SDC Growth $	City $
TOTAL WASTEWATER CAPITAL IMPROVEMENTS COSTS	**$66,840,500**		**$17,409,000**	**$49,431,500**
PROJECT SUMMARY				
TREATMENT	$26,004,000		$4,851,000	$21,153,000
COLLECTION	40,836,500		12,558,000	28,278,500
TOTAL WASTEWATER IMPROVEMENTS COSTS	**$66,840,500**		**$17,409,000**	**$49,431,500**
Less Developer Funding	$0	100.0%	$0	
NET WASTEWATER IMPROVEMENTS COSTS	**$66,840,500**		**$17,409,000**	**$49,431,500**

(1) From the 2018 Wastewater Master Plan, Treatment and Collection CIP, Table 1-18. In 2018 dollars.
(2) SDC eligible based on percent growth from 2017 to 2037. See Exhibit 5.

City of Newberg
Exhibit 5
Development of Equivalent Dwelling Units For Year Ended June 30, 2017

EDU = Equivalent Dwelling Unit

Average Dry Weather Flow ADWF (gpcd) (1)	99.0
Peak Instantaneous Flow PIF (gpcd)	326.0
Total projected unit flow (1)	425.0
Persons per Household (2)	2.72
Total design unit flow per EDU	1,156.0
Projected design flow at the plant (MGD) (3)	28.20
EDU's (4)	24,394

Year	Total Projected Design Flow (MGD) (3)	Total EDUs	Additional EDUs		
2017	28.20	24,394			
2037	32.60	28,201	3,807	20	Years
Total Change	**4.4**		**3,807**	190	Annual EDUs
				15.6%	Growth

(1) From Table 2-5, Projected Design Flows, 2018 Wastewater Master Plan, page 2-8.
(2) Based on US Census Bureau for 2012-2016 for Newberg area.
(3) From Table 2-5, Projected Design Flows, 2018 Wastewater Master Plan, page 2-8.
(4) Calculated based on gpcd and projected flow at the plant.

City of Newberg
Exhibit 6
Current and Calculated Sewer SDC

Item	Treatment	Collection	Calculated SDC
Reimbursement Fee	$1,659	$466	$2,125
Improvement Fee	1,274	3,299	4,573
Total Reimbursement & Improvement Fee	$2,933	$3,765	$6,698
Debt Credit			(994)
Net SDC			**$5,704**
Compliance Charge - Admin Fee			
Total Sewer SDC per EDU			**$5,704**

Resolution 2018-3454, Exhibit A	Present 2017 SDC (1)	Calculated SDC
For the first 18 fixture units	$6,533	$5,704
Per each fixture unit over 18	$364	$317
Efficiency Dwelling Unit (per each fixture unit)	$364	$317

(1) Resolution 2018-3454 Exhibit A, Master Fee Schedule

City of Newberg
Exhibit 7
Fixed Asset Listing as of June 30, 2017

Asset #	Function	Contributed	Description	Date Acquired	Original Cost	ENR-CCI 1/1/2018 10,878 ENR Factor	Replacement Cost	%SDC (1)	SDC Eligible Original Cost	SDC Eligible Replacement Cost
100	Treatment		WWTP Land 1	6/26/1984	$75,000	2.62	$196,780	100%	$75,000	$196,780
204	Pump Stations		Charles St Pump Station	12/31/1971	1,011	6.88	6,953	14%	141	973
240	Treatment		WWTP Land 2	12/31/1947	10	26.34	263	100%	10	263
254	Pump Stations		College St	12/31/1969	315	8.57	2,700	100%	315	2,700
255	Treatment		Old WWTP 1	12/31/1969	3,000	8.57	25,716	100%	3,000	25,716
260	Pump Stations		Eighth St.	12/31/1956	10	15.72	157	100%	10	157
486	Treatment		Meter-Oxygen	12/31/1978	499	3.92	1,955	0%	0	0
490	Treatment		Converter 1	12/31/1991	989	2.25	2,225	0%	0	0
547	Treatment		Motor control center 1	12/31/1987	1,742	2.47	4,302	0%	0	0
548	Treatment		Motor control center 2	12/31/1987	121,484	2.47	299,933	0%	0	0
549	Treatment		Motor control center-pump	12/31/1987	15,488	2.47	38,238	0%	0	0
550	Treatment		Motor control center-Cntr	12/31/1987	95,832	2.47	236,600	0%	0	0
554	Treatment		Motor control center-Blow	12/31/1987	27,104	2.47	66,917	0%	0	0
677	Treatment		Hoist 1	12/31/1987	4,143	2.47	10,229	0%	0	0
731	Treatment		Hoist 2	12/31/1987	3,308	2.47	8,167	0%	0	0
746	Treatment		Rotor Aerator 1	12/31/1987	127,391	2.47	314,517	0%	0	0
747	Treatment		Rotor Aerator 2	12/31/1987	127,391	2.47	314,517	0%	0	0
748	Treatment		Rotor Aerator 3	12/31/1987	127,391	2.47	314,517	0%	0	0
753	Treatment		Rotor Aerator 4	12/31/1987	127,391	2.47	314,517	0%	0	0
755	Treatment		Rotor Aerator 5	12/31/1987	127,391	2.47	314,517	0%	0	0
757	Treatment		Rotor Aerator 6	12/31/1997	127,391	1.87	237,858	0%	0	0
759	Treatment		Rotor Aerator 7	12/31/1987	127,391	2.47	314,517	0%	0	0
767	Treatment		Pump Sludge 1	12/31/1987	4,163	2.47	10,278	0%	0	0
771	Treatment		Pump Sludge 2	12/31/1987	2,034	2.47	5,022	0%	0	0
775	Treatment		Pump Sludge 3	12/31/1987	4,163	2.47	10,278	0%	0	0
781	Treatment		Pump 5	12/31/1987	2,034	2.47	5,022	0%	0	0
788	Treatment		Pump 6	12/31/1987	2,034	2.47	5,022	0%	0	0
789	General Equipment		Tool chest 1	12/31/1987	1,980	2.47	4,888	0%	0	0
791	Treatment		Clarifier 3	12/31/1986	55,333	2.53	140,143	3%	1,660	4,204
795	Treatment		Crane 1	12/31/1987	1,772	2.47	4,375	0%	0	0
804	Treatment		Clarifier 2	12/31/1986	55,333	2.53	140,143	3%	1,660	4,204
813	Treatment		Pump 10	12/31/1987	8,600	2.47	21,233	0%	0	0
814	Treatment		Pump 11	12/31/1987	8,600	2.47	21,233	0%	0	0
816	Treatment		Saw-horizontal band	12/31/1987	2,083	2.47	5,143	0%	0	0
820	Treatment		Pump-Turbine 3	12/31/1987	5,900	2.47	14,567	0%	0	0
825	Treatment		Clarifier 1	12/31/1986	55,333	2.53	140,143	3%	1,660	4,204
829	Treatment		Floor jack-Maintenance	12/31/1987	334	2.47	824	0%	0	0
831	Treatment		Tool chest 2	12/31/1987	1,715	2.47	4,235	0%	0	0
834	Treatment		Pump 15	12/31/1987	1,075	2.47	2,654	0%	0	0
836	Lift Station		Lift Charles St	12/31/1978	34,692	3.92	135,944	14%	4,857	19,032
840	Treatment		Meter tank	12/31/1990	663	2.30	1,524	0%	0	0
842	Treatment		Hoist 3	12/31/1987	1,095	2.47	2,703	0%	0	0
843	Treatment		Sander belt/disc	12/31/1987	585	2.47	1,444	0%	0	0
848	Treatment		Pump 16	12/31/1987	1,075	2.47	2,654	0%	0	0
850	Treatment		Hoist 4	12/31/1987	1,095	2.47	2,703	0%	0	0
871	Treatment		Pump-Turbine 4	12/31/1987	5,900	2.47	14,567	0%	0	0
885	Treatment		Hoist 5	12/31/1987	986	2.47	2,434	0%	0	0
894	Treatment		WWTP Floor	12/31/1991	2,625	2.25	5,906	0%	0	0
899	Treatment		Tank Fuel 1	12/31/1987	450	2.47	1,111	0%	0	0
907	Treatment		Tank Fuel 2	12/31/1987	2,000	2.47	4,938	0%	0	0
910	Treatment		Belt Conveyor 2	12/31/1987	8,712	2.47	21,509	0%	0	0
911	Treatment		Tank-air	12/31/1987	1,906	2.47	4,706	0%	0	0
913	Treatment		Hoist-Crane-Dayton Ave PS	12/31/1987	1,048	2.47	2,588	0%	0	0
919	Treatment		Old WWTP Piping	12/31/1950	72,500	21.33	1,546,384	0%	0	0
923	Treatment		WWTP Plant Piping 1	12/31/1987	15,488	2.47	38,238	0%	0	0
924	Treatment		WWTP Plant Piping 2	12/31/1987	71,632	2.47	176,853	0%	0	0

City of Newberg
Exhibit 7
Fixed Asset Listing as of June 30, 2017

Asset #	Function	Contributed	Description	Date Acquired	Original Cost	ENR-CCI 1/1/2018 10,878 ENR Factor	Replacement Cost	%SDC (1)	SDC Eligible Original Cost	SDC Eligible Replacement Cost
925	Treatment		WWTP Plant Piping 3	12/31/1987	3,388	2.47	8,365	0%	0	0
926	Treatment		Platform-steel	12/31/1987	4,356	2.47	10,755	0%	0	0
930	Treatment		WWTP Plant Piping 4	12/31/1987	145,200	2.47	358,485	0%	0	0
931	Treatment		WWTP Plant Piping 5	12/31/1987	3,872	2.47	9,560	0%	0	0
933	Treatment		WWTP Plant Piping 6	12/31/1987	6,776	2.47	16,729	0%	0	0
936	Treatment		WWTP Plant Piping 7	12/31/1987	11,616	2.47	28,679	0%	0	0
941	Treatment		Workbench 1	12/31/1987	336	2.47	829	0%	0	0
942	Treatment		Workbench 2	12/31/1987	336	2.47	829	0%	0	0
944	Treatment		Workbench 3	12/31/1987	1,091	2.47	2,694	0%	0	0
946	Treatment		Platform 2	12/31/1987	653	2.47	1,612	0%	0	0
948	Treatment		Hopper Feeder	12/31/1987	6,500	2.47	16,048	0%	0	0
949	Treatment		WWTP Plant Piping 8	12/31/1987	9,680	2.47	23,899	0%	0	0
952	Treatment		Bay Workbench	12/31/1987	630	2.47	1,555	0%	0	0
953	Treatment		WWTP Plant Piping 9	12/31/1987	23,232	2.47	57,358	0%	0	0
954	Treatment		Dft 1 Workbench	12/31/1987	1,091	2.47	2,694	0%	0	0
956	Treatment		WWTP Plant Piping 10	12/31/1987	40,656	2.47	100,376	0%	0	0
957	Treatment		Press-hydraulic	12/31/1987	2,615	2.47	6,456	0%	0	0
959	Treatment		Arm loading sludge	12/31/1987	3,800	2.47	9,382	0%	0	0
961	Treatment		Sludge Pump Stat.	12/31/1987	213,750	2.47	527,729	0%	0	0
963	Treatment		Clarifier 1	12/31/1987	157,000	2.47	387,619	3%	4,710	11,629
965	Treatment		Solid Handling	12/31/1987	646,000	2.47	1,594,915	0%	0	0
967	Treatment		KCM Phase III	12/31/1986	490,901	2.53	1,243,312	0%	0	0
968	Treatment		KCM Phase II	12/31/1986	851,611	2.53	2,156,888	0%	0	0
969	Treatment		Capitalized Interest	12/31/1986	461,056	2.53	1,167,723	0%	0	0
970	Treatment		Outfall	12/31/1986	343,674	2.53	870,428	0%	0	0
974	Treatment		RDS Distrib	12/31/1987	24,251	2.47	59,872	0%	0	0
975	Treatment		Chlorine Bldg	12/31/1987	118,750	2.47	293,183	0%	0	0
978	Treatment		Chlorine Contact Tk	12/31/1987	169,000	2.47	417,246	0%	0	0
979	Treatment		Equalization Basin	12/31/1987	454,000	2.47	1,120,884	0%	0	0
980	Treatment		RAS Distr Box	12/31/1987	16,167	2.47	39,915	0%	0	0
981	Treatment		Sludge Tank	12/31/1987	174,000	2.47	429,590	0%	0	0
982	Treatment		Clarifier Distr Box	12/31/1987	41,939	2.47	103,544	3%	1,258	3,106
983	Treatment		Operation Bldg	12/31/1987	881,672	2.47	2,176,768	0%	0	0
985	Treatment		Oxidation Ditch 2	12/31/1987	638,000	2.47	1,575,163	0%	0	0
986	Treatment		Oxidation Ditch 1	12/31/1987	638,000	2.47	1,575,163	0%	0	0
990	Treatment		Clarifier 3	12/31/1987	157,000	2.47	387,619	0%	0	0
991	Treatment		Clarifier 2	12/31/1987	157,000	2.47	387,619	0%	0	0
994	Treatment		KCM Phase I	12/31/1986	455,421	2.53	1,153,451	0%	0	0
997	Treatment		KCM-Design	12/31/1986	1,133,125	2.53	2,869,882	0%	0	0
1005	Treatment		Site Work 1	12/31/1986	19,788	2.53	50,117	0%	0	0
1006	Treatment		Site Work 2	12/31/1986	273,617	2.53	692,994	0%	0	0
1008	Treatment		Influent Pump	12/31/1986	546,970	2.53	1,385,319	0%	0	0
1011	Collection		FY 72-73 Sewer Lines	12/31/1973	2,619	5.74	15,034	20%	524	3,007
1012	Collection		FY 89-90 Sewer Lines	12/31/1990	3,466	2.30	7,968	20%	693	1,594
1014	Collection		FY 70-71 Sewer Lines	12/31/1971	57,325	6.88	394,422	20%	11,465	78,884
1016	Collection		FY 71-72 Sewer Lines	12/31/1972	21,553	6.21	133,744	20%	4,311	26,749
1024	Collection		FY 73-74 Sewer Lines	12/31/1974	30,982	5.39	166,843	20%	6,196	33,369
1025	Collection		FY 69-70 Sewer Lines	12/31/1970	269,447	7.88	2,122,409	20%	53,889	424,482
1027	Collection		FY 75-76 Sewer Lines	12/31/1976	56,899	4.53	257,788	20%	11,380	51,558
1029	Collection		FY 79-80 Sewer Lines	12/31/1980	145,527	3.36	489,047	20%	29,105	97,809
1030	Collection		FY 80-81 Sewer Lines	12/31/1981	463,143	3.08	1,425,198	20%	92,629	285,040
1032	Collection		FY 59-60 Sewer Lines	12/31/1960	46,740	13.20	617,037	20%	9,348	123,407
1034	Collection		FY 87-88 Sewer Lines	12/31/1988	248,007	2.41	596,995	20%	49,601	119,399
1035	Collection		FY 82-83 Sewer Lines	12/31/1983	3,900	2.68	10,434	20%	780	2,087
1036	Collection		FY 64-65 Sewer Lines	12/31/1965	18,523	11.20	207,511	20%	3,705	41,502
1037	Collection		FY 65-66 Sewer Lines	12/31/1966	78,742	10.68	840,585	20%	15,748	168,117

City of Newberg
Exhibit 7
Fixed Asset Listing as of June 30, 2017

Asset #	Function	Contributed	Description	Date Acquired	Original Cost	ENR-CCI 1/1/2018 10,878 ENR Factor	Replacement Cost	%SDC (1)	SDC Eligible Original Cost	SDC Eligible Replacement Cost
1039	Collection		FY 62-63 Sewer Lines	12/31/1963	35,812	12.07	432,368	20%	7,162	86,474
1041	Collection		FY 78-79 Sewer Lines	12/31/1979	53,863	3.62	195,112	20%	10,773	39,022
1043	Collection		FY 47-48 Sewer Lines	12/31/1948	20,466	23.60	482,927	20%	4,093	96,585
1044	Collection		FY 77-78 Sewer Lines	12/31/1978	59,148	3.92	231,777	20%	11,830	46,355
1045	Collection		FY 88-89 Sewer Lines	12/31/1989	113,787	2.36	268,207	20%	22,757	53,641
1046	Collection		FY 88-89 Sewer Lines	12/31/1989	32,877	2.36	77,494	20%	6,575	15,499
1047	Collection		FY 58-59 Sewer Lines	12/31/1959	7,110	13.65	97,042	20%	1,422	19,408
1069	Treatment		Hoist 6	8/14/1992	375	2.18	818	0%	0	0
1107	Treatment		Megohmeter	4/9/1993	682	2.09	1,423	0%	0	0
1113	Treatment		Locker	4/9/1993	310	2.09	646	0%	0	0
1118	Treatment		Sampler	1/12/1993	5,140	2.09	10,732	0%	0	0
1119	Treatment		Clarifier 1	8/14/1992	18,233	2.18	39,788	3%	547	1,194
1154	Treatment		Safety Block 1	9/11/1992	770	2.18	1,679	0%	0	0
1156	Treatment		Processor Board-Cntr	4/9/1993	894	2.09	1,867	0%	0	0
1158	Treatment		Calibrator-Cntr	3/10/1993	1,156	2.09	2,414	0%	0	0
1160	Treatment		Compressor 2	9/10/1992	647	2.18	1,411	0%	0	0
1161	Treatment		Serial Interface-Cntr	10/29/1992	2,270	2.18	4,953	0%	0	0
1177	Collection		FY 92-93 Sewer Lines	6/30/1993	209,960	2.09	438,378	20%	41,992	87,676
1183	Treatment		DC output card-Cntr	7/31/1993	489	2.09	1,022	0%	0	0
1204	Treatment		Reducer-Clar	10/31/1993	622	2.09	1,298	0%	0	0
1234	Treatment		Clarifier 2	10/31/1993	17,995	2.09	37,572	3%	540	1,127
1248	General Equipment		Pickup 94-508	1/31/1994	13,312	2.01	26,777	0%	0	0
1265	Collection		Valeri Park Sub	1/31/1994	1,817	2.01	3,654	0%	0	0
1338	Treatment		I/O Board Assembl	6/1/1994	695	2.01	1,398	0%	0	0
1379	Treatment		DC Output Card	6/30/1994	653	2.01	1,313	0%	0	0
1382	Treatment		Pump 18	9/11/1991	390	2.25	877	0%	0	0
1401	Pump Stations		Dayton Avenue Pump Station	6/30/1994	28,066	2.01	56,453	0%	0	0
1402	Pump Stations		Dayton Ave Pump Station WW	6/30/1994	56,761	2.01	114,173	0%	0	0
1403	Pump Stations		Dayton Ave PS Piping	6/30/1994	183,869	2.01	369,846	0%	0	0
1405	Pump Stations		Pumps Dayton Ave PS	6/30/1994	67,973	2.01	136,724	0%	0	0
1406	Pump Stations		Compressor Dayton Ave PS	6/30/1994	5,147	2.01	10,354	0%	0	0
1407	Pump Stations		Meter Flow Dayton Ave PS	6/30/1994	3,673	2.01	7,389	0%	0	0
1408	Pump Stations		Telemetry Dayton Ave PS	6/30/1994	588	2.01	1,184	0%	0	0
1409	Treatment		Dayton Ave Wet Well	6/30/1994	64,610	2.01	129,960	0%	0	0
1410	Collection		FY 93-94 Sewer Lines	6/30/1994	405,405	2.01	815,459	20%	81,081	163,092
1421	Treatment		Clarifier 3	8/31/1994	27,855	2.01	56,029	3%	836	1,681
1516	Treatment		Cleaner-SewerVactor	12/31/1994	151,950	2.01	305,642	0%	0	0
1520	Treatment		Pump 19	1/31/1995	945	1.99	1,879	0%	0	0
1533	General Equipment		Generator-Portable	3/31/1995	611	1.99	1,215	0%	0	0
1654	Collection		FY 94-95 Sewer Lines	6/30/1995	457,376	1.99	909,402	20%	91,475	181,880
1719	Treatment		Old WWTP 2	1/1/1947	990	26.34	26,076	0%	0	0
1720	Treatment		11th St.	4/1/1969	3,185	8.57	27,302	0%	0	0
1746	Treatment		WWTP Land 3	11/7/1984	68,000	2.62	178,414	0%	0	0
1748	Treatment		WWTP Land 4	6/26/1984	170,000	2.62	446,035	0%	0	0
1759	Lift Station		Lift Stat Rotat Pump College St	4/30/1996	2,445	1.94	4,733	100%	2,445	4,733
1761	Lift Station		Lift Stat Pkg Syst College St	12/31/1977	35,079	4.22	148,133	100%	35,079	148,133
1777	Collection		FY 95-96 Sewer Lines	6/30/1996	1,068,310	1.94	2,067,809	20%	213,662	413,562
1850	Collection		FY 91-92 Sewer Lines	12/31/1992	447,506	2.18	976,525	20%	89,501	195,305
1861	General Equipment		Radio-portable 8	3/31/1997	1,420	1.87	2,651	0%	0	0
1862	General Equipment		Radio-portable 9	3/31/1997	1,420	1.87	2,651	0%	0	0
1864	General Equipment		Radio-portable 10	3/31/1997	1,420	1.87	2,651	0%	0	0
1865	General Equipment		Radio-portable 11	3/31/1997	1,420	1.87	2,651	0%	0	0
1866	General Equipment		Radio-portable 12	3/31/1997	1,420	1.87	2,651	0%	0	0
1867	General Equipment		Radio-portable 13	3/31/1997	1,420	1.87	2,651	0%	0	0
1870	General Equipment		Radio-portable 14	3/31/1997	1,420	1.87	2,651	0%	0	0
1872	General Equipment		Radio-portable 15	3/31/1997	1,420	1.87	2,651	0%	0	0

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Asset #	Function	Contributed	Description	Date Acquired	Original Cost	ENR-CCI 1/1/2018 10,878 ENR Factor	Replacement Cost	%SDC (1)	SDC Eligible Original Cost	SDC Eligible Replacement Cost
1876	General Equipment		Stat Radio-Control	3/31/1997	3,000	1.87	5,601	0%	0	0
1879	General Equipment		Charger	3/31/1997	574	1.87	1,071	0%	0	0
1899	General Equipment		I & C Modifica	6/30/1997	384,647	1.87	718,193	0%	0	0
1920	General Equipment		Sewage Sampler	8/14/1997	3,795	1.87	7,086	0%	0	0
1925	General Equipment		Scope Meter	9/5/1997	1,888	1.87	3,525	0%	0	0
1926	General Equipment		Vacuum-Wet/Dry	8/22/1997	2,094	1.87	3,909	0%	0	0
1927	General Equipment		Hydraulic Puller Set	9/3/1997	2,307	1.87	4,307	0%	0	0
1934	Collection		Telemetry Upgrade	9/1/1997	13,600	1.87	25,393	0%	0	0
1970	General Equipment		Truck 507-98	7/10/1998	38,273	1.84	70,326	0%	0	0
1988	Collection		Sewer Tap	4/30/1998	2,035	1.84	3,739	0%	0	0
1989	Treatment		Pressure Transducer 1	5/27/1998	828	1.84	1,521	0%	0	0
1990	Treatment		Pressure Transducer 2	5/27/1998	828	1.84	1,521	0%	0	0
1997	Treatment		Tapping Machi ne	6/16/1998	3,132	1.84	5,755	0%	0	0
2037	Treatment		Composter	6/30/1998	4,000,000	1.84	7,350,007	0%	0	0
2040	Treatment		WTP Elect Upgrade	6/30/1998	91,266	1.84	167,701	0%	0	0
2044	Collection		FY 97-98 Sewer Lines	6/30/1998	26,747	1.84	49,147	20%	5,349	9,829
2047	General Equipment		Portable Radio 3	7/24/1998	1,629	1.84	2,993	0%	0	0
2050	General Equipment		Portable Radio 4	8/7/1998	1,629	1.84	2,993	0%	0	0
2057	General Equipment		Eyewash Upgrade	8/31/1998	4,283	1.84	7,870	0%	0	0
2072	General Equipment		Portable Radio 5	11/25/1998	1,330	1.84	2,443	0%	0	0
2073	General Equipment		Portable Radio 6	11/25/1998	1,330	1.84	2,443	0%	0	0
2074	General Equipment		Portable Radio 7	11/25/1998	1,330	1.84	2,443	0%	0	0
2080	General Equipment		Pickup 7	1/27/1999	16,535	1.80	29,686	0%	0	0
2113	General Equipment		Variable Spd Dr	3/31/1999	19,500	1.80	35,009	0%	0	0
2115	Treatment		Vacuum Blower	4/30/1999	3,500	1.80	6,284	0%	0	0
2120	Treatment		Valves/Actuator 1	4/26/1999	4,363	1.80	7,833	0%	0	0
2121	Treatment		Valves/Actuator 2	4/26/1999	4,363	1.80	7,833	0%	0	0
2142	Treatment		Conveyor Rebuild	4/23/1999	20,850	1.80	37,433	0%	0	0
2143	Treatment		Variable Freq Drive 2	2/11/1999	2,288	1.80	4,107	0%	0	0
2143.1	Treatment		Install VFD 1	4/27/1999	4,184	1.80	7,511	0%	0	0
2144	Treatment		Variable Freq Drive 3	2/11/1999	2,288	1.80	4,107	0%	0	0
2144.1	Treatment		Install VFD 2	4/27/1999	4,184	1.80	7,511	0%	0	0
2145	Treatment		Sawdust Bin Cover	11/6/1998	2,223	1.84	4,085	0%	0	0
2159	Treatment		Handrails	6/14/1999	2,669	1.80	4,792	0%	0	0
2160	Collection		1998-99 Lines	6/30/1999	11,971	1.80	21,492	20%	2,394	4,298
2162	Pump Stations		Eighth St. Pump Station	6/30/1999	19,442	1.80	34,906	40%	7,777	13,962
2163	Collection		MiddleBrook Relocate	6/30/1999	46,887	1.80	84,178	0%	0	0
2189	General Equipment		Saw-Band	8/19/1999	3,882	1.80	6,970	0%	0	0
2191	Treatment		Fan 1 Jaybird Misting System	9/16/1999	1,787	1.80	3,208	0%	0	0
2192	Treatment		Fan 2 Jaybird Misting System	9/16/1999	1,787	1.80	3,208	0%	0	0
2197	Treatment		Actuator/Controller	12/2/1999	2,574	1.80	4,620	0%	0	0
2202	Treatment		Trash Pump	1/13/2000	1,150	1.75	2,011	0%	0	0
2211	Treatment		Valve Actuator 1	2/2/2000	4,659	1.75	8,147	0%	0	0
2212	Treatment		Valve Actuator 2	2/2/2000	4,659	1.75	8,147	0%	0	0
2221	General Equipment		Handheld Meter Reader	4/28/2000	4,450	1.75	7,781	0%	0	0
2230	Treatment		Conveyor Rebuild	3/28/2000	8,310	1.75	14,531	0%	0	0
2247	Treatment		Generator 2	6/12/2000	29,500	1.75	51,584	0%	0	0
2267	Collection		FY 99-00 City Sewer Lines	6/30/2000	3,995	1.75	6,986	20%	799	1,397
2282	Treatment		Screw Conveyor	7/17/2000	18,399	1.75	32,173	0%	0	0
2314	Treatment		Robotic Total Station	3/23/2001	14,000	1.72	24,044	0%	0	0
2318	Treatment		Circuit Breaker	5/22/2001	6,587	1.72	11,313	0%	0	0
2320	Collection		FY 00-01 City Sewer Lines	6/30/2001	47,445	1.72	81,482	20%	9,489	16,296
2322	Collection		Manholes	6/30/2001	20,040	1.72	34,417	0%	0	0
2323	Pump Stations		Sheridan St Pump	6/30/2001	240,151	1.72	412,435	40%	96,060	164,974
2324	Pump Stations		Charles St Main	6/30/2001	40,985	1.72	70,387	14%	5,738	9,854
2325	Pump Stations		Charles St Pump	6/30/2001	120,592	1.72	207,105	14%	16,883	28,995

City of Newberg
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2326	Pump Stations		Andrews St Pump	6/30/2001	118,546	1.72	203,591	5%	5,927	10,180
2327	Treatment		Composter	6/30/2001	140,302	1.72	240,955	0%	0	0
2329	Treatment		WWTP Door Hardware	6/30/2001	19,434	1.72	33,377	0%	0	0
2341	General Equipment		Pickup 534-01	10/30/2001	18,359	1.72	31,530	0%	0	0
2346	Treatment		Flow Meter Monitoring Station	1/9/2002	17,620	1.66	29,316	0%	0	0
2348	Treatment		Variable Freq Drive 4	5/30/2002	15,710	1.66	26,139	0%	0	0
2353	Treatment		Amp Breaker-100	6/26/2002	6,462	1.66	10,752	0%	0	0
2354	Treatment		Amp Breaker-400	6/26/2002	6,929	1.66	11,529	0%	0	0
2364	Treatment		VFD Replacement	6/30/2002	103,621	1.66	172,406	0%	0	0
2370	Collection		01-02 Manholes	6/30/2002	28,192	1.66	46,906	0%	0	0
2371	Collection		FY 01-02 City Sewer Lines	6/30/2002	192,111	1.66	319,636	20%	38,422	63,927
2375	Treatment		Mailing Machine	9/19/2002	6,470	1.66	10,765	0%	0	0
2377	Treatment		VFD Upgrade	9/30/2002	5,170	1.66	8,602	0%	0	0
2381	Treatment		Diesel Fuel Tank	5/8/2003	11,240	1.63	18,265	0%	0	0
2387	Treatment		Pump Base	6/25/2003	7,054	1.63	11,463	0%	0	0
2388	Treatment		Software Work Director/Waterview	6/25/2003	7,910	1.63	12,854	0%	0	0
2390	Collection		FY 02-03 City Sewer Lines	6/30/2003	1,216,110	1.63	1,976,226	20%	243,222	395,245
2402	Collection	Contributed	FY 98-99 Developer Sewer Lines	6/30/1999	308,700	1.80	554,224	0%	0	0
2404	Collection	Contributed	FY 99-00 Developer Sewer Lines	6/30/2000	117,900	1.75	206,159	0%	0	0
2406	Collection	Contributed	FY 00-01 Developer Sewer Lines	6/30/2001	454,500	1.72	780,558	0%	0	0
2408	Collection	Contributed	FY 01-02 Developer Sewer Lines	6/30/2002	127,600	1.66	212,303	0%	0	0
2410	Treatment		Pickup 509-03	8/14/2003	15,783	1.63	25,647	0%	0	0
2412	Treatment		Loader 514-04	11/12/2003	127,822	1.63	207,716	0%	0	0
2418	Treatment		Power Supply	1/29/2004	18,565	1.53	28,384	0%	0	0
2424	Treatment		Screw Conveyor #2	5/13/2004	9,417	1.53	14,397	0%	0	0
2425	Treatment		Screw Conveyor #3	5/13/2004	9,417	1.53	14,397	0%	0	0
2427	Treatment		Pocket Align Laser Align System	6/30/2004	5,008	1.53	7,657	0%	0	0
2428	Treatment		1997 Flatbet 940-97	6/28/2004	20,561	1.53	31,435	0%	0	0
2433	Treatment		Fernwood Rd Pump Station	6/30/2004	1,053,855	1.53	1,611,222	0%	0	0
2434	Collection		FY 03-04 City Sewer Lines	6/30/2004	232,090	1.53	354,839	20%	46,418	70,968
2435	Collection	Contributed	FY 03-04 Developer Sewer Lines	6/30/2004	905,500	1.53	1,384,405	0%	0	0
2442	General Equipment		Trailer 903-04	9/9/2004	11,938	1.53	18,252	0%	0	0
2456	Treatment		Pressure Headworks Blower	1/6/2005	6,800	1.46	9,934	0%	0	0
2457	Treatment		Return Room Piping Replacement	11/18/2004	5,930	1.53	9,066	0%	0	0
2458	Treatment		Reclaim Pump #1	6/30/2005	9,005	1.46	13,156	0%	0	0
2463	Collection	Contributed	FY 2004-05 City Sewer Lines LID	6/30/2005	967,696	1.46	1,413,731	0%	0	0
2464	Collection	Contributed	FY 2004-05 Developer Sewer Lines	6/30/2005	1,111,775	1.46	1,624,219	0%	0	0
2465	Treatment		Headworks Improvements	6/30/2005	420,693	1.46	614,601	0%	0	0
2466	Treatment		Belt Screen & Compactor	6/30/2005	415,387	1.46	606,849	0%	0	0
2467	Treatment		Grit Cyclones & Classifier	6/30/2005	74,669	1.46	109,086	0%	0	0
2468	Treatment		Cure & Blower Building	6/30/2005	728,496	1.46	1,064,278	0%	0	0
2469	Treatment		Scrubber & Biofilter System	6/30/2005	301,212	1.46	440,048	0%	0	0
2470	Treatment		Cure & Ventilation Blower	6/30/2005	338,641	1.46	494,729	0%	0	0
2471	Treatment		Odorous Piping Network	6/30/2005	467,486	1.46	682,962	0%	0	0
2472	Treatment		Reaktop Door	6/30/2005	15,158	1.46	22,145	0%	0	0
2473	Treatment		Compost Bin Live Bottom	6/30/2005	75,546	1.46	110,367	0%	0	0
2478	Treatment		Chehalem Sewer Pump Station & Lines	6/30/2005	877,259	1.46	1,281,609	23%	201,770	294,770
2479	Treatment		Creekside Pump Station Improvements	6/30/2005	31,033	1.46	45,337	40%	12,413	18,135
2491	General Equipment		2005 Dodge Dakota 517-05	9/29/2005	22,169	1.46	32,387	0%	0	0
2496	Treatment		Composter Energy Improvements	2/2/2006	455,000	1.40	638,545	0%	0	0
2498	General Equipment		Tractor Loader & Mower	3/9/2006	20,150	1.40	28,278	0%	0	0
2508	Treatment		WWTP Crane	6/30/2006	8,319	1.40	11,675	0%	0	0
2516	Pump Stations		Generator-Backup Andrews Pump Station	6/30/2006	21,282	1.40	29,867	5%	1,064	1,493
2517	Collection		FY 2005-06 City Sewer Lines	6/30/2006	141,692	1.40	198,850	20%	28,338	39,770
2518	Collection	Contributed	FY 2005-06 Developer Sewer	6/30/2006	376,355	1.40	528,175	0%	0	0
2529	General Equipment		WWTP Truck 527-08	6/30/2007	40,939	1.37	55,896	0%	0	0

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2547	Collection	Contributed	FY 2006-07 Developer Sewer Lines	6/30/2007	538,720	1.37	735,536	0%	0	0
2578	Collection		Wastewater Line N Arterial S-Curve	6/30/2008	606,926	1.31	794,375	100.0%	606,926	794,375
2581	Collection	Contributed	2007-08 Developer Contributed WW Lines	6/30/2008	278,110	1.31	364,004	0.0%	0	0
2609.2	Collection		Effluent Reuse Pipelines-WW	6/30/2009	436,690	1.27	553,983	100.0%	436,690	553,983
2612	Collection	Contributed	2008-09 Developer Contributed Wastewater Lines	6/30/2009	60,305	1.27	76,503	0.0%	0	0
2635	Collection		W Sheridan/N Harrison WW Improvements	6/30/2010	307,287	1.24	379,746	100.0%	307,287	379,746
2716	Collection		Animal Shelter WW Lines	6/30/2013	48,550	1.14	55,321	100.0%	48,550	55,321
2778	Collection		Wynooski-Riverfront Utilities - relocate trunk line	6/30/2014	2,188,340	1.11	2,427,438	100.0%	2,188,340	2,427,438
2781	Collection		Reuse Line Relocation (Bypass Ph 1)	5/31/2014	28,547	1.11	31,666	100.0%	28,547	31,666
Sewer Lir	Collection	Contributed	Highland at Hess Creek Phase 4 & 5 Developer Contribut	6/30/2017	53,737	1.08	58,128	0.0%	0	0
Sewer Lir	Collection		South Springbrook (Bypass) (Wastewater Lines)	6/30/2017	71,531	1.08	77,377	100.0%	71,531	77,377
Sewer Lir	Collection	Contributed	Shellie Park Developer Contributed	6/30/2017	80,551	1.08	87,134	0.0%	0	0
Sewer Lir	Collection		Edwood 8" sewer 176 LF	6/30/2014	19,360	1.11	21,475	100.0%	19,360	21,475
Sewer Lir	Collection		2nd Street Parking Lot Rehab (Wastewater Lines)	6/30/2016	59,085	1.08	63,913	100.0%	59,085	63,913
Sewer Lir	Collection		Heritage 8" sewer 286 LF	6/30/2014	31,469	1.11	34,907	100.0%	31,469	34,907
Sewer Lir	Collection		Inflow/Infiltration - Aquarius, Vittoria Way, Madrona, Cc	6/30/2017	231,448	1.08	250,362	100.0%	231,448	250,362
Sewer Lir	Collection		Aquarious Street Lateral Replacement (I&I)	6/30/2016	134,804	1.08	145,819	100.0%	134,804	145,819
Sewer Lir	Collection		Meridian St Sewer (I&I)	6/30/2016	452,414	1.08	489,385	100.0%	452,414	489,385
2561	General Equipment		2008 Chev 1/2 ton PU Vehicle No. 528-08.	6/30/2008	19,935	1.31	26,092	0.0%	0	0
2567	General Equipment		Kubota Utility Cart	6/30/2008	14,752	1.31	19,308	0.0%	0	0
2588	General Equipment		Jet Lathe GH1440W-3	6/30/2009	6,098	1.27	7,736	0.0%	0	0
2605	General Equipment		Stantrol 960 base unit and parts	6/30/2009	18,227	1.27	23,123	0.0%	0	0
2673	General Equipment		2012 Chev Silverado Pick Up	6/30/2012	27,067	1.17	31,632	0.0%	0	0
2687	General Equipment		2011 Lawn Mower	6/30/2012	14,700	1.17	17,179	0.0%	0	0
2713	General Equipment		Doosan Forklift #539-13	6/30/2013	32,908	1.14	37,497	0.0%	0	0
2729	General Equipment		2013 Ford TV Inspection Truck (#540-14)	6/30/2014	169,675	1.11	188,214	0.0%	0	0
2742	General Equipment		2014 Freightliner Truck Veh# 542-14	6/30/2014	177,526	1.11	196,922	0.0%	0	0
2744	General Equipment		Camera - Controller for Composter	6/30/2014	7,717	1.11	8,560	0.0%	0	0
2757	General Equipment		2014 Caterpillar	12/18/2014	121,839	1.11	135,151	0.0%	0	0
2821	General Equipment		2017 Chevrolet PU Veh# 546-17	2/28/2017	27,902	1.08	30,182	0.0%	0	0
2822	General Equipment		2017 Chevrolet SUV Veh# 547-17	3/31/2017	22,316	1.08	24,140	0.0%	0	0
2823	General Equipment		Utility Golf Car	4/30/2017	8,207	1.08	8,877	0.0%	0	0
2598	Pump Stations		HWY 240 WW Pump Station 305 W Illinois	6/30/2009	77,808	1.27	98,707	100.0%	77,808	98,707
2649	Pump Stations		Generator at Charles St Pump Station	6/30/2011	20,172	1.20	24,182	100.0%	20,172	24,182
2650	Pump Stations		Generator for Dayton Ave-Pump Station	6/30/2011	35,900	1.20	43,037	100.0%	35,900	43,037
2668	Pump Stations		HWY 240 Pump Station	6/30/2011	1,782,391	1.20	2,136,730	100.0%	1,782,391	2,136,730
CIP	Pump Stations		Dayton Pump Station Design	6/30/2015	353,503	1.08	382,390	100.0%	353,503	382,390
2571	Treatment		Wireless bridge WWTP	6/30/2008	8,304	1.31	10,869	100.0%	8,304	10,869
2592	Treatment		Server for Public Works	6/30/2009	8,552	1.27	10,849	100.0%	8,552	10,849
2599.1	Treatment		City-Wide Wireless Network-Wastewater	6/30/2009	28,944	1.27	36,718	100.0%	28,944	36,718
2600	Treatment		Replacement pump-Inf Pump #3	6/30/2009	69,615	1.27	88,313	100.0%	69,615	88,313
2601.1	Treatment		New key system for Operations Bldg/Stat	6/30/2009	6,328	1.27	8,028	100.0%	6,328	8,028
2608.2	Treatment		Effluent Reuse Facility-WW	6/30/2009	1,931,662	1.27	2,450,498	100.0%	1,931,662	2,450,498
2610.2	Treatment		Effluent Reuse Membrane-WW	6/30/2009	382,000	1.27	484,604	100.0%	382,000	484,604
2611	Treatment		WWTP Generator/Building	6/30/2009	4,198,310	1.27	5,325,959	100.0%	4,198,310	5,325,959
2614	Treatment		8LVP-BHC Pressure Blower	6/30/2010	10,990	1.24	13,581	100.0%	10,990	13,581
2615	Treatment		Heat pump replacement-Operations Bldg	6/30/2010	14,649	1.24	18,103	100.0%	14,649	18,103
2625	Treatment		WWTP Land Expansion 19.68 acres (sold 9.74 ac)	6/30/2010	980,738	1.24	1,211,997	100.0%	980,738	1,211,997
2626	Treatment		Live bottom for composter replacement	6/30/2010	42,592	1.24	52,635	100.0%	42,592	52,635
2627	Treatment		Composter conveyor chains (replacement)	6/30/2010	18,428	1.24	22,773	100.0%	18,428	22,773
2637	Treatment		WWTP Sawdust Dryer	6/30/2010	995,912	1.24	1,230,749	100.0%	995,912	1,230,749
2638	Treatment		Influent Pump #2	6/30/2010	35,032	1.24	43,293	100.0%	35,032	43,293
2639	Treatment		Influent Pump #1	6/30/2010	35,032	1.24	43,293	100.0%	35,032	43,293
2653	Treatment		Sludge Pump to Belt Filter Press	6/30/2011	20,352	1.20	24,398	100.0%	20,352	24,398
2667	Treatment		Security Fencing at WWTP-FEDERAL GRANT	6/30/2011	30,181	1.20	36,181	100.0%	30,181	36,181
2669	Treatment		Jet Milling Machine	6/30/2011	11,072	1.20	13,273	100.0%	11,072	13,273

City of Newberg
Exhibit 7
Fixed Asset Listing as of June 30, 2017

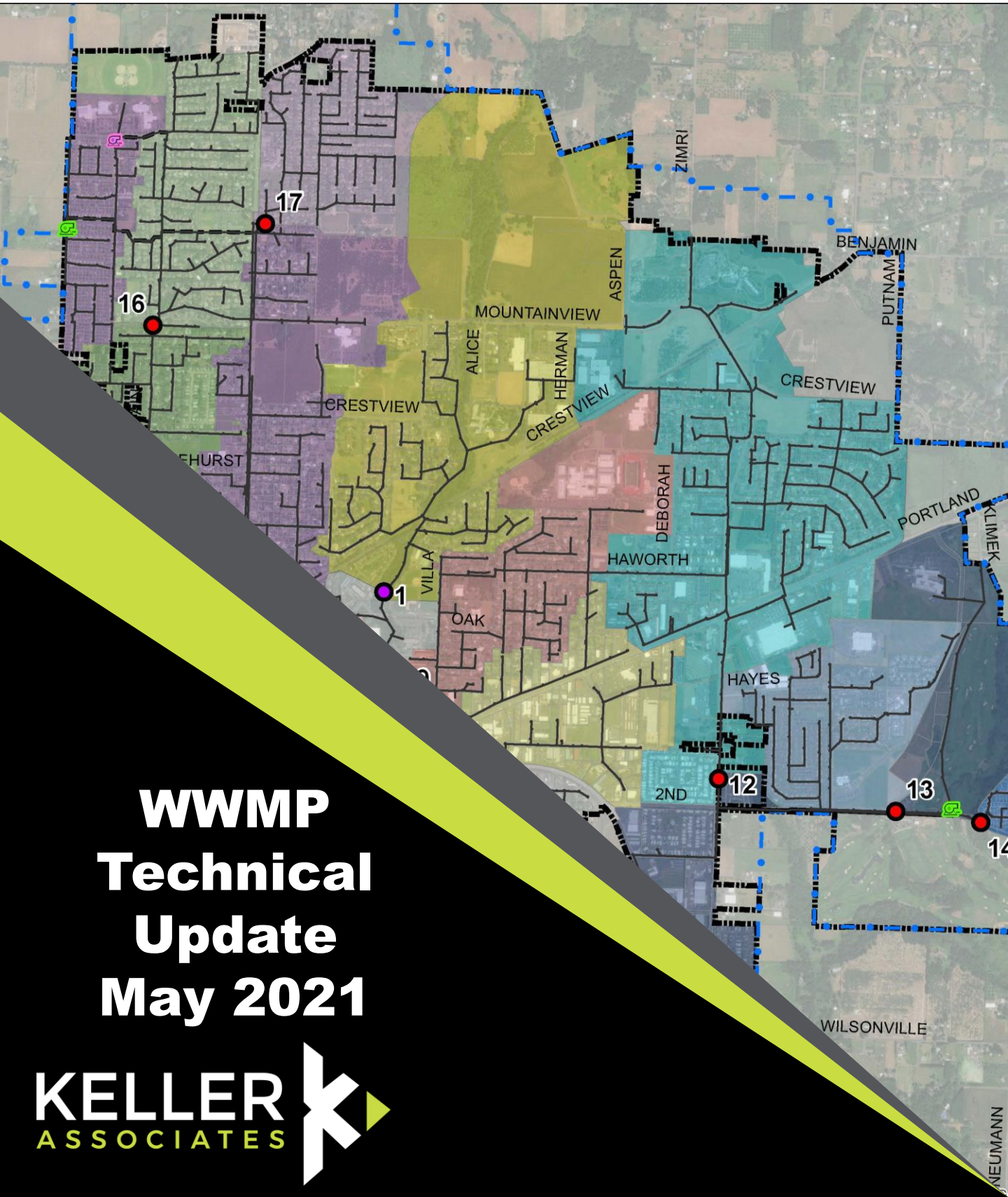
Asset #	Function	Contributed	Description	Date Acquired	Original Cost	ENR-CCI 1/1/2018 10,878 ENR Factor	Replacement Cost	% SDC (1)	SDC Eligible Original Cost	SDC Eligible Replacement Cost
2702	Treatment		Steel Utility Building and Construction	6/30/2013	44,958	1.14	51,228	100.0%	44,958	51,228
2719	Treatment		Engineering Copies	6/30/2013	8,410	1.14	9,583	0.0%	0	0
2724	Treatment		Sawdust Silo Unloader	6/30/2014	43,598	1.11	48,362	100.0%	43,598	48,362
2734	Treatment		WWTP Frontage Sign	6/30/2014	17,360	1.11	19,257	100.0%	17,360	19,257
2797	Treatment		Essco Vertical Pump	12/30/2015	14,368	1.08	15,542	100.0%	14,368	15,542
2798	Treatment		Cornell DP Pump	9/23/2015	8,460	1.08	9,151	100.0%	8,460	9,151
2825	Treatment		7.5 Ton WWTP Heat Pump	6/22/2017	14,594	1.08	15,787	100.0%	14,594	15,787
2832	Treatment		Composter Building Roof Replacement	6/30/2017	45,019	1.08	48,698	100.0%	45,019	48,698
2833	Treatment		Disinfection Building Roof Replacement	6/30/2017	37,524	1.08	40,591	100.0%	37,524	40,591
2834	Treatment		WWTP Hypochlorite	6/30/2017	922,178	1.08	997,538	100.0%	922,178	997,538
2772A	Treatment		520 W 3rd St - Building	6/30/2015	97,690	1.08	105,673	100.0%	97,690	105,673
2773A	Treatment		520 W 3rd St - Land	6/30/2015	128,582	1.08	139,089	100.0%	128,582	139,089
2806A	Treatment		WWTP RRE (4th Clarifier)	6/30/2016	4,690,850	1.08	5,074,181	100.0%	4,690,850	5,074,181
2806B	Treatment		WWTP RRE (Dewatering System)	6/30/2016	4,184,978	1.08	4,526,970	100.0%	4,184,978	4,526,970
2806C	Treatment		WWTP RRE (Headworks and Influent Pump Station)	6/30/2016	17,160,027	1.08	18,562,326	100.0%	17,160,027	18,562,326
2813B	Treatment		Video Inspection System - Vcam-5 control module and	9/14/2016	5,024	1.08	5,435	0.0%	0	0
2824A	Treatment		PWA Building - 500 W 3rd St	6/30/2017	19,883	1.08	21,507	100.0%	19,883	21,507
CIP	Treatment		Villa rd-Haworth to Crestview Culvert Imps.	6/30/2016	594,506	1.08	643,089	100.0%	594,506	643,089
CIP	Treatment		Oxidation Ditches (#2)	6/30/2017	145,415	1.08	157,299	100.0%	145,415	157,299
CIP	Treatment		Oxidation Ditch Rotor Aerator #8	6/30/2017	59,881	1.08	64,775	100.0%	59,881	64,775
Total					**$79,551,018**		**$125,488,582**		**$45,672,280**	**$54,107,426**

Matches CAFR

FUNCTION	Original Cost	Replacement Cost	SDC Eligible Original Cost	SDC Eligible Replacement Cost
Assets				
Treatment	$58,657,335	$88,125,499	$37,363,629	$42,234,191
Pump Stations	3,178,185	4,349,271	2,403,689	2,918,335
Collection	16,341,122	30,835,305	5,862,581	8,783,002
Lift Station	72,216	288,809	42,381	171,897
General Equipment	1,302,161	1,889,699	0	0
Total	**$79,551,018**	**$125,488,582**	**$45,672,280**	**$54,107,426**
Contributed				
Treatment	$0	$0	$0	$0
Pump Stations	0	0	0	0
Collection	5,381,449	8,025,079	0	0
Lift Station	0	0	0	0
General Equipment	0	0	0	0
Total	**$5,381,449**	**$8,025,079**	**$0**	**$0**
Net Assets	**$74,169,569**	**$117,463,504**	**$45,672,280**	**$54,107,426**

City of Newberg OREGON

Appendix K



WWMP Technical Update May 2021

KELLER ASSOCIATES

TECHNICAL MEMORANDUM/REPORT

CITY OF NEWBERG WASTWATER MASTER PLAN TECHNICAL UPDATE

ADDENDUM – RIVERFRONT MASTER PLAN

DRAFT

MAY 2021

PROJECT NO. 220045

PREPARED BY:

KELLER ASSOCIATES

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City of Newberg OREGON

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TABLE OF CONTENTS

APPENDICES

ACRONYMS, ABBREVIATIONS, AND SELECTED DEFINITIONS

AACE	Association for the Advancement of Cost Engineering
AADF	average annual daily flow
AAGR	average annual growth rate
ac	acre
ADWF	average dry weather flow
AWWF	average wet weather flow
CAC	citizen advisory committee
CCTV	closed circuit television
CDBG	community development block grants
CIP	Capital Improvement Plan
CIPP	cured-in-place pipe
CMS	construction management services
DEQ	Oregon Department of Environmental Quality
EDU	equivalent dwelling unit
ft	feet or foot
ft^3	cubic feet or cubic foot
GIS	geographic information system
gpad	gallons per acre per day
gpcd	gallons per capita per day
gpd	gallons per day
gpm	gallons per minute
I/I	infiltration and inflow
in	inch
KW	kilowatt
kwh	kilowatt hour
LF	linear foot
MG	million gallons
MGD	million gallons per day
MMDWF	max month dry weather flow
MMWWF	max month wet weather flow
O&M	operation and maintenance
OH&P	overhead and profit
PDAF	peak day flow
PkWF	peak week flow
PIF	peak instantaneous flow
PLC	programmable logic controller
PS	pump station
PVC	polyvinyl chloride
PWDS	public works design standards
SCADA	supervisory control and data acquisition
sqft	square feet or square foot
TDH	total dynamic head
UGB	urban growth boundary
VFD	variable frequency drive
WWMP	wastewater master plan
WWTP	wastewater treatment plant

EXECUTIVE SUMMARY

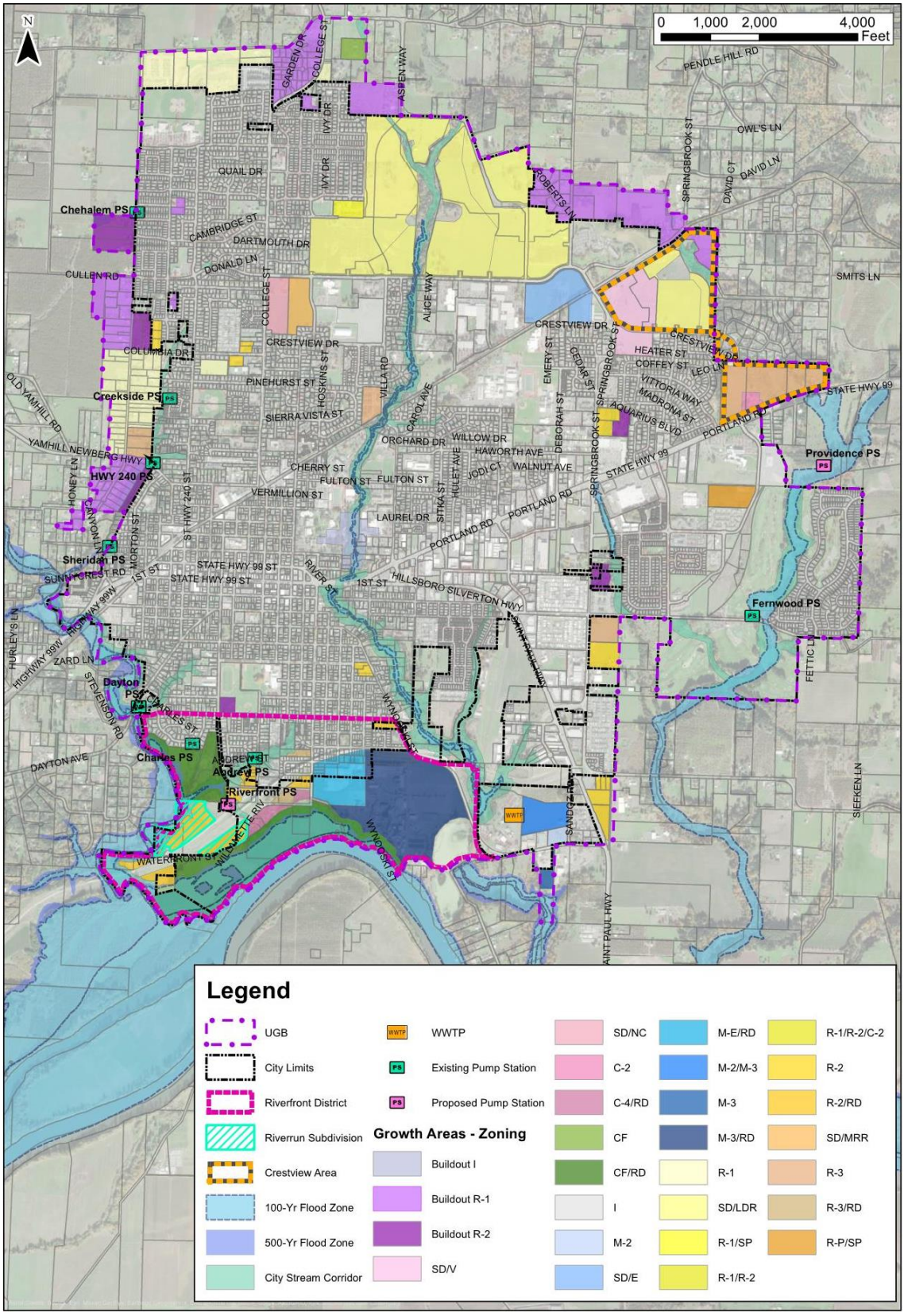
In 2018, the City of Newberg, Oregon (City) completed a wastewater master plan (WWMP) for the City's sanitary sewer collection system and wastewater treatment plant (WWTP). Since the adoption of the 2018 WWMP, the City accepted the Riverfront Master Plan in September 2019. This wastewater master plan technical update incorporates the new information on zoning, infrastructure, and development within the Riverfront district in alignment with the accepted master plan. The Riverrun Subdivision development within this area was reflected and updated during this process. Additionally, the City decided to include the E Crestview Drive and Crestview Crossing projects in the Springbrook Basin in the technical update evaluation. These projects in the Springbrook basin have resulted in the possibility of routing additional flow further east within the basin.

The technical update shall serve as a planning guide for operating, maintaining, constructing, and expanding the City's wastewater collection system. The technical update will be incorporated as an addendum to the 2018 WWMP as Appendix K. The update is consistent with buildout growth projections and design flows documented in the 2018 WWMP with updates specifically to the Riverfront and Springbrook basins. This update does not include an update to the evaluation of the WWTP. This section summarizes the major findings of the update, including brief discussions of alternatives considered and final recommendations.

ES.1 STUDY AREA

The 2018 WWMP study area consisted of all areas within the City of Newberg Urban Growth Boundary (UGB). This technical update was limited to the Riverfront and Crestview areas of the City and collection system infrastructure that serves these areas. Figure ES-1 (next page) shows the existing City limits, UGB, growth areas identified in the 2018 WWMP and highlights updated information for this technical update in the Riverfront and Crestview areas. Figure 2 (See Appendix A) shows the Riverfront Master Plan study area with proposed zoning and wastewater infrastructure. Figure 3 (See Appendix A) shows the Crestview area with proposed wastewater infrastructure. Both projects are currently under construction. Crestview Crossing is a private development.

FIGURE ES-1: STUDY AREAS



ES.2 POPULATION AND FLOWS

No additional population or flow analyses were completed as part of this update. Summary of the population and flow projections from the 2018 WWMP are shown in Section 1.2.

ES.3 PLANNING CRITERIA

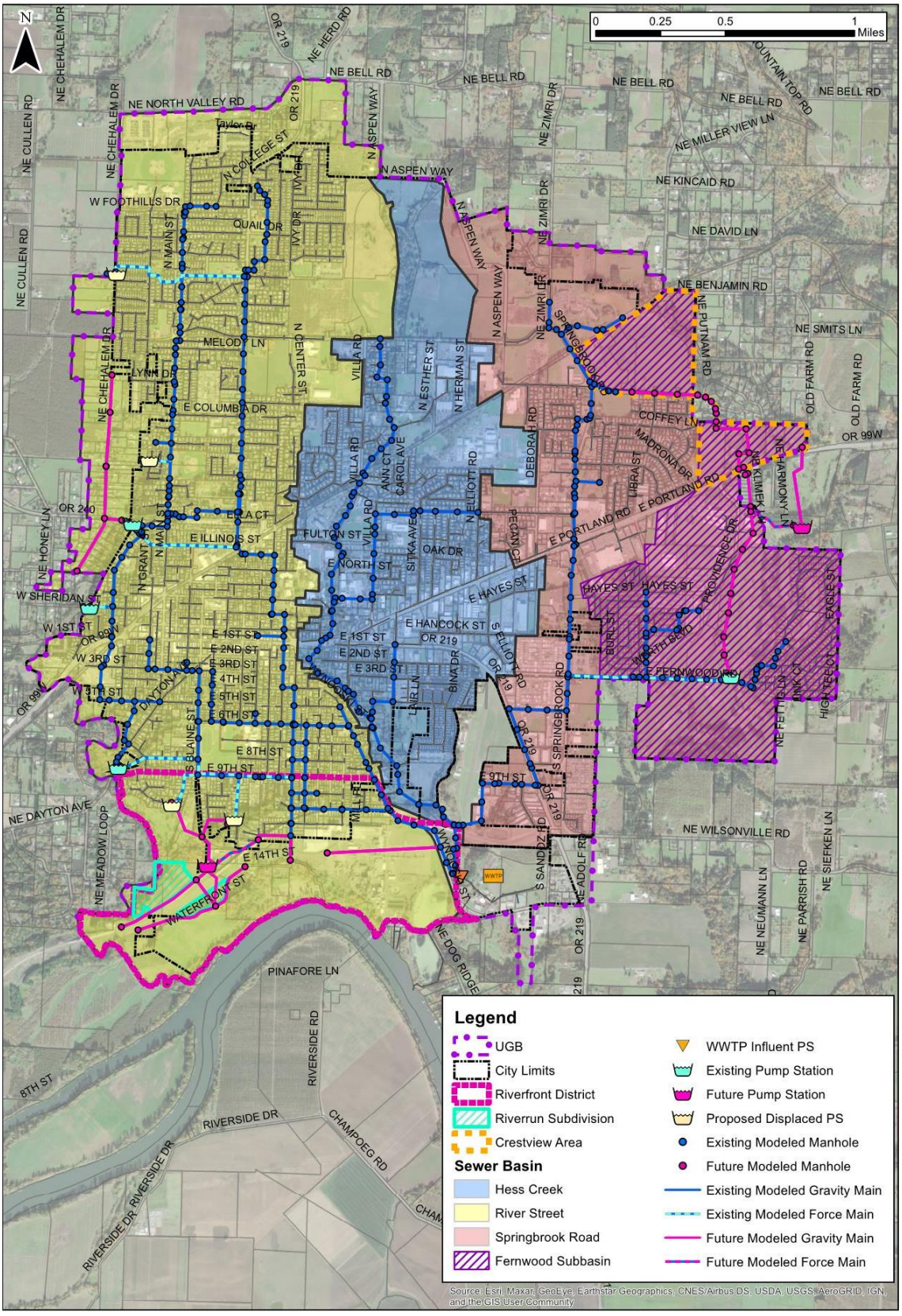
City-defined goals and objectives, Public Works Design Standards (PWDS), engineering best practices, and regulatory requirements form the basis for planning and design. The technical update limited evaluation to the Riverfront and Crestview areas and associated collection system infrastructure. The City's conveyance system was sized for the projected buildout peak instantaneous flow rates associated with the 5-year, 24-hour storm event. Consistent with the 2018 WWMP, the evaluation threshold for pipeline upsizing was wastewater flow level rising to within two feet of a manhole rim. Gravity pipelines were sized to carry peak design flows at 85% of pipeline depth. Pump stations were designed to handle the peak flows with the largest pump out of service (defined as firm capacity). Additional discussion of planning criteria is included in Section 1.3.

ES.4 COLLECTION SYSTEM COMPUTER MODEL UPDATE

The computer model update was completed in InfoSWMM (Version 14.7, Update #2) using the 2018 WWMP buildout scenario as the basis. As discussed in previous sections, the Riverfront and Crestview areas were the focus and revised as part of this technical update. Modeled infrastructure shown in Figure ES-2 (next page) reflects buildout conditions. Sanitary Sewer drainage basins are also shown in Figure ES-2. Chapter 2 provides additional information on the model update.

The Riverfront Master Plan proposed wastewater infrastructure and Riverrun Subdivision as-builts for Phases 1 and 2 and preliminary plans for Phase 3 were incorporated into the model as part of this update. Base loads from the updated growth areas were estimated by zoning designations and area using flows presented in Section 1.2. Updates to Springbrook Basin included infrastructure added to E Crestview Drive and Crestview Crossing. E Crestview Drive is currently under construction and construction drawings were used to add manholes and pipelines along E Crestview Drive. The new infrastructure on E Crestview Drive redirects some future flows from growth areas north to the east and downstream to the Fernwood Pump Station, changing the Fernwood drainage basin from the 2018 WWMP. Crestview Crossing preliminary utility report was used to add infrastructure and base loads to the model update.

FIGURE ES-2: MODELED INFRASTRUCTURE



ES.5 UPDATED BUILDOUT SYSTEM CAPACITY LIMITATIONS

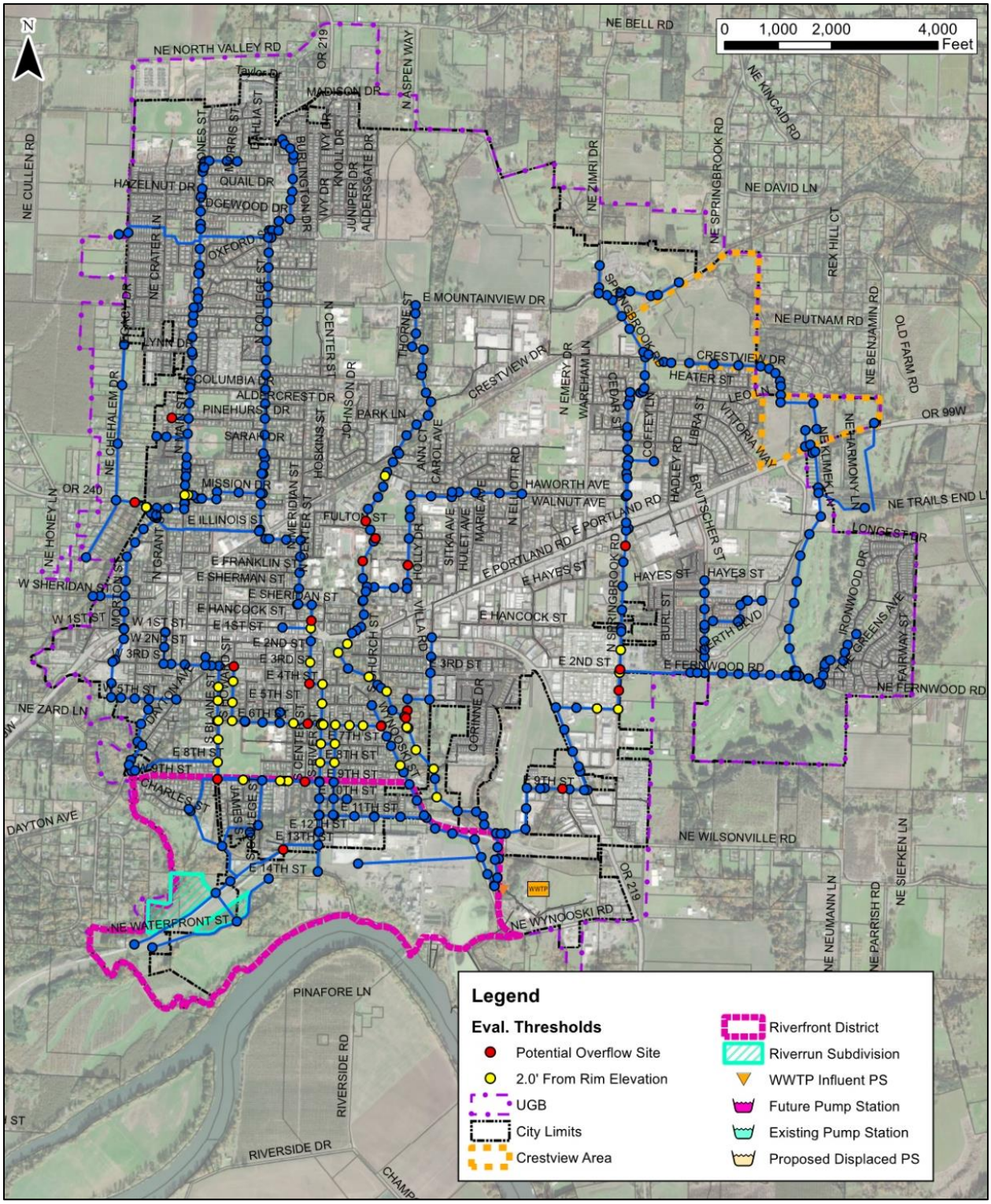
Results of the updated model simulation for buildout conditions are shown in Figure ES-3 (next page). The red manholes indicate potential overflow locations in the system. Overflows have been observed historically by the City staff on Hess Creek, N Villa Road, and S Springbrook Road. These locations are the highest priority and concern for the system as overflows pose public health risks, environmental concerns, and possible Oregon Department of Environmental Quality (DEQ) action. Comparing the model results of the updated system and the 2018 model, the flow redirection at E Crestview Drive does not resolve the capacity limitations on the Springbrook trunk line that were identified in the 2018 WWMP. Additional areas of interest in the updated evaluation, but not in the 2018 WWMP include backwater in the Riverfront district and Fernwood Pump Station undersized pumps. Additional information on the updated evaluation is included in Section 2.2.

ES.6 ALTERNATIVES CONSIDERED

Chapter 3 discusses alternatives that were considered to address the collection system deficiencies in the Riverfront and Springbrook areas. Multiple, feasible alternatives to address capacity deficiencies along the S River Street and E Eleventh Street trunk line were not identified given existing infrastructure and development. Additional discussion and recommended improvements to upsize existing trunk lines are described in Chapter 4.

Two alternatives were evaluated for the Springbrook basin to direct flow from the new E Crestview Drive infrastructure. Alternative 1 would entail directing flow from E Crestview Drive to the east and then south through Crestview Crossing, eventually flowing to the Fernwood Pump Station. A new parallel pipeline south of E Fernwood Road would alleviate capacity issues in the existing Springbrook trunkline and/or convey flow from the Fernwood Pump Station. This alternative includes upsizing the firm capacity at the Fernwood Pump Station. Alternative 2 would entail directing flow from E Crestview Drive through the Aquarius Blvd subdivision and then flow west to the Springbrook Road trunk line near Haworth Avenue. The parallel gravity main south of E Fernwood Road follows the same proposed alignment as Alternative 1. This alternative does not include any upsizing to the Fernwood Pump Station. Additional details and lifecycle cost comparison for the alternatives are shown in Chapter 4. The 20-year lifecycle costs for Alternative 1 are lower than those for Alternative 2, therefore Alternative 1 improvements are the recommended improvements for the Springbrook basin.

FIGURE ES-3: UPDATED SYSTEM EVALUATION



ES.7 RECOMMENDED IMPROVEMENTS

Recommended improvements to collection system infrastructure that vary from the recommendations of the 2018 WWMP are summarized below. All recommended collection system improvements are described in Chapter 4, including recommendations that match the 2018 WWMP. This was done so that system-wide, collection system recommendations are in one location in the WWMP for easy reference. Project cost estimates are included in Chapter 4 and have been updated from the 2018 WWMP, even if a recommended project has not changed.

Updated Recommended Pipelines Improvements

The recommended alternative for Springbrook Road has been updated since the 2018 WWMP and is Alternative 1 as described in the previous section. The improvements include upsizing the firm capacity of Fernwood Pump Station, upsizing a portion of the existing Springbrook line from E Fernwood Road to north of Hayes Street, and a new parallel gravity line added west on E Second Street from the E Fernwood Road intersection.

The recommended improvements on S River Street and E Eleventh Street have also been updated since the 2018 WWMP. The improvements include upsizing the existing trunkline from upstream of the influent pump station on S Wynooski Road up through E Eleventh Street and S river Street to E Fourth Street. The extents of these recommendations have increased since the 2018 WWMP as the recommended size has increased one nominal pipe size and a few additional segments are now included in the improvements to match pipe size along the trunk line.

Future infrastructure recommended in the Riverfront and Crestview areas have been updated to match the model updated infrastructure as described in Chapter 2. These areas generally include additional pipe length from the approximations in the 2018 WWMP. The firm capacities have been updated for the Riverfront and Providence proposed pump stations. Their firm capacities have decreased slightly with the flow changes in the updated infrastructure. The Riverfront infrastructure still includes the recommendation to displace the Charles and Andrews Pump Stations in the future.

Additional descriptions and cost estimates for the updated recommended improvements as well as additional collection system improvements (matching the 2018 WWMP) are included in Chapter 4. Figure 7 (See Appendix A) shows the locations of all recommended collection system improvements.

Recommended Pump Station Improvements

Additional pump station condition assessments were not included in the scope of this update. The main modification in the technical update was to remove the Dayton Pump Station Replacement project from the CIP as it has been completed since the 2018 WWMP. Upsizing the Fernwood Pump Station was included in the Springbrook Basin recommendations. Otherwise, pump station recommendations have not changed from the 2018 WWMP, though the cost estimates have been increased to 2021 dollars using the ENR index.

ES. 8 CAPITAL IMPROVEMENT PLAN (CIP)

The updated opinion of probable cost of the recommended collection system improvements is listed in Table ES-1 (Capital Improvement Plan). This plan includes all recommended collection system improvements including the projects that have not changed in scope from the 2018 WWMP. This was done for ease of reference for future planning use. Capital costs developed for

the recommended improvements are Class 5 estimates as defined by the Association for the Advancement of Cost Engineering (AACE) in alignment with the 2018 WWMP. Actual construction costs may differ from the estimates presented, depending on specific design requirements and the economic climate at the time a project is bid. The range of accuracy for a Class 5 cost estimate is broad, but these are typical levels of accuracy for planning work and match the process from the 2018 WWMP. It is important to communicate this level of accuracy to policy- and decision-makers. Costs shown are planning-level estimates and should be updated as the project is further refined in the project development, pre-design, and design phases. Contractor's overhead and profit are worked into the base construction cost and the other indirect costs are identified and included, where required, as a specific line item. The CIP is based on modeling data that was available during the completion of this master plan. When projects are carried forward to predesign and design phases, the model, data, assumptions, etc., should be re-evaluated to make any necessary adjustments to the basis of the project. An estimated schedule for the next six years is shown in Table ES-2.

TABLE ES-1. 20-YEAR CAPITAL IMPROVEMENT PLAN (CIP)

ID#	Item	Primary Purpose	Total Estimated Cost (2021)	SDC Growth Apportionment		City's Estimated Portion
				%	Cost	
Priority 1 Improvements						
1.a	Hess Creek Phase 1 - CIPP	Capacity & I/I reduction	$ 1,351,000	2%	$ 27,020	$ 1,323,980
1.b	Hess Creek Phase 2 - Parallel Gravity Main	Capacity	$ 7,460,000	2%	$ 149,200	$ 7,310,800
1.c	Springbrook Road	Capacity	$ 5,314,000	20%	$ 1,062,800	$ 4,251,200
1.d	E Pinehurst Court	Capacity	$ 318,000	0%	$ -	$ 318,000
1.e	Pump Station Improvements (Short-term)	Condition	$ 118,000	1%	$ 1,180	$ 116,820
1.f	I/I Projects	Capacity & Condition	$ 2,700,000	50%	$ 1,350,000	$ 1,350,000
1.g	E Crestview Drive Infrastructure	Future Development	$ 928,000	100%	$ 928,000	$ -
1.h	Crestview Crossing Infrastructure	Future Development	$ 1,414,000	100%	$ 1,414,000	$ -
1.i	Maintenance Yard Improvements	Capacity & Condition	$ 804,000	20%	$ 160,800	$ 643,200
		Priority 1 Total (rounded):	**$ 20,407,000**		**$ 5,093,000**	**$ 15,314,000**
Priority 2 Improvements						
2.a	Hess Creek Phase 3 - Pump Station	Capacity	$ 2,539,000	2%	$ 50,780	$ 2,488,220
2.b	S River and E Eleventh Streets	Capacity	$ 5,103,000	17%	$ 867,510	$ 4,235,490
2.c	HWY 240 Pump Station Upsize	Capacity	$ 642,000	19%	$ 121,980	$ 520,020
2.d	N Main and S Wynooski Streets	Capacity	$ 616,000	1%	$ 6,160	$ 609,840
2.e	Pump Station Improvements (Long-term)	Condition	$ 459,000	11%	$ 50,490	$ 408,510
2.f	I/I Projects	Capacity & Condition	$ 3,150,000	50%	$ 1,575,000	$ 1,575,000
2.g	Wastewater Master Plan	Planning	$ 300,000	100%	$ 300,000	$ -
		Priority 2 Total (rounded):	**$ 12,809,000**		**$ 2,972,000**	**$ 9,838,000**
Priority 3 Improvements						
3.a	NE Chehalem Drive Phase 1	Future Development	$ 2,217,000	100%	$ 2,217,000	$ -
3.b	Riverfront Infrastructure	Future Development	$ 4,787,000	100%	$ 4,787,000	$ -
3.c	Riverfront Industrial Infrastructure	Future Development	$ 1,154,000	100%	$ 1,154,000	$ -
3.d	Providence PS Infrastructure	Future Development	$ 1,734,000	100%	$ 1,734,000	$ -
3.e	NE Chehalem Drive Phase 2	Future Development	$ 990,000	100%	$ 990,000	$ -
3.f	I/I Projects	Capacity & Condition	$ 3,150,000	50%	$ 1,575,000	$ 1,575,000
		Priority 3 Total (rounded):	**$ 14,032,000**		**$ 12,457,000**	**$ 1,575,000**
Priority 4 Improvements						
4.a	Chehalem & Creekside PS Displacement/Future Trunk Line	Operations	$ 3,498,000	44%	$ 1,539,120	$ 1,958,880
4.b	Charles & Andrew PS Displacement	Operations	$ 1,109,000	44%	$ 487,960	$ 621,040
		Priority 4 Total (rounded):	**$ 4,607,000**		**$ 2,028,000**	**$ 2,580,000**
		Total Wastewater Collection System Improvement Costs (rounded):	**$ 51,855,000**		**$ 22,550,000**	**$ 29,307,000**

Notes:

1. The opinion of probable cost herein is concept level information only based on our perception of current conditions at the project location and its accuracy is subject to significant variation depending upon project definition and other factors. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. This cost opinion is in 2021 dollars and does not include escalation to time of actual construction. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.
2. All costs in 2021 Dollars. Costs include mobilization (5%), contractor overhead and profit (OHP; 15%), contingency (30%), engineering and construction management services (CMS; 20-30%), and legal, administrative, and permitting services (2%).
3. Acronyms: Cure-in-place pipe (CIPP), infiltration and inflow (I/I), pump station (PS)
4. The Capital Improvement Plan does not include annual pipeline replacement, pipeline cleaning and inspection, and lift station maintenance budgets. These budgets are discussed in Chapter 5.

TABLE ES-2: PRIORITY 1 CAPITAL IMPROVEMENT PLAN

ID#	Item	Total Estimated Cost (2021)	Opinion of Probable Costs (2021)					
			2022	2023	2024	2025	2026	2027
Priority 1 Improvements								
1.a	Hess Creek Phase 1 - CIPP	$ 1,351,000	$ 337,750	$ 1,013,250	$ -	$ -	$ -	$ -
1.b	Hess Creek Phase 2 - Parallel Gravity Main	$ 7,460,000	$1,865,000	$ 2,797,500	$2,797,500	$ -	$ -	$ -
1.c	Springbrook Road	$ 5,314,000	$ -	$ -	$ -	$1,328,500	$1,992,750	$1,992,750
1.d	E Pinehurst Court	$ 318,000	$ 318,000	$ -	$ -	$ -	$ 318,000	$ -
1.e	Pump Station Improvements (Short-term)	$ 118,000	$ -	$ -	$ -	$ 118,000	$ -	$ -
1.f	I/I Projects	$ 2,700,000	$ 450,000	$ 450,000	$ 450,000	$ 450,000	$ 450,000	$ 450,000
1.g	E Crestview Drive Infrastructure	$ 928,000	$ 232,000	$ 348,000	$ 348,000	$ -	$ -	$ -
1.h	Crestview Crossing Infrastructure	$ 1,414,000	$ 353,500	$ -	$ -	$ 353,500	$ 353,500	$ 353,500
1.i	Maintenance Shops Improvements	$ 804,000	$ -	$ -	$ 201,000	$ 201,000	$ 201,000	$ 201,000
	Priority 1 Total (rounded):	**$ 20,407,000**	**$3,557,000**	**$ 4,609,000**	**$3,797,000**	**$2,451,000**	**$3,316,000**	**$2,998,000**

Note: The opinion of probable cost herein is concept level information only based on our perception of current conditions at the project location and its accuracy is subject to significant variation depending upon project definition and other factors. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. This cost opinion is in 2021 dollars and does not include escalation to time of actual construction. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.

ES. 9 2018 WWMP REFERENCES

Table ES-3 (next page) summarizes the sections and references in the 2018 WWMP that have been modified by this technical update. The table correlates the technical update section and/or references with the corresponding modified section and/or references (including page numbers) of the 2018 WWMP. Brief descriptions of the modifications from the technical update are included in the last column of the table.

TABLE ES-3: 2018 WWMP REFERENCES

Technical Update Section or Reference	2018 WWMP Report Section or Reference	Page/s	Description
1.3	2.5.1	2-11	Summary of additional discussion on evaluation threshold.
2.1.1, Figure 2	4.2.1, Figure 12	4-7, App A	Riverfront Master Plan and Riverrun Subdivision updates to proposed wastewater infrastructure and estimated future loading for Riverfront District.
2.1.2, Figure 3	4.2.1, Figure 12	4-7, App A	E Crestview Drive and Crestview Crossing updates to proposed wastewater infrastructure and estimated future loading for Crestview Area in the Springbrook sewer basin.
2.1, Figure 1	4.2.1, Figure 12	4-7, App A	Buildout system loading updated with additional information on Riverfront District and Crestview areas.
2.2, Figure 6	4.2.3, Figure 15	4-8, App A	Updated buildout capacity evaluation.
3.2, Figure 3.1 & Figure 3.2 (pg 3-2 & 3-3)	5.2.2, Figure 17	5-6 to 5-8, App A	Additional evaluation and alternatives have been added to the Springbrook basin evaluation with the Crestview area updates.
4.2	5.1.1	5-1	Dayton PS replacement has been completed, so recommendation for replacement was eliminated.
Chapter 4, Figure 7	6.1, 6.2, Figures 18 & 28	6-1 to 6-10, App A	Updated recommended inprovements to the collection system. All recommended project cost estimates have been updated (those in report body and in cost estimate appendix). Recommended projects with updates to scope include Priority 1 Lift Station Improvements (Dayton PS replacement has been removed), Springbrook Road, S River Street, Providence LS future infrastructure, Riverfront future infrastructure, and Crestview future infrastructure (added since 2018 WWMP).
Chapter 5, Table 5-1	12.1, 12.2, Table 12-2	12-1, 12-2, 12-3	Capital Improvement Plan (CIP) has been updated.
Appendix C	Appendix E	-	Cost estimate additional information has been updated.
Appendix D	Appendix F	-	Priority 1 Collection System Project Sheets have been updated.

CHAPTER 1 – PROJECT PLANNING

The City of Newberg owns and operates a municipal wastewater collection system and a wastewater treatment plant (WWTP). In 2018, the City of Newberg completed a Wastewater Master Plan (WWMP) to assess the needs of the City for the wastewater system, evaluate if the existing collection system and WWTP could meet those needs, and provide a plan to implement improvements to the wastewater system so the City could continue to meet their level of service goals. Since the adoption of the WWMP, the City accepted the Riverfront Master Plan in September 2019. The City acceptance of the Riverfront Master Plan initiated the WWMP technical update process. The technical update included evaluating the Riverfront Master Plan recommendations for zoning and wastewater infrastructure within the Riverfront area. The Riverrun Subdivision development within this area was also reflected and updated during this process. Additionally, the City decided to include the E Crestview Drive and Crestview Crossing projects in the Springbrook Basin in the technical update evaluation. These projects in the Springbrook basin have resulted in the possibility of routing additional flow further east within the basin.

The City desired a technical update to the 2018 WWMP that evaluated the Riverfront and Crestview area updates as they pertain to the collection system. The technical update shall serve as a planning guide for operating, maintaining, constructing, and expanding the City's wastewater collection system. The technical update will be incorporated as an addendum to the 2018 WWMP as Appendix K. The update provides recommendations for buildout conditions to continue to meet the wastewater collection needs of the City. The update reflects buildout growth projections and design flows documented in the 2018 WWMP with updates specifically to the Riverfront and Springbrook basins. This update does not include an update to the evaluation of the WWTP.

1.1 STUDY AREA

The 2018 WWMP study area consisted of all areas within the City of Newberg Urban Growth Boundary (UGB). This technical update was limited to the Riverfront and Crestview areas of the City and collection system infrastructure that serves these areas. Figure 1 Appendix A shows the existing City limits, UGB, growth areas identified in the 2018 WWMP and highlights updated information available on the Riverfront and Crestview areas. Figure 2 shows the Riverfront Master Plan study area with proposed zoning and wastewater infrastructure. Figure 3 shows the Crestview area with proposed wastewater infrastructure. Both projects are currently under construction. Crestview Crossing is a private development.

1.2 POPULATION AND FLOWS

The update uses the population projections and flow analysis presented in the 2018 WWMP. No additional population or flow analyses were completed as part of this update. A summary of the population and flow projections from the 2018 WWMP are shown in Tables 1-1 and 1-2.

TABLE 1-1: POPULATION AND PROJECTIONS

Year	Population	Source
1980	10,394	U.S. Census, Population Research Center: PSU
1990	13,086	U.S. Census, Population Research Center: PSU
2000	18,064	U.S. Census, Population Research Center: PSU
2010	22,110	U.S. Census, Population Research Center: PSU
2017	23,480	PSU Preliminary Population (Nov. 2017)
2022	25,797	Projected Using Coordinated Growth Rate of 1.9%
2027	28,343	Projected Using Coordinated Growth Rate of 1.9%
2032	31,139	Projected Using Coordinated Growth Rate of 1.9%
2037	33,811	Projected Using Coordinated Growth Rate of 1.3%

Notes: PSU - Portland State University; Coordinated Growth Rates (AAGR) from PSU Coordinated Population Forecast 2017-2067 Yamhill County.
Source: City of Newberg 2018 WWMP

TABLE 1-2: FLOW PROJECTION SUMMARY

	Design Flow (MGD)	Design Unit Flow (gpcd)	Projected Unit Flow (gpcd)[2]	Projected Design Flow (MGD)				
Year	2015	2015	-	2017	2022	2027	2032	2037
Population	22,900	22,900	-	23,480	25,797	28343	31,139	33,811
ADWF	2.27	99	99	2.33	2.56	2.81	3.09	3.35
$MMDWF_{10}$	4.48	196	196	4.60	5.05	5.55	6.09	6.62
AADF	3.32	145	145	3.40	3.74	4.11	4.51	4.90
AWWF	4.38	191	191	4.49	4.94	5.42	5.96	6.47
$MMWWF_5$	9.66	422	250	9.81	10.4	11.0	11.7	12.4
PWkF	10.0	438	275	10.2	10.8	11.5	12.3	13.0
$PDAF_5$	21.5	941	325	21.7	22.5	23.3	24.2	25.1
PIF_5[1]	28.0	1,223	425	28.2	29.2	30.3	31.5	32.6

Notes: 1. MGD - million gallons per day, gpcd - gallons per capita per day, ADWF - average dry weather flow, MMDWF - max month dry weather flow, AADF - average annual flow, AWWF - average wet weather flow, MMWWF max month wet weather flow, PWkF - peak week flow, PDAF - peak day flow, PIF - peak instantaneous flow
2. The DEQ method produces a design flow of 67.1 MGD. PIF5 flow was adjusted based on continuous flow data from peak days between 2012 and 2015.
3. Projected unit flow scaled down to reflect reduced I/I in future developments.
Source: City of Newberg 2018 WWMP

1.3 PLANNING CRITERIA

The City's conveyance system was evaluated for the projected buildout peak instantaneous flow rates associated with the 5-year, 24-hour storm event. Based on the Comprehensive Plan updated in September 2015, buildout for the UGB and URA are projected to occur at approximately the same time as the planning period for the 2018 WWMP (2037).

Evaluation Threshold

The evaluations performed as part of this technical update were used to update and prioritize recommended improvements to address deficiencies in the collection system. These improvements are organized into the Capital Improvement Plan (CIP). The evaluation threshold is used to identify deficiencies in infrastructure and trigger improvement projects. Different thresholds can be used to help prioritize deficiencies in the system. Evaluation thresholds can progressively be lower in subsequent studies as a City makes progress on improvements. Some examples of evaluation thresholds for pipelines include 85% full depth of pipe, top of pipe, 1-foot above top of pipe, 2-feet below rim, at rim elevation. Part of this update was to reconsider different evaluation thresholds. A key component to this discussion was the Citizen Advisory Committee (CAC). This committee is made up of citizens of the City who were involved throughout the development of this update, reviewed draft documents, and provided feedback to be considered in this update. The committee discussed the various options for the evaluation threshold and decided to continue with the evaluation threshold used in the 2018 WWMP of 2.0 feet below rim elevation. The committee was interested in looking more closely at the impacts to the recommended improvements and subsequent CIP resulting from the various evaluation thresholds. The committee recommended to the City that a study be completed with this information in the future. Providing recommendations and CIP for multiple evaluation thresholds was not in the scope of this update. Further discussion on the evaluation threshold and impacts to the system evaluation are in Chapter 2. It should be noted that the evaluation threshold is not a design standard (though they can align) and the CIP pipeline projects are all sized to conform to design criteria as described below.

Design Criteria

The design criteria govern the design of improvements and new infrastructure. Often many of the design criteria are included in the Public Works Design Standards (PWDS). For this update, gravity collection pipelines will be sized to carry peak design flows at 85% depth of the pipe. Where appropriate, new lines will be sized one nominal pipe size larger than what is needed for areas that may not be at buildout by the end of the planning period. Additionally, it should be noted that efforts to reduce I/I in the collection system could further extend the service population. Pump stations will be designed to handle the peak flows with the largest pump out of service (defined as firm capacity). These are consistent with industry and the Oregon DEQ design guidelines.

Growth Areas

The future buildout growth areas identified in the 2018 WWMP serve as the basis for the scenario evaluated in this master plan update. The growth areas updated as part of the evaluation were limited to the Riverfront and Crestview areas. These areas and flow assumptions were updated with information provided by the City for the Riverfront area including the Riverfront Subdivision and the Crestview area including the Crestview Drive and Crestview Crossing projects. Additional discussion of these areas is included in Chapter 2.

Residential flows were projected using growth area, average lot size, population density, and ADWF per capita attributed with residential contributions. Commercial, industrial, and institutional flows were projected using growth areas identified in the 2018 WWMP and typical flow per acre values (Metcalf and Eddie, 3rd Edition). Projected flows per zoning designation used in this update to estimate flows for growth areas are summarized in Table 1-3.

TABLE 1-3: PROJECTED FLOWS BY ZONING

Zoning	Dwelling Units per Acre	Average Lot Size[A] (sqft)	Average Lot Size[A] (ac)	Pop. Density[A, B] (people/ac)	Flow[C, D] (gpad)
R-1	4.4	9,900	0.227	12	880
R-2	9.0	4,840	0.111	24	1,800
R-3, R-4	16.5	2,640	0.061	44	3,301
M-1, M-2, M-3, M-E	N/A	N/A	N/A	N/A	1,250
C-1, C-2, C-3, C-4	N/A	N/A	N/A	N/A	1,250
I	Institutional (Providence, GFU, etc.)	N/A	N/A	N/A	2,000

Note: sqft - square feet, ac - acre, gpad - gallons per acre per day, GFU - George Fox University

[A]Allocates 25% of area for roads and other public dedication, except on industrial and commercial area where 20% is allocated.

[B]Assume 2.69 people/dwelling unit (2010 US Census).

[C]Residential flows based on Design ADWF per capita from Table 1-2 (99 gpcd). Industrial, commercial, and institutional values from Metcalf and Eddie, 3rd Edition.

[D]Utilizes average annual dry-weather flows.

CHAPTER 2 – MODEL UPDATE & SYSTEM EVALUATION

This chapter contains a description and evaluation of the model update for the collection system, including pump stations and pipelines, evaluation for the City of Newberg.

2.1 COLLECTION SYSTEM COMPUTER MODEL UPDATE

This section summarizes the updates to the wastewater collection system model. The computer model developed for the 2018 WWMP buildout scenario was used as the basis. The 2018 model used City GIS database as well as survey data collected as part of the project to update the elevation data in the model. The 2018 model was completed in InfoSWMM Suite 14.5, Update #9. InfoSWMM is a fully dynamic model which allows for evaluation of complex hydraulic flow patterns. This update was completed in InfoSWMM (Version 14.7, Update #2). Modeled infrastructure is shown in Figure 4 and reflects buildout conditions. The three main trunkline basins area also shown on Figure 4. The following sections provide additional descriptions of the updated areas of the model.

2.1.1 Riverfront Master Plan and Riverrun Subdivision

The Riverfront Master Plan proposed wastewater infrastructure and Riverrun Subdivision as-builts for Phases 1 and 2 and preliminary plans for Phase 3 were incorporated into the model as part of this update. Appendix D in the Riverfront Master Plan provides recommended utility improvements to serve the Riverfront area as proposed in the master plan (included in Appendix B). Figure 2 shows the updated growth areas and model infrastructure to reflect the Riverfront Master Plan. The Riverfront Master Plan does not include wastewater flow estimations or evaluation. Base loads from the growth areas were estimated by zoning designations and area using flows presented in Table 1-3.

The Riverrun Subdivision is within the Riverfront area (as seen in Figure 2). The subdivision has three planned phases. Phases 1 and 2 are on the north side of the bypass and include 91 lots. Phase 3 is on the south side of the bypass and includes 41 lots. Wastewater loads for these two areas were estimated using the number of proposed lots in the subdivision, people per dwelling unit and the previously established unit flows.

2.1.2 Springbrook Basin

E Crestview Drive and Crestview Crossing

E Crestview Drive is currently under construction. Construction drawings for E Crestview Drive were used to add manholes and pipelines along E Crestview Drive. A preliminary wastewater report for Crestview Crossing PUD has previously been completed. This report was used to update growth areas and proposed infrastructure. Base loads for Crestview Crossing were provided in the report and used the 2018 WWMP unit flows as a basis. Infiltration and inflow (I/I) was added in the model rather than from the report as the model I/I is more conservative and has been calibrated to field conditions as part of the 2018 WWMP process. Updated growth areas and infrastructure for the Crestview area are shown in Figure 3.

Updated Sanitary Sewer Subbasin

The new infrastructure on E Crestview Drive redirects some future flows from growth areas north to the east and down to the Fernwood Pump Station (see northern portion of Crestview area on Figure 3). In the 2018 WWMP, the flow from these growth areas was directed west towards the Springbrook Road trunkline. The updated Fernwood Pump Station drainage basin is reflected in Figure 4. The subbasin is still part of the larger Springbrook basin. The Fernwood Pump Station discharges flow to the Springbrook trunkline at the intersection of S Springbrook Road and E Fernwood Road.

2.2 UPDATED BUILDOUT SYSTEM CAPACITY LIMITATIONS

After the updates described above were incorporated into the computer model, the model was exercised to perform an updated system evaluation and identify capacity limitations throughout the system. Figure 5 shows the results of this evaluation. Various evaluation thresholds, as introduced in Chapter 1, are shown by the different color manholes. The different colored manholes indicate at what evaluation threshold the area would trigger evaluation of improvements. The red manholes indicate potential overflow locations in the system. Overflows have been observed historically by the City staff on Hess Creek, N Villa Road, and S Springbrook Road. These locations are the highest priority and concern for the system as overflows pose public health risks, environmental concerns, and possible Oregon Department of Environmental Quality (DEQ) action.

As discussed in Chapter 1, the CAC recommended using 2.0 feet below rim elevation be used as the evaluation threshold for this update, which matches the threshold used in the 2018 WWMP. Figure 6 shows the system evaluation with annotations on the areas of interest/evaluation based on this evaluation threshold (2.0 feet below rim elevation). Most of the capacity limitations impact a group of manholes as indicated by the areas of interest/evaluation. A summary of the areas identified is listed below along with the probable cause of capacity limitation.

A. E Pinehurst Ct, topographic low point
B. N Main St, downstream bottleneck
C. Excess flows from HWY240 cause backups
D. HWY240 PS, undersized pumps
E. S River/E Eleventh St, undersized
F. Riverfront District, backwater (S River/E Eleventh St)
G. S Wynooski St, undersized
H. N Villa Rd, downstream bottleneck
I. Hess Creek, undersized and limited or no access to line
J. S Springbrook Rd, undersized and topographic low point
K. E Fernwood/Springbrook Rd, undersized
L. Fernwood PS, undersized pumps

The areas identified above match the areas identified in the 2018 WWMP, except the Riverfront District and Fernwood PS areas have been added from the technical update evaluation.

2.2.1 Springbrook Basin

As mentioned previously, the Crestview area updates result in redirecting some growth area flow away from the Springbrook trunk line north of the Fernwood Pump Station discharge in comparison

to the 2018 WWMP. Comparing the model results of the updated system and the 2018 model, the flow redirection at E Crestview Drive does not resolve the capacity limitations on the Springbrook trunk line that were identified in the 2018 WWMP. Improvements for both options of flow direction will be evaluated in the alternatives (see Chapter 3 for more discussion).

2.2.2 Pipeline Conditions

In-field pipeline material condition inspection and review were not included as part of this update. However, it is important to note that one of the basic assumptions of the hydraulic model is that all the lines are free from physical obstructions such as roots and accumulated debris. Such maintenance issues, which certainly exist, must be discovered and addressed through consistent maintenance efforts. The modeled capacities discussed in this chapter represent the capacity assuming the sewer lines are in good working order.

CHAPTER 3 – ALTERNATIVES CONSIDERED

The primary driver of the WWMP update was to incorporate the Riverfront Master Plan to evaluate the impacts and subsequent improvements recommended for this area of the collection system. This update also reviews the Springbrook basin and impacts from the E Crestview Drive and Crestview Crossing developments. This chapter discusses alternatives that were considered to address the collection system deficiencies in the Riverfront and Springbrook areas. Multiple, feasible alternatives to address capacity deficiencies along the S River Street and E Eleventh Street trunk line were not identified for this area given existing infrastructure and development. Redirecting flow to another basin or a parallel line that provides cost savings were not identified along the existing alignment. The recommended improvements to upsize existing trunk line and additional discussion are described in Chapter 4. The alternatives evaluation and recommended improvements from the 2018 WWMP remain applicable to the other capacity deficiencies identified outside of the Riverfront and Crestview areas in this update and are summarized in Chapter 4.

3.1 PLANNING CRITERIA

The planning criteria used for this collection system facilities planning effort are summarized as follows and discussed in Chapter 1. The City's conveyance system will be sized for the projected, buildout peak instantaneous flow rates associated with the 5-year, 24-hour storm event. The City and CAC decided that the criteria for requiring improvements (evaluation threshold) is when the water surface reaches within 2 feet of a manhole rim elevation. Recommended improvements will be sized per design criteria to flow at 85% depth or less for the buildout peak flows. Additionally, it should be noted that efforts to reduce I/I in the collection system could further extend the life of the pipeline with regards to capacity.

3.2 ALTERNATIVES DISCUSSION

Alternatives are described and discussed below. Maps of the alternatives accompany each description below. Overall planning level project cost estimates for alternatives are presented in Chapter 4. For each set of alternatives, there is also an unstated option to do nothing and make no changes. This option perpetuates existing deficiencies and increases the risk of surcharging, overflows, environmental damages, DEQ violations, and subsequent fines. Deficiencies identified in Section 2 that do not have multiple, feasible alternatives for improvements are addressed in Section 4. Alternatives are organized by location. As a general policy, all pipelines that are replaced in the alternative, at a minimum, match the upstream pipeline size. This is considered an industry good practice. Some specific cases are noted where existing downstream pipe segments are smaller in size than the improvements recommended in the alternative. Advantages and disadvantages of alternatives, including capital cost and operations and maintenance (O&M) considerations, are also discussed below. Detailed cost estimates of the improvements summarized in this section are presented in Appendix C.

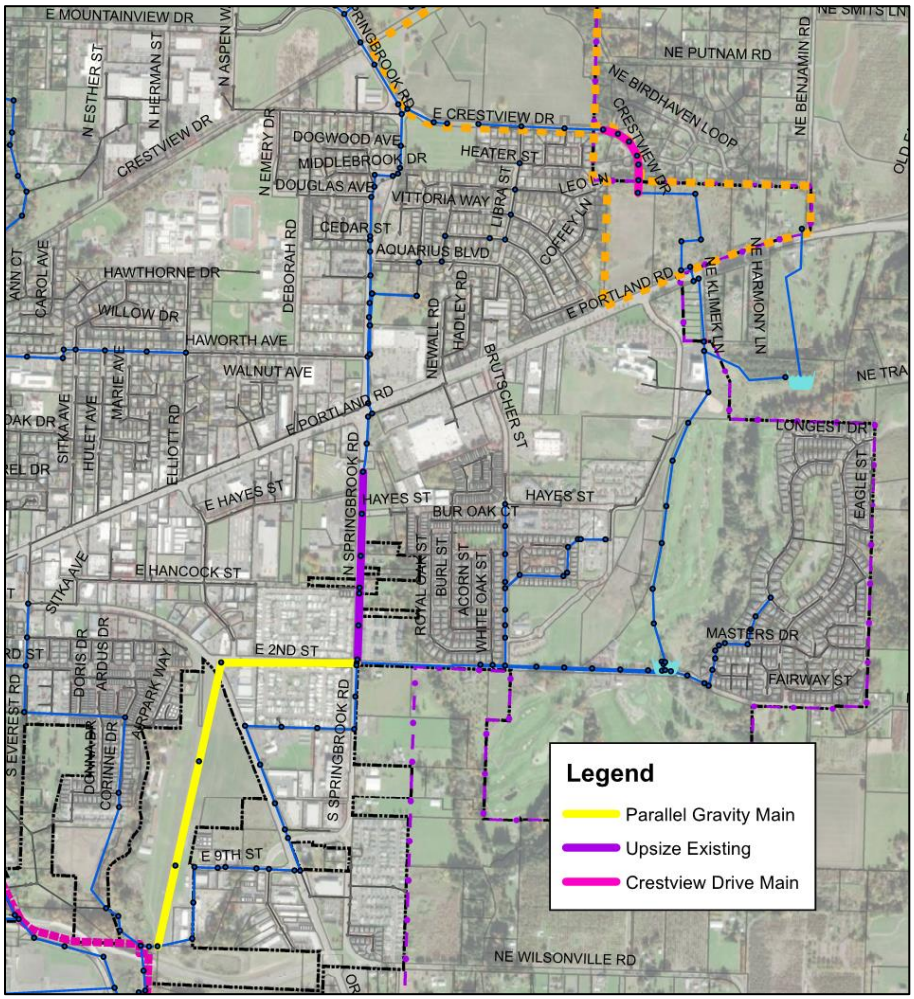
Springbrook Basin

The two alternatives evaluated for the Springbrook basin were to direct the flow from E Crestview Drive to the east or to the west. The improvements in the full Springbrook basin were evaluated collectively for each of the alternatives. The two alternatives are described and evaluated in the following sections.

Alternative 1 – E Crestview Drive East

The main portion of flow draining to E Crestview Drive would be directed to the east, and then south through Crestview Crossing, eventually flowing to the Fernwood Pump Station (as shown in Figure 3-1). This alternative includes a small portion of new 8-inch line on E Crestview Drive to connect to Crestview Crossing to the SE, upsizing the firm capacity at the Fernwood Pump Station by approximately 250 gallons per minute (gpm), upsizing approximately 2,300 linear feet (LF) of existing 15-inch line on Springbrook Road from E Fernwood Road to north of Hayes Street to 18-inch, and a new, 24-inch parallel gravity main to the south. The parallel gravity main that would run west on E Second Street to HWY 219, then turn south and route through the Sportsman Airpark property and reconnect to the existing trunk line south of the airport before it drops into the creek bottom. This parallel line could be designed to receive all flows from either the Fernwood Lift Station force main or from the S Springbrook Road trunk line. These connections could be designed with overflow capabilities to transfer flow from one trunk line to the other if needed. Otherwise, a flow split downstream of the existing manhole in E Fernwood Road and S Springbrook Street could be utilized to send most of the flow down the new airport trunk line. The extents of the improvements are shown in Figure 3-1.

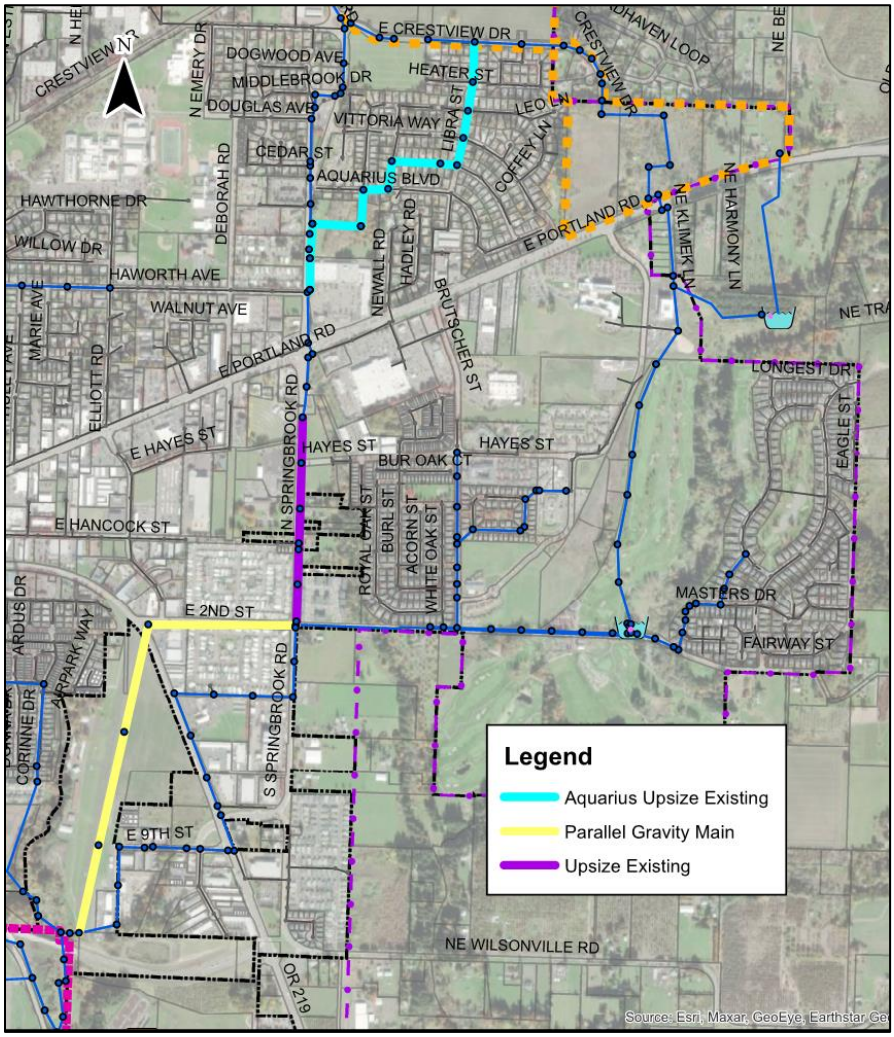
FIGURE 3-1: ALTERNATIVE 1, E CRESTVIEW DRIVE EAST



Alternative 2 – E Crestview Drive West

The main portion of flow from E Crestview Drive would be directed south through the Aquarius Blvd subdivision and then flow west to the Springbrook Road trunk line near Haworth Avenue (as shown in Figure 3-2). This alternative includes upsizing approximately 4,400 LF in Aquarius Blvd subdivision to 15-inch pipe. Additional improvements downstream would include upsizing approximately 2,300 LF of existing 15-inch line on Springbrook Road to 21-inch, and a new, 24-inch parallel gravity main to the south. The parallel gravity main follows the same proposed alignment as Alternative 1. This alternative does not include any upsizing to the Fernwood Pump Station, but the improvements on Springbrook Road are one nominal pipe size larger than those in Alternative 1. The extents of the improvements are shown below in Figure 3-2.

FIGURE 3-2: ALTERNATIVE 2, E CRESTVIEW DRIVE WEST



Lifecycle Cost Evaluation

A 20-year lifecycle cost evaluation was completed for the two alternatives. Two of the three pumps at the existing Fernwood Pump Station were installed in 2001 and the third was installed in 2010. The typical lifecycle of pumps is estimated at 20 years. Pump replacement was assumed in the 20-

year lifecycle for both alternatives. The same base pump can be used for both alternatives. The impeller size and the average efficiencies of the pumps vary between the alternatives. Annual pump electrical demands and maintenance costs were estimated for each alternative. The annual O&M cost is converted to a 20-year total using a net present value approach with a rate of 1.2%. Table 3-1 shows the 20-year lifecycle cost comparison. Alternative 1, directing Crestview Drive east, has the lower 20-year lifecycle cost despite its higher annual O&M.

TABLE 3-1: SPRINGBROOK ALT. 20-YEAR LIFECYCLE COSTS

Alternative 1 - Crestview East	
Item	**Annual Cost**
Annual electricity	$ 9,600
Pump maintenance	$ 3,200
Annual O&M (rounded)	$ 13,000
20-Year O&M (rounded)	$ 230,000
Pump capital cost	$ 202,000
Pipe improvements capital cost	$ 5,314,000
20-Year Lifecycle Cost (rounded):	**$ 5,746,000**
Alternative 2 - Crestview West	
Item	**Annual Cost**
Annual electricity	$ 8,100
Pump maintenance	$ 3,200
Annual O&M (rounded)	$ 12,000
20-Year O&M (rounded)	$ 212,300
Pump capital cost	$ 202,000
Pipe improvements capital cost	$ 6,617,000
20-Year Lifecycle Cost (rounded):	**$ 7,032,000**

Both alternatives include continued use of two, 15-inch diameter segments (approximately 200 feet) downstream of the improvements (north of the Newberg-Dundee Bypass and south of the Airpark). These segments drop down into the Hess Creek corridor and increase in slope, preventing them from being capacity limiting. The City can choose to replace and upsize the downstream portion of this trunk line during preliminary design to avoid the downstream pipeline from being smaller than the upstream pipeline. The average useful life of a pipeline is roughly 50-75 years; longer than the projected growth of this study. It is advisable to review growth beyond this study's buildout conditions and consider the impacts to the Springbrook Road gravity main during the preliminary design phase.

3.3 INFILTRATION AND INFLOW (I/I) DISCUSSION

Infiltration and inflow (I/I) are concerns in the Newberg collection system. The City completed an I/I Study in 2015 that included pump run time analysis, continuous flow monitoring, night-time monitoring, smoke testing, and CCTV inspection. The study provided a prioritized list of improvements and areas of high I/I for the City to focus their mitigation efforts. The 2018 WWMP collected additional data and updated the I/I evaluation and prioritization areas. The City has made concerted efforts to fund and complete annual I/I mitigation projects, particularly since the 2015 I/I Study was completed. Operators have noted that surcharging and peak flows seen at the WWTP

during large storm events has decreased with the continued I/I mitigation efforts. Additional information and details on the City's I/I efforts and prioritization can be found in the 2018 WWMP (Sections 7 and 8).

CHAPTER 4 – RECOMMENDED IMPROVEMENTS

This section consists of the recommended plan to address the wastewater collection system deficiencies identified in previous chapters, as well as recommendations from the 2018 WWMP that have not been modified in scope in this technical update. This was done so that system-wide, collection system recommendations are in one location in the WWMP for easy reference. A location map showing the improvements to the collection system is shown in Figure 7 (Appendix A).

4.1 RECOMMENDED PIPELINE IMPROVEMENTS

This section summarizes the recommended pipeline improvements to address deficiencies from Chapter 2, including recommended alternatives from Chapter 3 and recommendations from the 2018 WWMP that have not changed in scope. Project cost estimates are included in this chapter and have been updated from the 2018 WWMP, even if a recommended project scope has not changed with the technical update. Cost estimates with additional information for all recommended improvements can be found in Appendix C.

4.1.1 Priority 1 – Address Existing Deficiencies

Priority 1 addresses short-term, existing capacity deficiencies. Primary existing deficiencies were identified in the 2018 WWMP. There was no additional information from this update that would change the existing deficiencies. The recommended alternatives from Chapter 3 are summarized and additional improvements from the 2018 WWMP are expanded upon below. Individual project summary sheets for Priority 1 projects, including location maps, are included in Appendix D.

Hess Creek Trunk Line and N Villa Road

The recommended improvements for the Hess Creek trunk line and N Villa Road have not been changed from the 2018 WWMP. The recommended project includes a new pump station, parallel gravity main, and partial abandonment of the Hess Creek Line (Figure 7). These improvements will alleviate some of the O&M challenges with the Hess Creek trunk line by utilizing a new pump station near E Portland Road to direct flow to a proposed parallel line on S Church Street, E Third Street, and Corinne Drive; and abandon the trunk line in the southern portion of Hess Creek.

These improvements can be completed as one project but is recommended to be divided into three phases. Phase 1 includes cured-in-place-pipe (CIPP) of the upper portion of Hess Creek trunk line followed by flow monitoring of the basin to evaluate flows for pre-design of the pump station and parallel line. There are two segments of pipeline in the upper portion that should not be lined as they will be upsized in Phase 2. Phase 2 includes design and construction of the parallel line, as well as improvements to two sections of the existing Hess Creek trunk line that are undersized for existing flows. The final phase is design and construction of the pump station and force main, and connection to the parallel gravity line. Phase 1 and 2 are included in Priority 1 improvements. Phase 3 is included as a Priority 2 improvement. Phase 1 and 2 will provide I/I reduction and re-direct flow from the east side of the canyon away from the Hess Creek trunk line down the parallel line. A summary of the estimated costs of Phase 1 and 2 is presented in Table 4-1.

TABLE 4-1: HESS CREEK IMPROVEMENTS, PHASE 1 & 2 COST ESTIMATE

	Item	Unit	Unit Price	Quantity	Cost
Phase 1					
	CIPP, 8 to 18-inch[1]	LF	$ 145	6,800	$ 986,000
	Flow monitoring	LS	$ 30,000	1	$ 30,000
				Subtotal (rounded)	$ 1,016,000
	Mobilization	%	5	-	$ 50,800
				Subtotal (rounded)	$ 1,067,000
	Contingency	%	10	-	$ 106,700
				Subtotal (rounded)	$ 1,174,000
	Engineering and CMS	%	15	-	$ 176,100
				Phase 1 Cost (rounded):	**$ 1,351,000**
	[1]Additional 30% added to unit price for Hess Creek accessibility constraints				
Phase 2					
	Parallel gravity main				$ 2,915,500
	Upsize existing pipeline				$ 1,435,000
				Subtotal (rounded)	$ 4,351,000
	Mobilization	%	5	-	$ 217,550
				Subtotal (rounded)	$ 4,569,000
	Contingency	%	30	-	$ 1,370,700
				Subtotal (rounded)	$ 5,940,000
	Engineering (25%) and Soft Costs				$ 1,520,000
				Phase 2 Cost (rounded):	**$ 7,460,000**

Springbrook Road

The recommended alternative for Springbrook Road is Alternative 1 – E Crestview Drive directed east. The improvements include a small portion of new 8-inch line from E Crestview Drive to connect to Crestview Crossing to the SE, upsizing the firm capacity of Fernwood Pump Station, upsizing a portion of the existing Springbrook line north of E Fernwood Road, and a new parallel gravity line added west on E Second Street from the E Fernwood Road intersection. The parallel gravity line will be bored under Highway 219 and then run through Sportsman Airpark. The City Community Development Department had been in discussion with Airpark for other projects during the 2018 WWMP process and the City thinks it is probable that the Airpark would be willing to negotiate an easement for the gravity sewer. The upsized portion on Springbrook Road and new parallel line match the extents of the 2018 WWMP recommendations, though the size of the improvements has changed with the flow modifications in the technical update. During preliminary design it should be determined if the downstream pipeline should be replaced to match the upstream pipeline size. Table 4-2 shows the estimated costs. It is advisable to review growth beyond this study's buildout conditions and consider the impacts to the Springbrook Road gravity main when the next Buildable Lands Study is completed.

TABLE 4-2: SPRINGBROOK IMPROVEMENTS COST ESTIMATE

Item	Unit	Unit Price	Quantity	Cost
Parallel gravity main				$ 1,562,200
Upsize existing pipeline				$ 1,314,500
Upsize Fernwood PS				$ 202,000
			Subtotal (rounded)	$ 3,079,000
Mobilization	%	5	-	$ 153,950
			Subtotal (rounded)	$ 3,233,000
Contingency	%	30	-	$ 969,900
			Subtotal (rounded)	$ 4,203,000
Engineering (25%) and Soft Costs				$ 1,110,750
			Project Total Cost (rounded):	**$ 5,314,000**

E Pinehurst Court

The recommended improvements for E Pinehurst Court have not changed from the 2018 WWMP. E Pinehurst Court in the Highway 240 basin has overflow concerns due to road elevations and the N Main Street trunk line invert elevation. It is recommended that the line on E Pinehurst Court be disconnected from the N Main Street trunk line, re-graded to the west, and extended south to connect to the existing line on Creekside Court (Figure 7). Preliminary design should confirm Creekside Pump Station has capacity to handle E Pinehurst Court flows. E Pinehurst Court flows should also be considered when evaluating Creekside Pump Station displacement (see Section 4.1.3 for more discussion). Estimated costs are summarized in Table 4-3.

TABLE 4-3: E PINEHURST COURT IMPROVEMENTS COST ESTIMATE

Item	Unit	Unit Price	Quantity	Cost
Pinehurst Court				
Disconnect and re-direct to Creekside LS				$ 183,000
Mobilization	%	5	-	$ 9,150
			Subtotal (rounded)	$ 193,000
Contingency	%	30	-	$ 57,900
			Subtotal (rounded)	$ 251,000
Engineering (25%) and Soft Costs				$ 66,400
			Project Total Cost (rounded):	**$ 318,000**

Additional Improvement Projects

The additional improvements projects summarized here have not changed from the 2018 WWMP. The City completed a master plan on expanding and upgrading the City maintenance yard facilities. The recommended improvements project includes remodel of the building (completed in 2016/2017), major site work, a new fleet building, and new administration building. This project is being funded over multiple years and through multiple sources as it is relevant to several City divisions. The cost reflected in the CIP (Chapter 5) was provided by the City in 2018 as the portion of the project costs to be allocated from the sewer funds and has been updated to 2021 dollars with the ENR index. The City is allocating $450,000-$600,000 annually for I/I specific projects. These projects will be directed by the I/I based priority improvements recommended in the 2018 WWMP and coordination with other utility projects. This work is considered part of the

annual replacement budget work for pipelines and manholes (see Chapter 5 for additional discussion).

E Crestview Drive and Crestview Crossing

The Crestview area as shown in Figure 3, includes the E Crestview Drive and Crestview Crossing infrastructure. While this infrastructure is development driven, construction on both projects is currently moving forward. With this timeline, the projects have been included in the Priority 1 CIP, which differs from the priority of the 2018 WWMP. The scopes of these projects have been modified from the 2018 WWMP to reflect the most current information the City has on the ongoing projects. E Crestview Drive includes approximately 2,500 linear feet on 8-inch gravity main. Crestview Crossing is a private development and includes approximately 3,200 linear feet of gravity main. The development is currently in the design phase. The estimated costs for this infrastructure are summarized in Table 4-4.

TABLE 4-4: E CRESTVIEW DRIVE AND CRESTVIEW CROSSING INFRASTRUCTURE COST ESTIMATE

Item	Unit	Unit Price	Quantity	Cost
E Crestview Drive				
New pipeline				$ 521,000
Subtotal (rounded)				$ 521,000
Mobilization	%	5	-	$ 26,050
Subtotal (rounded)				$ 548,000
Contingency	%	30	-	$ 164,400
Subtotal (rounded)				$ 713,000
Engineering (25%) and Soft Costs				$ 214,250
E Crestview Drive Total Cost (rounded):				**$ 928,000**
Item	**Unit**	**Unit Price**	**Quantity**	**Cost**
Crestview Crossing				
New pipeline				$ 801,000
Subtotal (rounded)				$ 801,000
Mobilization	%	5	-	$ 40,050
Subtotal (rounded)				$ 842,000
Contingency	%	30	-	$ 252,600
Subtotal (rounded)				$ 1,095,000
Engineering (25%) and Soft Costs				$ 318,750
Crestview Crossing Total Cost (rounded):				**$ 1,414,000**

4.1.2 Priority 2 – Address Future Deficiencies

Hess Creek Trunk Line and N Villa Road

As mentioned previously, Phase 3 of the Hess Creek and Villa Road Improvements – New Pump Station – is included in the Priority 2 projects. The cost estimate for Phase 3 is summarized in Table 4-5.

TABLE 4-5: HESS CREEK IMPROVEMENTS, PHASE 3 COST ESTIMATE

Phase 3					
	Pump Station				$ 1,369,000
	Mobilization	%	5	-	$ 68,450
				Subtotal (rounded)	$ 1,438,000
	Contingency	%	30	-	$ 431,400
				Subtotal (rounded)	$ 1,870,000
	Engineering (25%) and Soft Costs				$ 668,500
				Phase 3 Cost (rounded):	**$ 2,539,000**

S River and E Eleventh Streets

Capacity deficiencies along the S River and E Eleventh Streets trunk line cause capacity issues upstream along S Blaine, Howard, and Chehalem Streets; and E Sixth and Ninth Streets. To alleviate these capacity issues, approx. 900 linear feet would be upsized from 21-inch to 30-inch diameter along S River Street between E Fourth and Sixth Streets. In addition, approximately 1,900 linear feet of 36-inch diameter pipeline would replace existing 21- and 30-inch diameter pipeline along S River Street south of E Sixth Street to Eleventh Street. Approximately 4,700 linear feet of existing 30- and 36-inch pipe along E Eleventh and S Wynooski Street is to be upsized to 42-inch pipe (Figure 7). The extents of these recommendations have increased since the 2018 WWMP as the recommended size has increased one nominal pipe size and a few additional segments are now included in the improvements to match pipe size along the trunk line. The new 42-inch diameter pipeline on E Eleventh Street and S Wynooski Street would result in smaller diameter downstream pipelines (further south on S Wynooski Street and to the influent pump station). There is one 24-inch diameter segment (approximately 300 feet in length, just upstream of the influent pump station) downstream of the improvements, which has a significantly higher slope than the other segments preventing it from being capacity limiting. During preliminary design it should be assessed if the downstream pipeline should be replaced to match the upstream pipeline size. The cost estimate for these improvements is summarized in Table 4-6.

TABLE 4-6: S RIVER AND E ELEVENTH STREET IMPROVEMENTS COST ESTIMATE

Item	Unit	Unit Price	Quantity	Cost
Upsize existing pipeline				$ 2,972,000
Mobilization	%	5	-	$ 148,600
			Subtotal (rounded)	$ 3,121,000
Contingency	%	30	-	$ 936,300
			Subtotal (rounded)	$ 4,058,000
Engineering (25%) and Soft Costs				$ 1,044,500
			Project Total Cost (rounded):	**$ 5,103,000**

As noted in the 2018 WWMP, City staff are aware there is at least one connection between the S River Street trunk line and the S Chehalem Street pipeline (former trunk line) at E Sixth Street. It is known that there are likely additional connections between the S River Street trunk line and the S Chehalem Street pipeline. The model was calibrated with observed flow monitoring data and closely matched flow, depth, and velocity data upstream at Vermillion Street during the 2018 WWMP process. Additional flow monitoring (number of locations focused in this area) and data collection could be beneficial to further characterize flow throughout the S River Street trunk line.

This is recommended as part of the preliminary design of any improvements related to the S River Street trunk line. Parallel lines could be investigated during preliminary design as a potential alternative alignment as these existing, adjacent lines may be in worse condition and benefit from replacement and upsizing.

Highway 240 Pump Station

The recommended improvements for the Highway 240 Pump Station have not changed from the 2018 WWMP. Highway 240 Pump Station will need upsized pumps as part of Priority 2. Prior to reaching the firm capacity at Highway 240, the pumps at the pump station should be upsized to handle peak flows at buildout (approximately 3,000 gpm at buildout with pump station displacement, recommended below). It is recommended the pump station controls/telemetry be adjusted now to add an alarm to alert operations staff when all pumps are running. This information will indicate if flows at Highway 240 are beyond the firm capacity of the pump station. The cost estimate is summarized in Table 4-7. This estimate assumes pumps can be replaced while maintaining the operations and does not require bypass pumping.

It should be noted that prior to upsizing Highway 240, the recommended S River and E Eleventh Streets improvements should be completed to prevent additional surcharging and overflows in the area. When the Highway 240 pumps are upsized, the Highway 240 diversion structure should be adjusted to prevent flow from being re-directed to the Dayton Pump Station, eliminating potential surcharging and overflows in the downstream pipeline or at the Dayton Pump Station. Operations at Highway 240 Pump station should be adjusted when the pumps are upsized to utilize both 10-inch force mains to maintain velocities of 7 feet per second or lower.

TABLE 4-7: HWY 240 PUMP STATION IMPROVEMENTS COST ESTIMATE

Item	Unit	Unit Price	Quantity	Cost
Upsize pump	EA	$ 130,000	3	$ 390,000
Mobilization	%	5	-	$ 19,500
			Subtotal (rounded)	$ 410,000
Contingency	%	25	-	$ 102,500
			Subtotal (rounded)	$ 513,000
Engineering and CMS	%	25	-	$ 128,250
			Project Total Cost (rounded):	**$ 642,000**

N Main and S Wynooski Streets Pipeline Improvements

The recommended improvements for N Main and S Wynooski Streets have not changed from the 2018 WWMP. N Main Street exceeds the surcharge threshold in future scenarios along Clifford Court. There is a single 12-inch diameter pipeline segment just upstream of the Highway 240 diversion structure. It is recommended this pipeline be upsized to be a 15-inch diameter to match the upstream pipeline and alleviate surcharging on N Main Street (Figure 7). While replacing this segment, it should be regraded with the segment upstream (WWGM1566) to resolve an inverse slope highlighted by survey data collected in 2017 for the 2018 WWMP. In addition, there is another pipeline segment upstream (WWGM1568) that has an inverse slope based on survey data and should be regraded to correct the slope (Figure 7).

It is recommended the pipeline segment on S Wynooski Street north of E Eleventh Street be upsized from 10-inch to 15-inch diameter pipeline to alleviate surcharging along S Wynooski

Street (Figure 7). There is a short segment of 10-inch diameter pipeline downstream of this segment that has a steep slope that prevents it from causing capacity deficiencies. During preliminary design it can be determined if this segment should be replaced to match the new upstream pipeline size. Cost estimates for both N Main Street and S Wynooski Street Improvements are summarized in Table 4-8.

TABLE 4-8: N MAIN AND S WYNOOSKI STREETS IMPROVEMENTS COST ESTIMATE

Item	Unit	Unit Price	Quantity	Cost
N Main Street Improvements				
Upsize/regrade existing pipeline				$ 224,000
Mobilization	%	5	-	$ 11,200
Subtotal (rounded)				$ 236,000
Contingency	%	30	-	$ 70,800
Subtotal (rounded)				$ 307,000
Engineering and CMS	%	25	-	$ 76,800
Project Total Cost (rounded):				**$ 384,000**
Item	**Unit**	**Unit Price**	**Quantity**	**Cost**
S Wynooski Street Improvements				
Upsize existing pipeline				$ 135,000
Mobilization	%	5	-	$ 6,800
Subtotal (rounded)				$ 142,000
Contingency	%	30	-	$ 42,600
Subtotal (rounded)				$ 185,000
Engineering and CMS	%	25	-	$ 46,300
Project Total Cost (rounded):				**$ 232,000**

Additional Improvement Projects

The additional improvements projects summarized here have not changed from the 2018 WWMP. The City will continue to budget $450,000-$600,000 annually for I/I related improvements. This work will continue to be directed by the I/I based priority improvements highlighted in the 2018 WWMP and any additional I/I evaluations completed. Continued coordination with other utility projects could provide cost savings for the City. This work is considered part of the annual replacement budget work for pipelines and manholes. Further discussion of annual replacement budgets is included in Chapter 5.

In addition, a master plan update is recommended within Priority 2 to re-evaluate the existing system and system needs as growth occurs. This will assist the City staff in directing their funds to the highest priority improvement projects to continue delivering wastewater services to the rate payers.

4.1.3 Future Infrastructure and Pump Stations

There are three areas where future infrastructure is recommended to service future growth. In two of these areas, pump station displacement options are recommended in conjunction with the addition of future infrastructure. These projects are summarized below. During any subsequent phases of any pump station abandonments, a return-on-investment analysis should be completed.

Providence PS Future Infrastructure

These improvements have minor changes since the 2018 WWMP with the updated information on the Crestview Crossing development. North of the Fernwood Pump Station, a regional pump station is recommended to serve future development northeast of the intersection of E Portland Road and Harmony Lane (east portion of Crestview Crossing). The approximate location of this future pump station is located on Figure 3. The approximate location of the pump station was assessed during the 2018 WWMP process considering future development and elevation contours and has not been modified from the 2018 WWMP. The new force main will discharge into the existing line on Providence Drive. During pre-design, exact location and size should consider any Buildable Lands Study and future developments. The preliminary Crestview Crossing development indicates that the two properties NE of Harmony Lane are unable to flow by gravity to the existing line on Providence Drive and will require pumping with the new pump station. The estimated loading to the proposed Providence Pump Station has been reduced sine the 2018 WWMP with the information on Crestview Crossing. The future infrastructure estimated costs are summarized in Table 4-9.

TABLE 4-9: PROVIDENCE PS FUTURE INFRASTRUCTURE COST ESTIMATE

Item	Unit	Unit Price	Quantity	Cost
Gravity Main				$ 507,000
Pump Station (including Force Main)				$ 478,000
Subtotal (rounded)				$ 985,000
Mobilization	%	5	-	$ 49,250
Subtotal (rounded)				$ 1,035,000
Contingency	%	30	-	$ 310,500
Subtotal (rounded)				$ 1,346,000
Engineering (25%) and Soft Costs				$ 387,500
Providence PS Total Cost (rounded):				**$ 1,734,000**

NE Chehalem Drive Future Infrastructure and Pump Station Displacement

The future infrastructure along NE Chehalem Drive summarized here has not changed from the 2018 WWMP. Future infrastructure along NE Chehalem Drive will be necessary to service growth predicted through buildout. It is recommended the gravity pipelines discharge to the Highway 240 wet well. There is an existing stub out for an inlet from the west that can be utilized to connect the future pipeline. Near-future infrastructure, includes a pipeline from approximately E Mountainview Drive, south on NE Chehalem Drive to Highway 240 (W Illinois Street) and east to the pump station (Figure 7). This infrastructure cost estimate is in Table 4-10 as Phase 1. The design of this infrastructure is nearly complete. The most recent engineer's opinion of probable cost is reflected in Table 4-10. See pump station displacement considerations below that impact the vertical alignment of this pipeline. Additional infrastructure for buildout growth includes pipeline extensions to the north and south of the Phase 1 pipeline along NE Chehalem Drive (Figure 7). These improvements are summarized as Phase 2 in Table 4-10.

In addition to serving future growth, this infrastructure could allow for the displacement of Chehalem and Creekside Pump Stations. Additional gravity pipelines with approximate alignments shown in Figure 7 could transport Chehalem and Creekside Pump Station flows to the Highway 240 Pump Station. This infrastructure is recommended to decrease the capital cost and O&M required to continue operation and maintenance of the two pump stations. The vertical

alignment of Phase 1 improvements would need to be lower in general to facilitate the displacement of Chehalem and Creekside Pump Stations. Phase 3 in Table 4-10 summarizes the cost estimate for these changes.

TABLE 4-10: NE CHEHALEM DRIVE FUTURE INFRASTRUCTURE AND PUMP STATION DISPLACEMENT COST ESTIMATE

	Item	Unit	Unit Price	Quantity	Cost
Phase 1					
	NE Chehalem Drive Infrastructure				$ 1,683,000
				Subtotal (rounded)	$ 1,683,000
	Contingency	%	10	-	$ 169,000
				Subtotal (rounded)	$ 1,852,000
	Engineering and CMS	LS	-	1	$ 365,000
				Phase 1 Cost (rounded):	**$ 2,217,000**
Phase 2					
	New pipeline				$ 580,000
	Mobilization	%	5	-	$ 29,000
				Subtotal (rounded)	$ 609,000
	Contingency	%	30	-	$ 182,700
				Subtotal (rounded)	$ 792,000
	Engineering and CMS	%	25	-	$ 198,000
				Phase 2 Cost (rounded):	**$ 990,000**
Phase 3 (Chehalem and Creekside PS displacement)					
	New pipeline				$ 1,931,000
	Pump station demolition/removal				$ 33,000
				Subtotal (rounded)	$ 1,964,000
	Mobilization	%	5	-	$ 98,200
				Subtotal (rounded)	$ 2,063,000
	Contingency	%	30	-	$ 618,900
				Subtotal (rounded)	$ 2,682,000
	Engineering (25%) and Soft Costs				$ 815,600
				Phase 3 Cost (rounded):	**$ 3,498,000**
				Project Total Cost (rounded):	**$ 6,705,000**

Riverfront Future Infrastructure and Pump Station Displacement

Future infrastructure in the Riverfront area will be necessary to service growth planned for the Riverfront Master Plan. Approximate regional pump station, force main, and gravity main locations based on the Riverfront Master Plan are shown in Figure 2. See pump station displacement considerations below that impact the vertical alignment of the pump station. The force main discharge near E Twelfth Street will require upsize of the downstream pipeline. For planning and development purposes, the industrial gravity main (identified as GM D1 in the Riverfront Master Plan) across the old mill property that is anticipated to serve the industrial area in the Riverfront District has been separated from other infrastructure in the Riverfront area. Cost estimates for the recommended infrastructure and improvements are in summarized as Phase 1 and Riverfront Industrial Line in Table 4-11.

In addition to serving future growth, this infrastructure could allow for the displacement of Andrew and Charles Pump Stations. Additional gravity pipelines with approximate alignments shown in Figure 2 could transport Andrew and Charles Pump Station flows to the new, regional Riverfront Pump Station. This infrastructure is reflected in the Riverfront Master Plan and is recommended to decrease the capital cost and O&M required to continue operation of the two existing pump stations. The vertical alignment of Phase 1 improvements should consider the displacement of

Andrew and Charles Pump Stations during design phase. The estimated cost of displacement and new gravity pipelines for Andrew and Charles Pump Stations is summarized in Phase 2 in Table 4-11.

TABLE 4-11: RIVERFRONT INFRASTRUCTURE AND PUMP STATION DISPLACEMENT COST ESTIMATE

	Item	Unit	Unit Price	Quantity	Cost
Phase 1					
	New pipeline				$ 2,047,000
	Pump Station				$ 691,000
	Subtotal (rounded)				$ 2,738,000
	Mobilization	%	5	-	$ 136,900
	Subtotal (rounded)				$ 2,875,000
	Contingency	%	30	-	$ 862,500
	Subtotal (rounded)				$ 3,738,000
	Engineering (25%) and Soft Costs				$ 1,048,900
	Phase 1 Cost (rounded):				**$ 4,787,000**
Riverfront Industrial Line					
	New pipeline				$ 654,000
	Subtotal (rounded)				$ 654,000
	Mobilization	%	5	-	$ 32,700
	Subtotal (rounded)				$ 687,000
	Contingency	%	30	-	$ 206,100
	Subtotal (rounded)				$ 894,000
	Engineering (25%) and Soft Costs				$ 259,400
	Riverfront Industrial Line Cost (rounded):				**$ 1,154,000**
Phase 2 (Charles and Andrew PS displacement)					
	New pipeline				$ 513,000
	Pump station demolition/removal				$ 22,000
	Subtotal (rounded)				$ 535,000
	Mobilization	%	5	-	$ 26,750
	Subtotal (rounded)				$ 562,000
	Contingency	%	30	-	$ 168,600
	Subtotal (rounded)				$ 731,000
	Engineering (25%) and Soft Costs				$ 377,750
	Phase 2 Cost (rounded):				**$ 1,109,000**
	Project Total Cost (rounded):				**$ 5,896,000**

4.2 RECOMMENDED PUMP STATION IMPROVEMENTS

Additional pump station condition assessments were not included in the scope of this technical update. The main modification in the technical update was to remove the Dayton Pump Station Replacement project from the short-term improvements in the CIP as it has been completed since the 2018 WWMP. Upsizing the Fernwood Pump Station was included in the Springbrook Basin recommendations. Otherwise, pump station recommendations have not changed from the 2018 WWMP. Pump stations that are recommended to be displaced, do not have long-term condition improvements associated with them. Costs presented in the following tables are planning level estimates and are in 2021 dollars (updated from the 2018 WWMP using the ENR index). Actual costs may vary and should be refined further in the pre-design process. Engineering costs assume that multiple pump station projects will be grouped together for project administration efficiencies.

4.2.1 Priority 1 – Address Existing Deficiencies

Priority 1 pump station improvements address existing, short-term condition deficiencies that should be addressed in the next six years. Improvement costs are summarized by pump station in Table 4-12. Cost estimate details can be found in Appendix C. There are no recommended short-term improvements for the Andrew Pump Station.

TABLE 4-12: PUMP STATION SHORT-TERM IMPROVEMENTS COST ESTIMATE

Site	Recommended Improvements Cost
Charles Pump Station	$ 3,700
Chehalem Pump Station	$ 900
Creekside Pump Station	$ 16,600
Fernwood Pump Station	$ 15,900
HWY 240 Pump Station	$ 12,600
Sheridan Pump Station	$ 15,500
Pump Station Improvements Subtotal	*$ 66,000*
Contingency (30%)	*$ 19,800*
Engineering (35%)	*$ 30,100*
Administration (2%)	*$ 1,800*
Total Improvements Cost (rounded)	***$ 118,000***

4.2.2 Priority 2 – Address Future Deficiencies

The following table summarizes recommended, long-term Priority 2 improvements by pump station (Table 4-13). These recommended improvements assume that Andrew, Charles, Chehalem, and Creekside pump stations are displaced through other CIP projects (discussed above) and therefore no long-term improvements are necessary. The Dayton Pump Station has recently been replaced as noted previously, so it is assumed that the new pump station will not need long-term improvements. Cost estimate details can be found in Appendix C.

TABLE 4-13: PUMP STATION LONG-TERM IMPROVEMENTS COST ESTIMATE

Site	Recommended Improvements Cost
Fernwood Pump Station	$ 72,600
HWY 240 Pump Station	$ 46,900
Sheridan Pump Station	$ 138,100
Pump Station Improvements Subtotal	*$ 257,600*
Contingency (30%)	*$ 77,300*
Engineering (35%)	*$ 117,300*
Administration (2%)	*$ 6,700*
Total Improvements Cost (rounded)	***$ 459,000***

4.2.3 Future Infrastructure and Pump Station Displacement

Two new pump stations to service future growth are recommended within the planning period. They were discussed in conjunction with future pipelines above in Section 4.1.3. Recommended pump station displacement options were also discussed in Section 4.1.3.

CHAPTER 5 – CAPITAL IMPROVEMENT PLAN (CIP)

This section consists of the recommended capital improvement plan (CIP) to address the wastewater collection system deficiencies identified in previous chapters. A location map showing the improvements to the collection system is shown in Figure 7 (Appendix A).

5.1 BASIS FOR ESTIMATE OF PROBABLE COST

Capital costs developed for the recommended improvements are Class 5 estimates as defined by the Association for the Advancement of Cost Engineering (AACE) in alignment with the 2018 WWMP. Actual construction costs may differ from the estimates presented, depending on specific design requirements and the economic climate at the time a project is bid. An AACE Class 5 estimate is normally expected to be within -50 and +100 percent of the actual construction cost. As a result, the final project costs will vary from the estimated presented in this document. The range of accuracy for a Class 5 cost estimate is broad, but these are typical levels of accuracy for planning work and they apply to all alternatives so that the relative estimated costs of the alternatives are comparable and can be used for decision-making. It is important to communicate this level of accuracy to policy- and decision-makers. Costs shown are planning-level estimates and can vary depending on market conditions; they shall be updated as the project is further refined in the project development, pre-design, and design phases. Contractor's overhead and profit are worked into the base construction cost and the other indirect costs are identified and included, where required, as a specific line item. The CIP is based on modeling data that was available during the completion of this facilities plan. When projects are carried forward, the model, data, assumptions, etc., should be re-evaluated to make any necessary adjustments to the basis of the project. Individual project sheets for Priority 1 projects are included in Appendix D ([to be completed]). Each project sheet consists of a project objective, description, location map, and cost estimate.

5.2 SUMMARY OF PROBABLE COSTS

The summary of the Newberg collection system improvement costs is in Table 5-1 (Capital Improvement Plan (CIP)). These costs include all improvements described in Chapter 4, which include those modified with the technical update as well as those unmodified from the 2018 WWMP. As summarized previously, the primary projects with changes to their scope since the 2018 WWMP include Springbrook Road (1.c), short-term pump station improvements (1.e), E Crestview Drive (1.g, Crestview Crossing (1.h), S River and E Eleventh Streets (2.b), and Riverfront infrastructure (3.b and 3.c). The percent system development charge (SDC) eligibility for each project factored in the existing design flow, existing capacity, and capacity after the improvements are completed. The amount of capacity that can be utilized for future connections is divided by the future capacity. For projects that did not have an increase in flows, the percent SDC eligible is derived from the percent growth in population over the 20-year planning period (aligns with 2018 WWMP population projections).

TABLE 5-1: 20-YEAR CAPITAL IMPROVEMENT PLAN (CIP)

ID#	Item	Primary Purpose	Total Estimated Cost (2021)	SDC Growth Apportionment		City's Estimated Portion
				%	Cost	
Priority 1 Improvements						
1.a	Hess Creek Phase 1 - CIPP	Capacity & I/I reduction	$ 1,351,000	2%	$ 27,020	$ 1,323,980
1.b	Hess Creek Phase 2 - Parallel Gravity Main	Capacity	$ 7,460,000	2%	$ 149,200	$ 7,310,800
1.c	Springbrook Road	Capacity	$ 5,314,000	20%	$ 1,062,800	$ 4,251,200
1.d	E Pinehurst Court	Capacity	$ 318,000	0%	$ -	$ 318,000
1.e	Pump Station Improvements (Short-term)	Condition	$ 118,000	1%	$ 1,180	$ 116,820
1.f	I/I Projects	Capacity & Condition	$ 2,700,000	50%	$ 1,350,000	$ 1,350,000
1.g	E Crestview Drive Infrastructure	Future Development	$ 928,000	100%	$ 928,000	$ -
1.h	Crestview Crossing Infrastructure	Future Development	$ 1,414,000	100%	$ 1,414,000	$ -
1.i	Maintenance Yard Improvements	Capacity & Condition	$ 804,000	20%	$ 160,800	$ 643,200
		Priority 1 Total (rounded):	**$ 20,407,000**		**$ 5,093,000**	**$ 15,314,000**
Priority 2 Improvements						
2.a	Hess Creek Phase 3 - Pump Station	Capacity	$ 2,539,000	2%	$ 50,780	$ 2,488,220
2.b	S River and E Eleventh Streets	Capacity	$ 5,103,000	17%	$ 867,510	$ 4,235,490
2.c	HWY 240 Pump Station Upsize	Capacity	$ 642,000	19%	$ 121,980	$ 520,020
2.d	N Main and S Wynooski Streets	Capacity	$ 616,000	1%	$ 6,160	$ 609,840
2.e	Pump Station Improvements (Long-term)	Condition	$ 459,000	11%	$ 50,490	$ 408,510
2.f	I/I Projects	Capacity & Condition	$ 3,150,000	50%	$ 1,575,000	$ 1,575,000
2.g	Wastewater Master Plan	Planning	$ 300,000	100%	$ 300,000	$ -
		Priority 2 Total (rounded):	**$ 12,809,000**		**$ 2,972,000**	**$ 9,838,000**
Priority 3 Improvements						
3.a	NE Chehalem Drive Phase 1	Future Development	$ 2,217,000	100%	$ 2,217,000	$ -
3.b	Riverfront Infrastructure	Future Development	$ 4,787,000	100%	$ 4,787,000	$ -
3.c	Riverfront Industrial Infrastructure	Future Development	$ 1,154,000	100%	$ 1,154,000	$ -
3.d	Providence PS Infrastructure	Future Development	$ 1,734,000	100%	$ 1,734,000	$ -
3.e	NE Chehalem Drive Phase 2	Future Development	$ 990,000	100%	$ 990,000	$ -
3.f	I/I Projects	Capacity & Condition	$ 3,150,000	50%	$ 1,575,000	$ 1,575,000
		Priority 3 Total (rounded):	**$ 14,032,000**		**$ 12,457,000**	**$ 1,575,000**
Priority 4 Improvements						
4.a	Chehalem & Creekside PS Displacement/Future Trunk Line	Operations	$ 3,498,000	44%	$ 1,539,120	$ 1,958,880
4.b	Charles & Andrew PS Displacement	Operations	$ 1,109,000	44%	$ 487,960	$ 621,040
		Priority 4 Total (rounded):	**$ 4,607,000**		**$ 2,028,000**	**$ 2,580,000**
		Total Wastewater Collection System Improvement Costs (rounded):	**$ 51,855,000**		**$ 22,550,000**	**$ 29,307,000**

Notes:

1. The opinion of probable cost herein is concept level information only based on our perception of current conditions at the project location and its accuracy is subject to significant variation depending upon project definition and other factors. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. This cost opinion is in 2021 dollars and does not include escalation to time of actual construction. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.
2. All costs in 2021 Dollars. Costs include mobilization (5%), contractor overhead and profit (OHP; 15%), contingency (30%), engineering and construction management services (CMS; 20-35%), and legal, administrative, and permitting services (2%).
3. The Capital Improvement Plan does not include annual pipeline replacement, pipeline cleaning and inspection, and lift station maintenance budgets. These budgets are discussed in Section 5.4.

5.3 PROJECT SCHEDULE

An estimated schedule for Priority 1 improvements is shown in Table 5-2. Individual schedules for each project will be further refined at a later date by the City during the pre-design phase for each proposed improvement. Costs presented here are planning-level estimates. Actual costs may vary depending on market conditions and must be updated as projects are further refined in the project development, pre-design, and design phases.

TABLE 5-2: PRIORITY 1 CAPITAL IMPROVEMENT PLAN

ID#	Item	Total Estimated Cost (2021)	Opinion of Probable Costs (2021)					
			2022	2023	2024	2025	2026	2027
Priority 1 Improvements								
1.a	Hess Creek Phase 1 - CIPP	$ 1,351,000	$ 337,750	$ 1,013,250	$ -	$ -	$ -	$ -
1.b	Hess Creek Phase 2 - Parallel Gravity Main	$ 7,460,000	$1,865,000	$ 2,797,500	$2,797,500	$ -	$ -	$ -
1.c	Springbrook Road	$ 5,314,000	$ -	$ -	$ -	$1,328,500	$1,992,750	$1,992,750
1.d	E Pinehurst Court	$ 318,000	$ 318,000	$ -	$ -	$ -	$ 318,000	$ -
1.e	Pump Station Improvements (Short-term)	$ 118,000	$ -	$ -	$ -	$ 118,000	$ -	$ -
1.f	I/I Projects	$ 2,700,000	$ 450,000	$ 450,000	$ 450,000	$ 450,000	$ 450,000	$ 450,000
1.g	E Crestview Drive Infrastructure	$ 928,000	$ 232,000	$ 348,000	$ 348,000	$ -	$ -	$ -
1.h	Crestview Crossing Infrastructure	$ 1,414,000	$ 353,500	$ -	$ -	$ 353,500	$ 353,500	$ 353,500
1.i	Maintenance Shops Improvements	$ 804,000	$ -	$ -	$ 201,000	$ 201,000	$ 201,000	$ 201,000
	Priority 1 Total (rounded):	**$ 20,407,000**	**$3,557,000**	**$ 4,609,000**	**$3,797,000**	**$2,451,000**	**$3,316,000**	**$2,998,000**

Note: The opinion of probable cost herein is concept level information only based on our perception of current conditions at the project location and its accuracy is subject to significant variation depending upon project definition and other factors. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. This cost opinion is in 2021 dollars and does not include escalation to time of actual construction. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.

5.4 OTHER ANNUAL COSTS

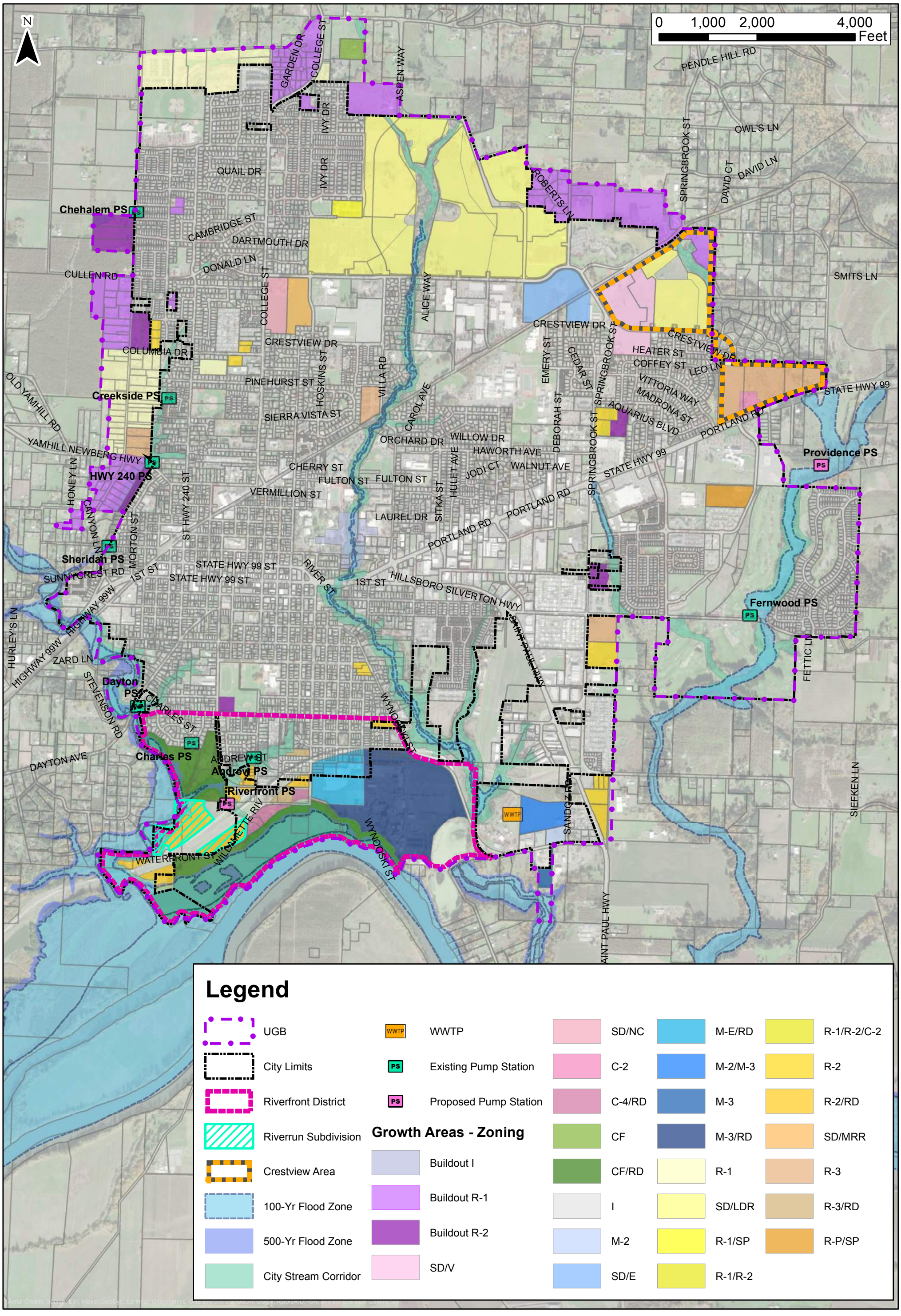
Additional evaluation of other annual costs was not included in the scope of the technical update. The section below summarizes recommendations from the 2018 WWMP. In addition to the capital improvement costs presented in Table 5-1, the following expected annual operating costs are recommended for consideration in setting annual budgets for the collection system:

- Additional collection system replacement/rehabilitation needs: Based on linear feet of pipeline, and number of manholes and cleanouts, the City should budget a total of $1,285,000/year for pipeline replacement/rehabilitation (to be either contracted out or completed using City crews). The City already budgets $450,000 for I/I related pipeline replacement/rehabilitation projects. This amount, combined with the other priority capital improvement projects, the City will be targeting enough manholes, pipelines, etc. to cover the recommended average annual amount.
- Pump station annual costs will go down as the City prepares to abandon four small pump stations and build one large and one medium pump station.
- Collection system cleaning and CCTV needs: City maintenance staff currently follow a five-year timeline to clean and CCTV inspect the entire system. No change is recommended to the current practice of cleaning and CCTV inspection.
- Annual O&M costs for the collection system may increase due to the increase in linear feet of pipeline. However, lowering the need to enter into the Hess creek area to service the Hess creek trunk line may amount to a net zero impact to O&M costs due to Priority 1 improvements.

Report Appendices

Appendix A

Figures

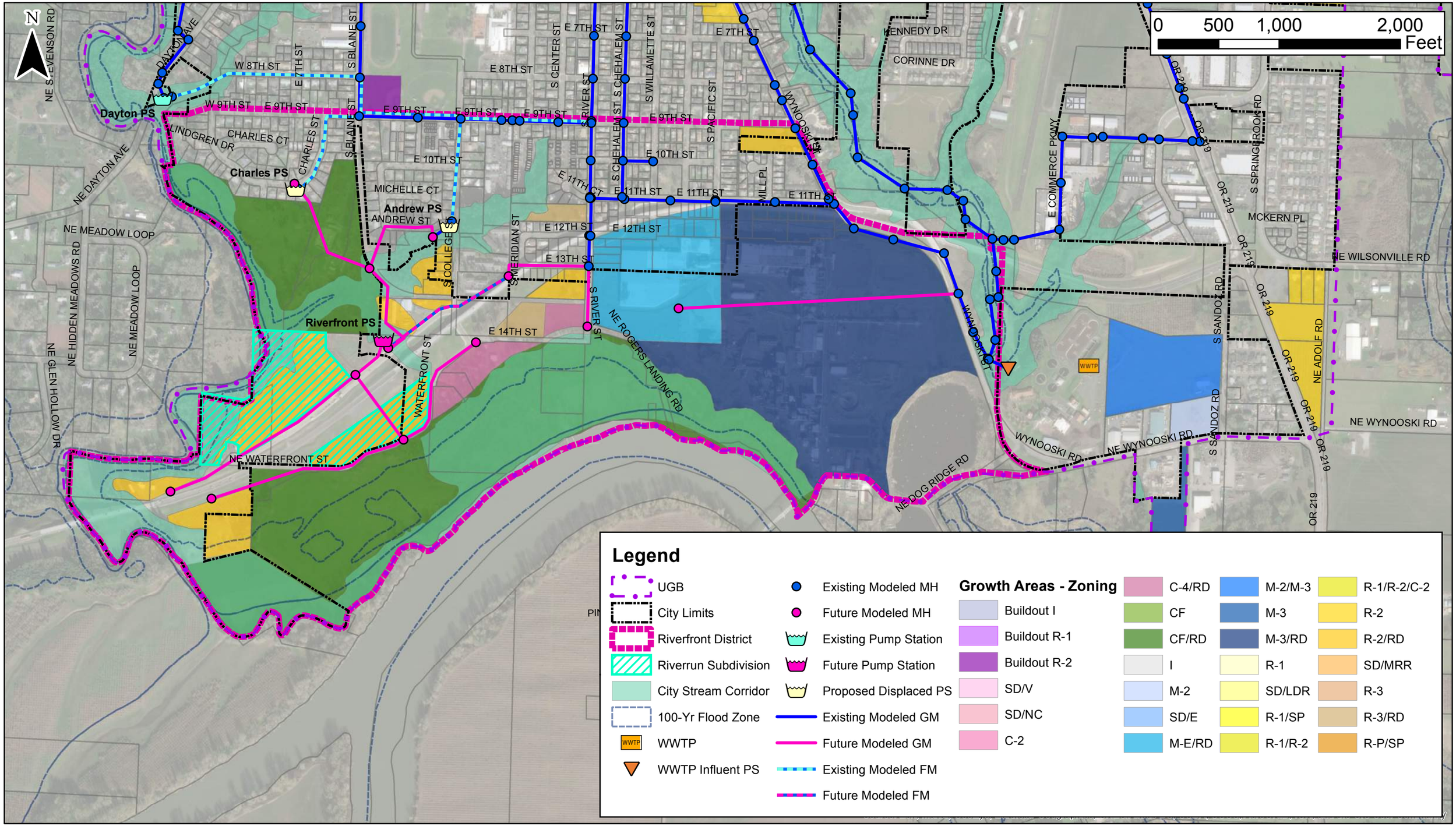


Study Area and Growth Areas

Wastewater Master Plan Update

Figure 1

City of Newberg, OR



KELLER ASSOCIATES

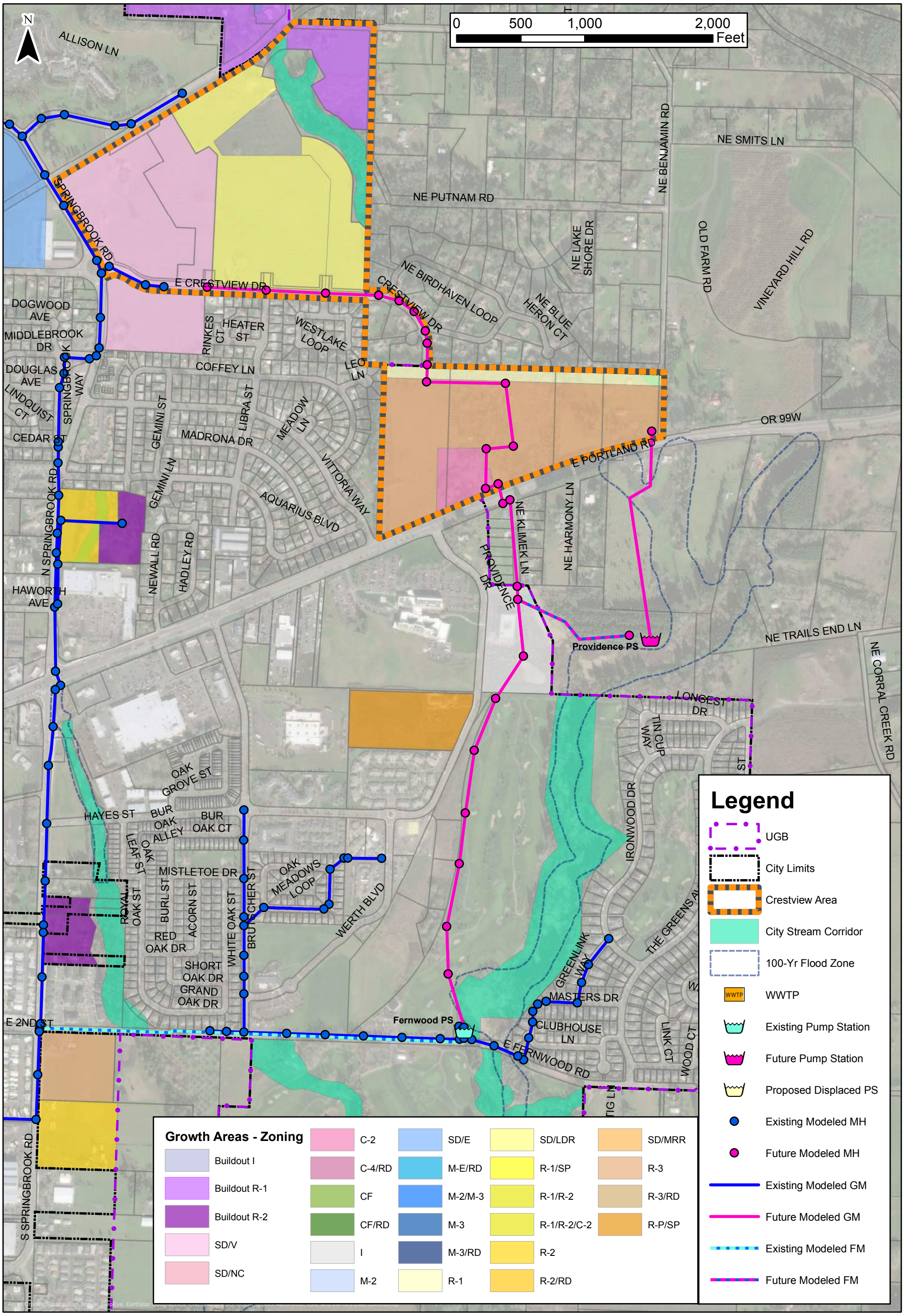
Riverfront and Riverrun Areas

Wastewater Master Plan Update

City of Newberg OREGON

Figure 2

City of Newberg, OR

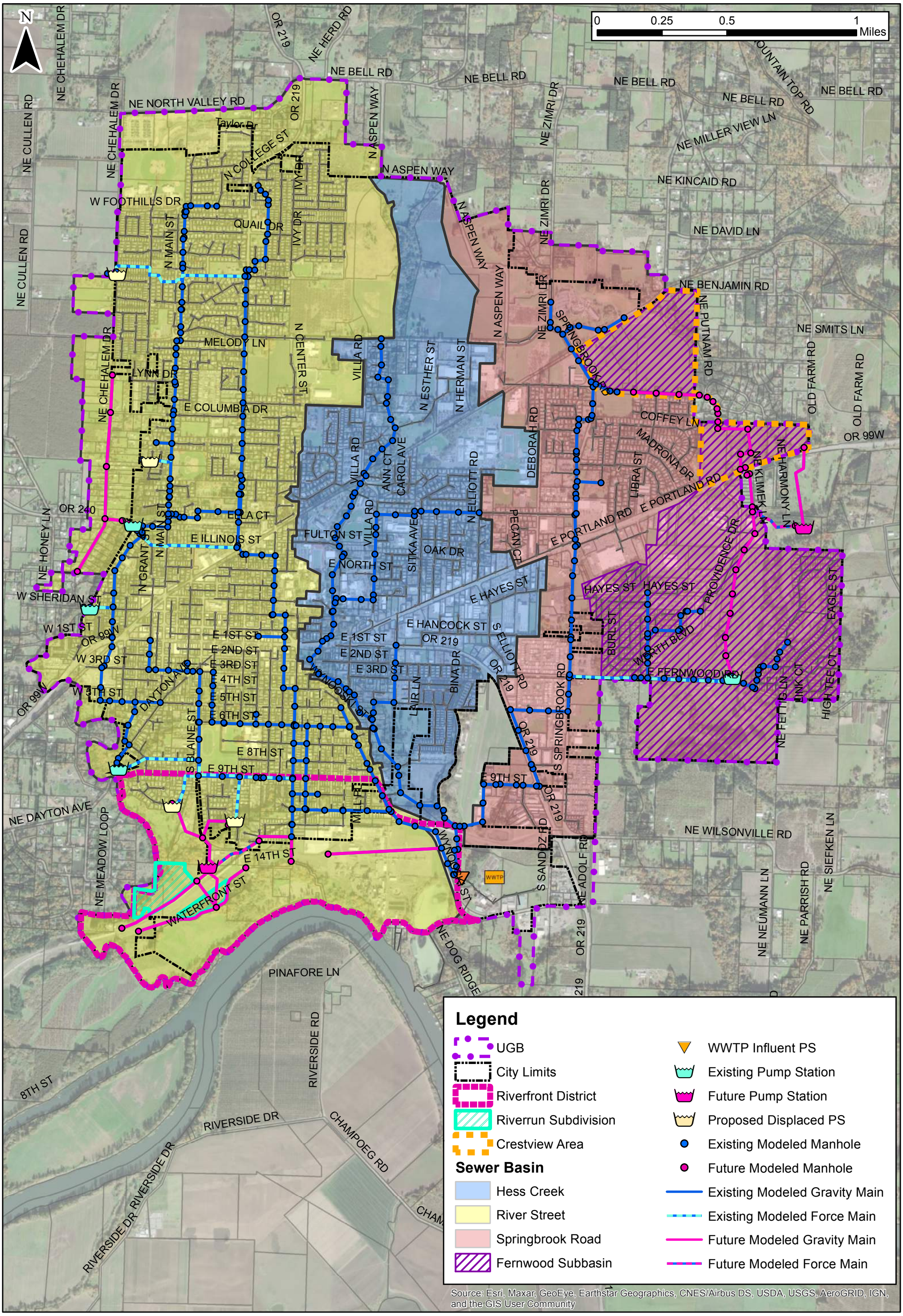


Crestview Area

Wastewater Master Plan Update

Figure 3

City of Newberg, OR



KELLER ASSOCIATES

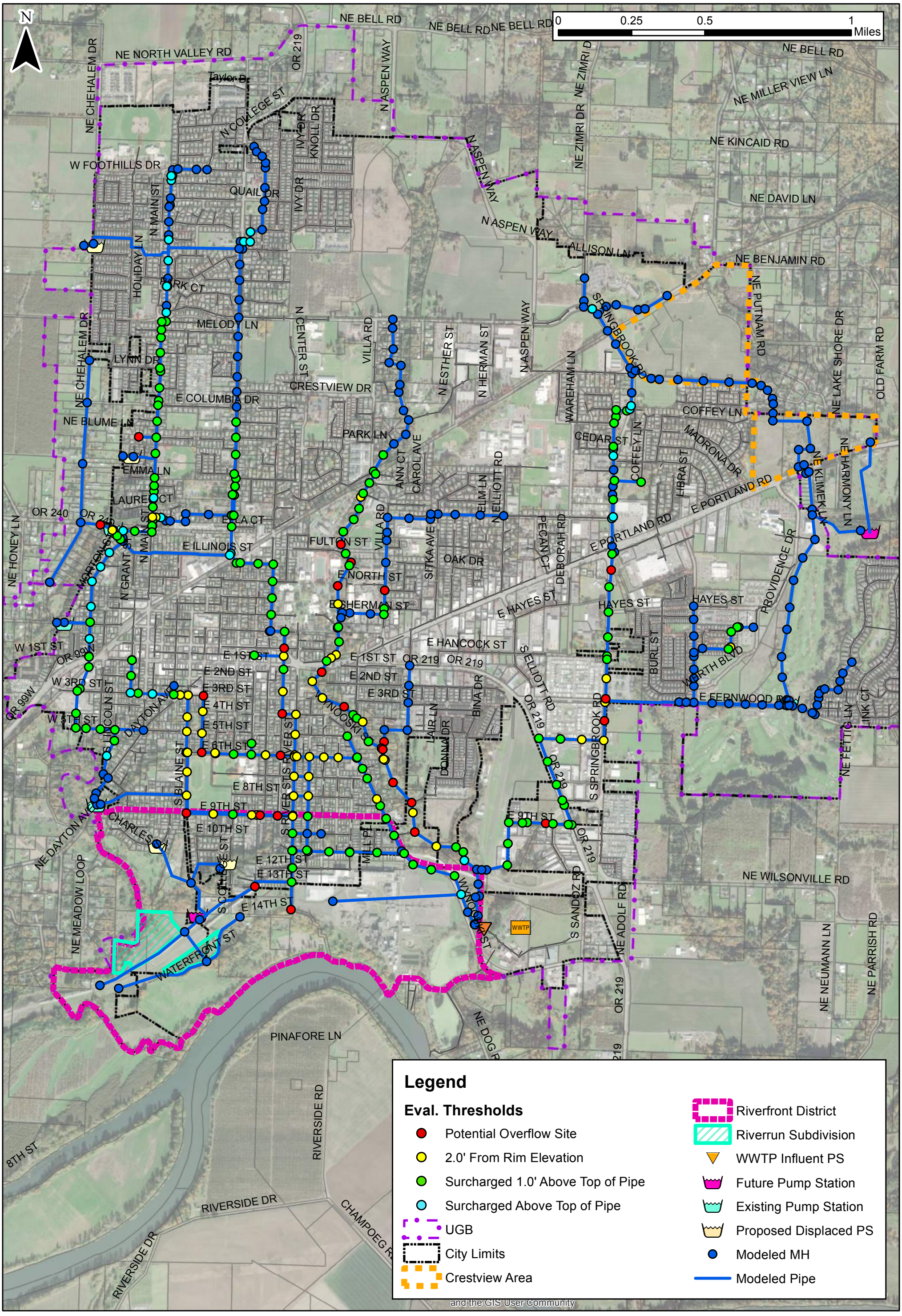
Modeled Facilities and Basins

Wastewater Master Plan Update

City of Newberg OREGON

Figure 4

City of Newberg, OR



KELLER ASSOCIATES

Updated System Evaluation

Wastewater Master Plan Update

City of Newberg OREGON

Figure 5

City of Newberg, OR

Areas of Interest/Evaluation

- A - Pinehurst Ct, topographic low point
- B - N. Main St, downstream bottleneck
- C - Excess flows from HWY240
- D - HWY240 LS, undersized pumps
- E - S. River St, undersized
- F - Riverfront District, prop. infrastructure and backwater
- G - Wynooski St, undersized
- H - Villa Rd, downstream bottleneck
- I - Hess Creek, undersized and limited or no access to line
- J - S. Springbrook Rd, undersized and topographic low point
- K - Fernwood/Springbrook Rd, undersized
- L - Fernwood PS, undersized pumps

N

A
B
C
D
E
F
G
H
I
J
K
L

NE CULLEN RD
NE ROEDEL RD
NE CHEHALEM DR
N MAIN ST
N CENTER ST
VILLA RD
N ESTHER ST
N HERMAN ST
N ASPEN WAY
NE ZIMRI DR
IVY DR
QUAIL DR
E COLUMBIA DR
OR 240
NE HONEY LN
E 1ST CT
W SHERIDAN ST
N GRANT ST
W 1ST ST
W 3RD ST
W 5TH ST
E 3RD ST
DAYTONA AVE
OR 99W
NE DAYTON AVE
BLAINE ST
LAIR LN
E 1ST ST
E 2ND ST
E 3RD ST
E NORTH ST
FULTON ST
SITKA AVE
HAWORTH AVE
OAK DR
E HANCOCK ST
E 2ND ST
E 9TH ST
E 14TH ST
WYNOOSKI ST
WWTP
PINAFORE LN
NORTH RIDGE RD
DEBORAH RD
VILLA RD
SPRINGBROOK RD
S SPRINGBROOK RD
OR 219
NE ADOLF RD
E PORTLAND RD
HAYES ST
E HAYES ST
BURL ST
WHITE OAK ST
PROVIDENCE DR
EAGLE ST
NE FERNWOOD RD
NE FETTIG LN
LINK CT
NE WILSONVILLE RD
NE NEUMANN LN
NE SIEFKEN LN
NE HARMONY LN
NE KLIMEK LN
NE TRAILS
NE KINCAID RD
NE DAVID LN
NE BENJAMIN RD
NE PUTNAM RD
NE SMITS LN
OLD FARM RD
COFFEY LN
MADRONA DR
NE STREEDS
NE RENNE RD
ALLISON LN
N ASPEN WAY

0 0.25 0.5 1 Miles

Legend

Eval. Thresholds
- Potential Overflow Site
- 2.0' From Rim Elevation
- UGB
- City Limits
- Crestview Area
- Riverfront District
- Riverrun Subdivision
- WWTP Influent PS
- Future Pump Station
- Existing Pump Station
- Proposed Displaced PS

KELLER ASSOCIATES

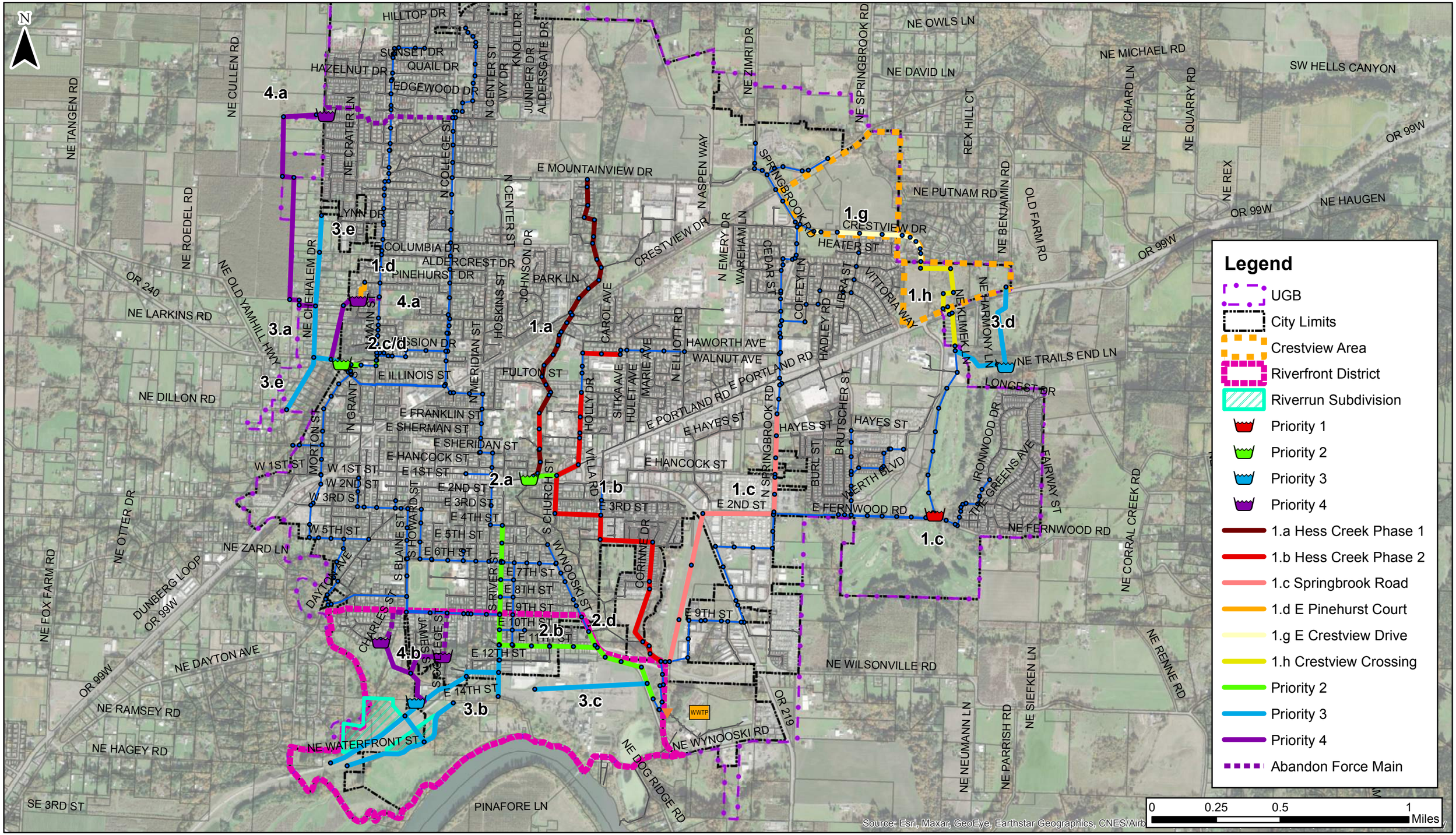
Updated System Evaluation - Annotated

Wastewater Master Plan Update

City of Newberg OREGON

Figure 6

City of Newberg, OR



KELLER ASSOCIATES

Updated CIP

Wastewater Master Plan Update

City of Newberg OREGON

Figure 7

City of Newberg, OR

Appendix B

Riverfront MP Excerpts

REGULATORY ACTIONS

Regulatory actions are an essential first step toward realizing the vision of the Riverfront Master Plan. Changing City regulations is also squarely within the City's authority, whereas other actions described later require the City to work with other public agencies or private entities to effect change.

Amend the Comprehensive Plan to Reflect the Intent of the Riverfront Master Plan

The City of Newberg's Comprehensive Plan is a set of policies and map of land use designations that guide growth and development within the Newberg Urban Growth Boundary (UGB). It includes several existing policies related to the Riverfront District, put into place by the 2002 Riverfront Master Plan, many of which need to be revised because they are out of date or inconsistent with the current vision for the area.

Updates include:

- Removing references to the "Smurfit Newsprint Processing Plant"
- Revising policies to more closely match the vision and goals of this plan
- Updating references to the Newberg-Dundee Bypass
- Amending the boundary of the Riverfront District classification to include the Riverfront Industrial Site and lands north of the Bypass.

Detailed changes to the Comprehensive Plan are provided in the Appendix F (TM6 - Comprehensive Plan Amendments).

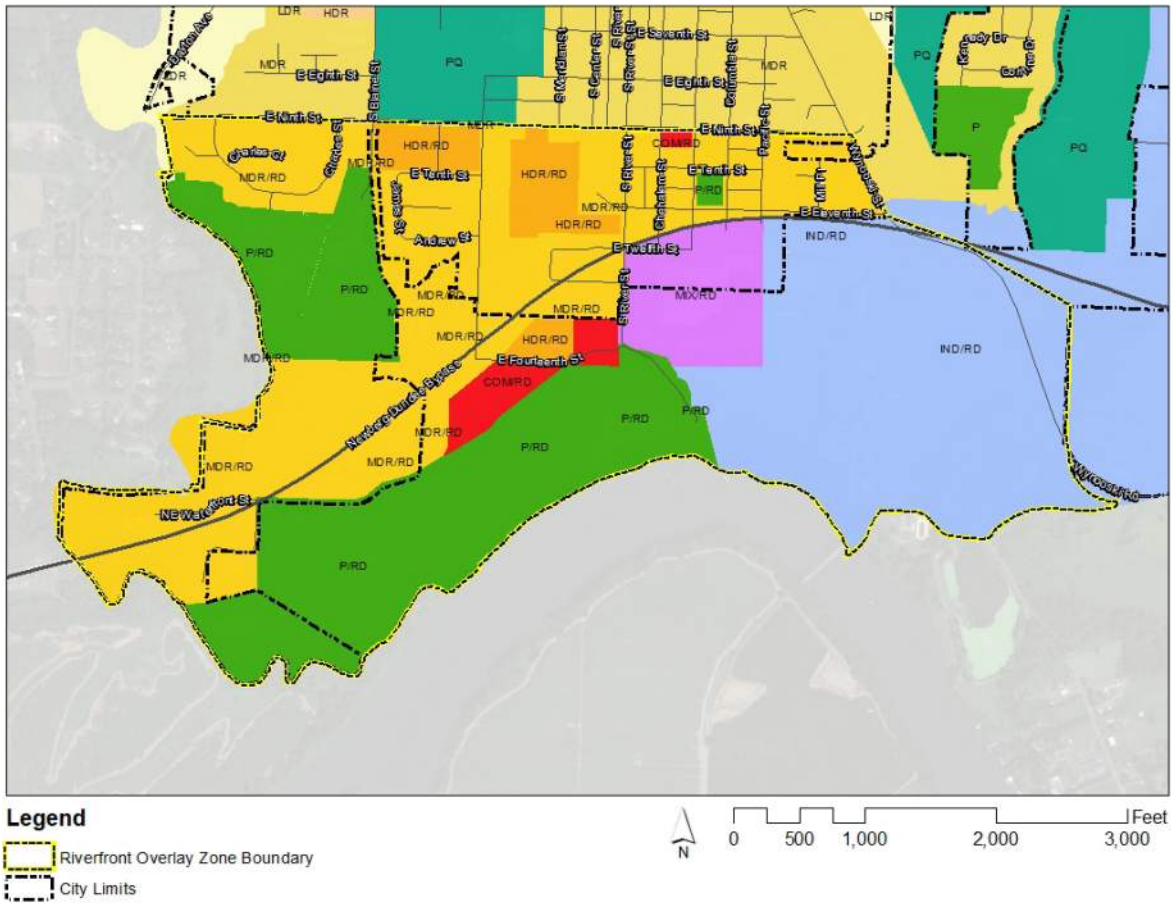


FIGURE 38. PROPOSED COMPREHENSIVE PLAN DESIGNATIONS

APPENDIX D

RIVERFRONT MASTER PLAN
City of Newberg

Technical Memorandum 4:

Infrastructure Needs

wallis engineering

MEMORANDUM

DATE:	April 12, 2019
TO:	Andrew Parish, AICP Angelo Planning
FROM:	Jane Vail, P.E. Wallis Engineering
RE:	Infrastructure Needs for Newberg Riverfront Master Plan Update Job No. 1441A
EXHIBITS:	*Exhibit A – Existing Water System Map* *Exhibit B – Existing Wastewater System Map* *Exhibit C – Existing Storm Drainage Map* *Exhibit D – Recommended Water System Improvements* *Exhibit E – Wastewater System Sub-Basins* *Exhibit F – Recommended Wastewater System Improvements*

BACKGROUND

The City of Newberg's Riverfront Master Plan Update has included the creation and evaluation of several land use/transportation alternatives for the Riverfront Area. Through discussion with the project's advisory committees, stakeholders, and property owners in the Riverfront Area, the process has resulted in the selection of a preferred alternative, "Alternative E." This land use/transportation program includes a variety of uses in the study area, including single-family and multi-family residential developments, mixed-use nodes of activity, parks and passive open space, and employment uses.

This memorandum describes the existing utility infrastructure and previously-planned improvements to this infrastructure within the planning area. It also provides recommendations for improvements to the water, wastewater, and stormwater infrastructure as the area develops.

The current planning effort will update the 2002 Newberg Riverfront Master Plan. That previous plan made specific recommendations as to infrastructure improvements based on anticipated phasing and land use.

At the time of the 2002 Riverfront Master Plan, the riverfront industrial site (WestRock) was not included in the riverfront planning area, and the Newberg-Dundee Bypass was in the conceptual design phase - and at a different alignment than constructed. In other words, the 2002 Master Plan's recommended street and utility improvements were based on different conditions than the current existing conditions. However, from the perspective of total water demand and wastewater flow, there are few differences between the land uses shown in the 2002 Master Plan and Yamhill County zoning efforts and the preferred land use alternatives identified in the current planning effort. The overall water demand and projected wastewater flow values from past land use planning efforts are reflected in the City's 2017 Water Master Plan and 2018 Wastewater Master Plan. The recommendations made in these two utility master plans are still relevant to the current planning effort.

In the course of preparing this memorandum, the following planning documents were reviewed:

- 2002 Newberg Riverfront Master Plan
- 2002 City of Newberg Water Treatment Facilities Plan
- 2007 City of Newberg Wastewater Treatment Plant Facilities Plan Update
- 2007 City of Newberg Sewerage Master Plan Update
- 2014 City of Newberg Stormwater Master Plan Update
- 2015 Newberg Wastewater I&I Study
- 2016 City of Newberg Comprehensive Plan Text (Ordinance 1967)
- 2017 City of Newberg Water Master Plan
- 2018 City of Newberg Wastewater Master Plan
- 1996 Yamhill County Comprehensive Land Use Plan

EXISTING AND PLANNED UTILITY INFRASTRUCTURE

Existing utilities within the project area include wastewater, stormwater, potable water, and private utilities (electricity, natural gas, and telecommunications). Much of the project area is relatively underdeveloped, so utilities are limited in extent and size.

Water System

The existing water system is owned and operated by the City of Newberg. The study area is located within Zone 1, which is served by three reservoirs: the North Valley Reservoir Nos. 1 and 2 located on the north side of the City, and the Corral Creek Reservoir, located east of the City. These reservoirs are fed by transmission mains from the water treatment plant, which is located on the southeast corner of the study area. A well field south of the study area supplies a portion of the City's water, which is conveyed to their water treatment plant. A water transmission main conveys treated drinking water from the treatment plant north through the riverfront industrial site to the rest of the City.

The area north of the Bypass is served by an existing water distribution network, with distribution mains 2 to 8 inches in diameter. Several properties just south of the Bypass, including the riverfront industrial site, are also served by water main extensions from the distribution system north of the Bypass.

Non-potable water system elements were not reviewed as part of this memorandum effort. The City of Newberg has a re-use water system, which is currently confined to the City's Wastewater Treatment Plant. The riverfront industrial site property has water rights to water from the Willamette River, and this privately-owned non-potable water was used in the past

for mill operations. Additional details about this non-potable water system were not available.

A map of the existing potable water system within the project limits is included as *Exhibit A* on the following page.

No planned improvements to the water system within the planning area are described in the City's 2017 Water Master Plan. The 2002 Newberg Riverfront Master Plan proposed water distribution mains along the roads proposed and recommended for improvement by that planning effort.

Wastewater System

Existing wastewater infrastructure within the project limits is largely limited to the area north of the Bypass. The City of Newberg's wastewater treatment plant is located just east of the project study area.

The portion of the study area north of the Bypass is currently served by two lift stations (the Charles Lift Station and the Andrew Lift Station) and a network of gravity sewer mains and trunk lines, which ultimately convey wastewater west to the City's wastewater treatment plant. A small lift station also serves Rogers Landing, conveying wastewater to the gravity sewer system to the north. The riverfront industrial site is served by a single gravity sewer connection at the northwest corner of the site.

A map of the existing wastewater system within the project limits is included as *Exhibit B*.

The City's 2018 Wastewater Master Plan recommends improvements to the existing wastewater system within the planning area. The Wastewater Master Plan proposed abandoning the Charles Lift Station and Andrew Lift Station in the northeast portion of the study area, and replacing them with a single lift station (the Riverfront Lift Station) and a series of gravity mains (projects C4.b and C3.b in the Wastewater Master Plan). The Riverfront Lift Station would also serve a portion of the southeast portion of the study area with several gravity sewer extensions to the south and the east. The Wastewater Master Plan also recommended upsizing several gravity mains within the study area to convey future flows. No wastewater improvements are described for the eastern portion of the study area. The 2002 Riverfront Master Plan proposed some gravity mains along the roads proposed and recommended for improvement by that planning effort.

Stormwater System

The study area is drained by a system of natural drainages, open channels, and storm drain lines. Currently, the study area drains in three directions: west to Chehalem Creek, south to the Willamette River, and east to Hess Creek.

The southern portion of the site lies within the 100-year flood plain of the Willamette River, and Chehalem Creek.

Underground stormwater lines are few in number, and largely confined to the northern portion of the study area. A stormwater main bisects the study area, conveying stormwater from the drainage lines in the northern portion of the study area south to outfall at the Willamette River. This line was previously the wastewater outfall from the former wastewater treatment plant.

A map of the existing drainage and stormwater system within the project limits is included as *Exhibit C*.

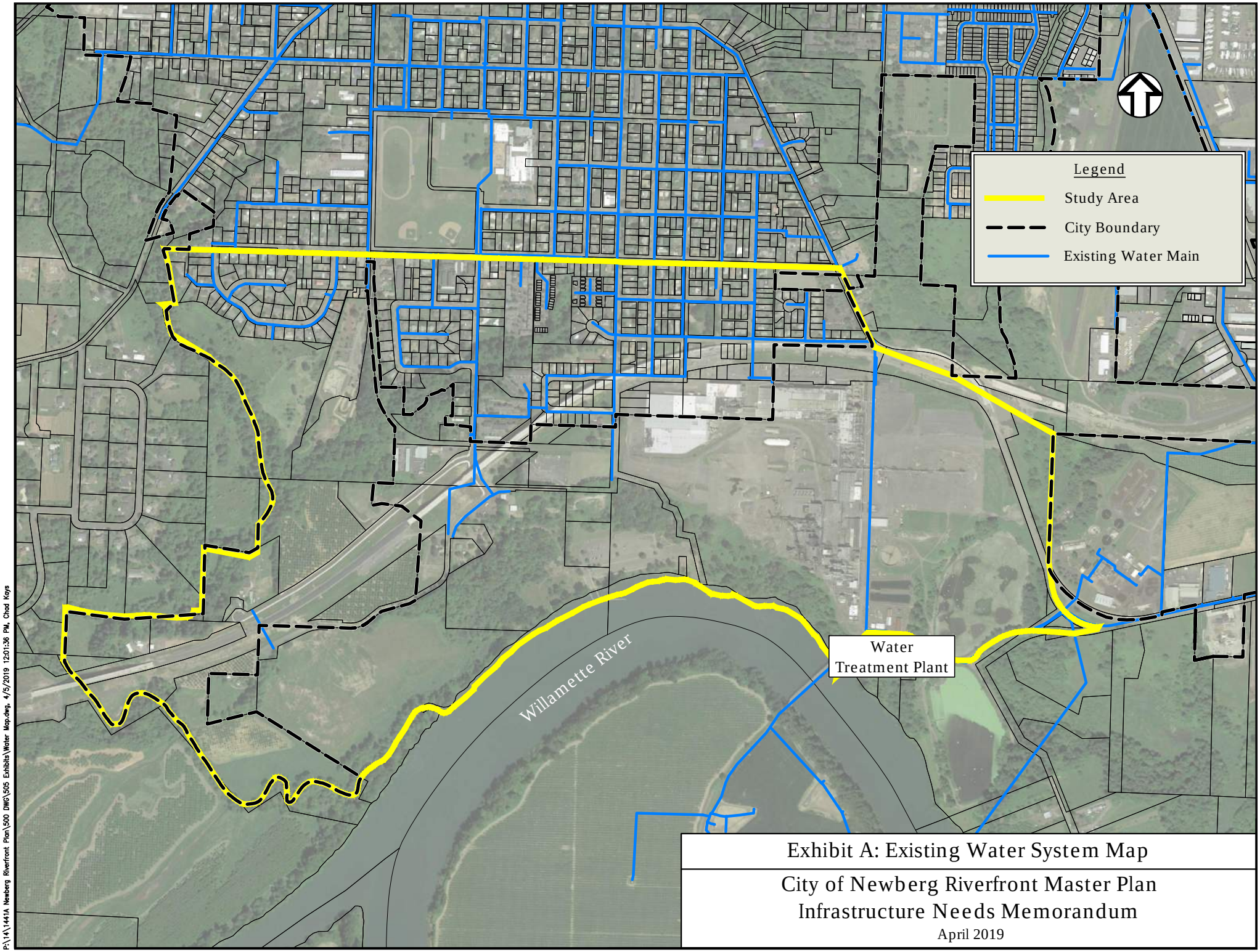


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Exhibit A: Existing Water System Map

City of Newberg Riverfront Master Plan
Infrastructure Needs Memorandum
April 2019

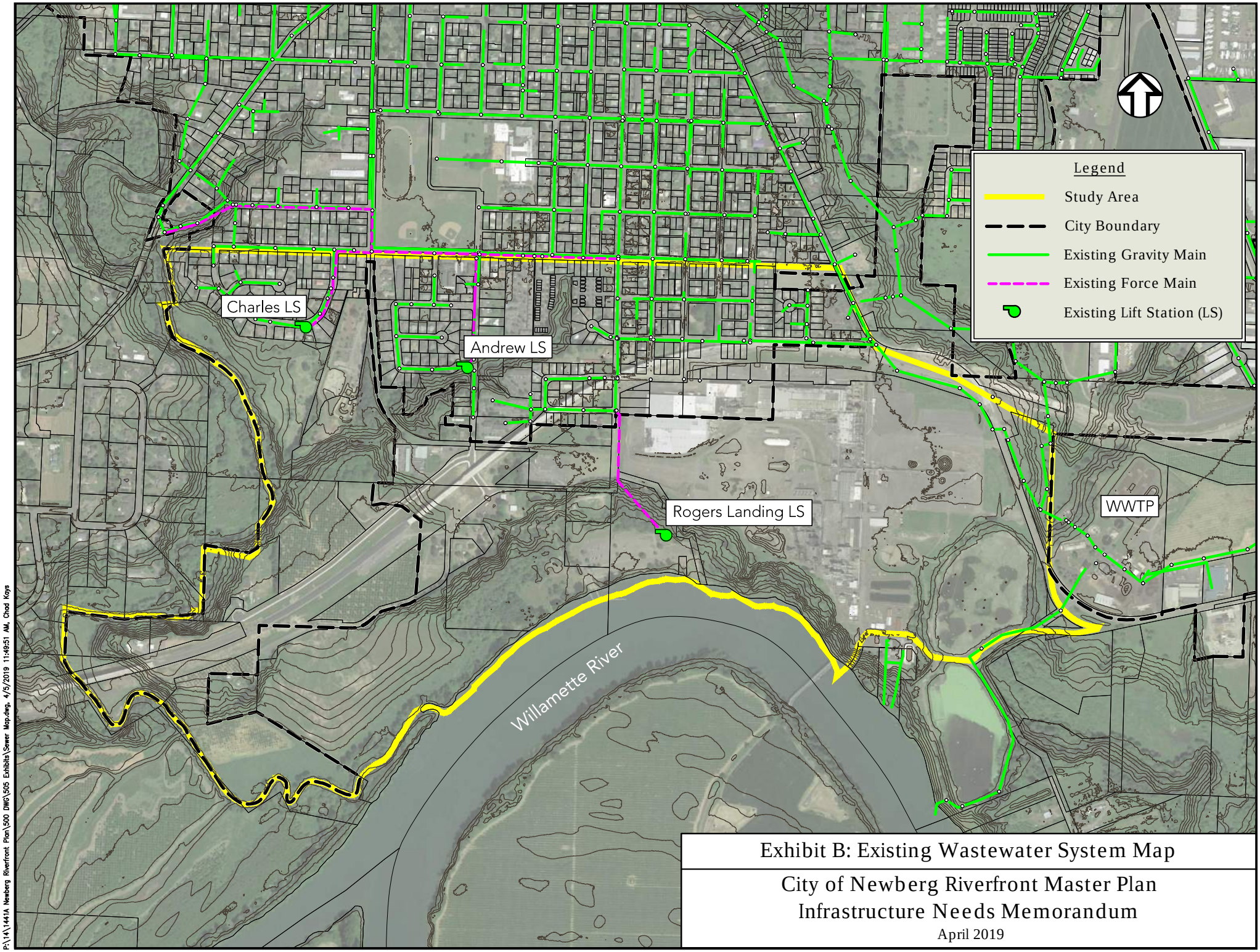

Exhibit B: Existing Wastewater System Map

City of Newberg Riverfront Master Plan
Infrastructure Needs Memorandum
April 2019

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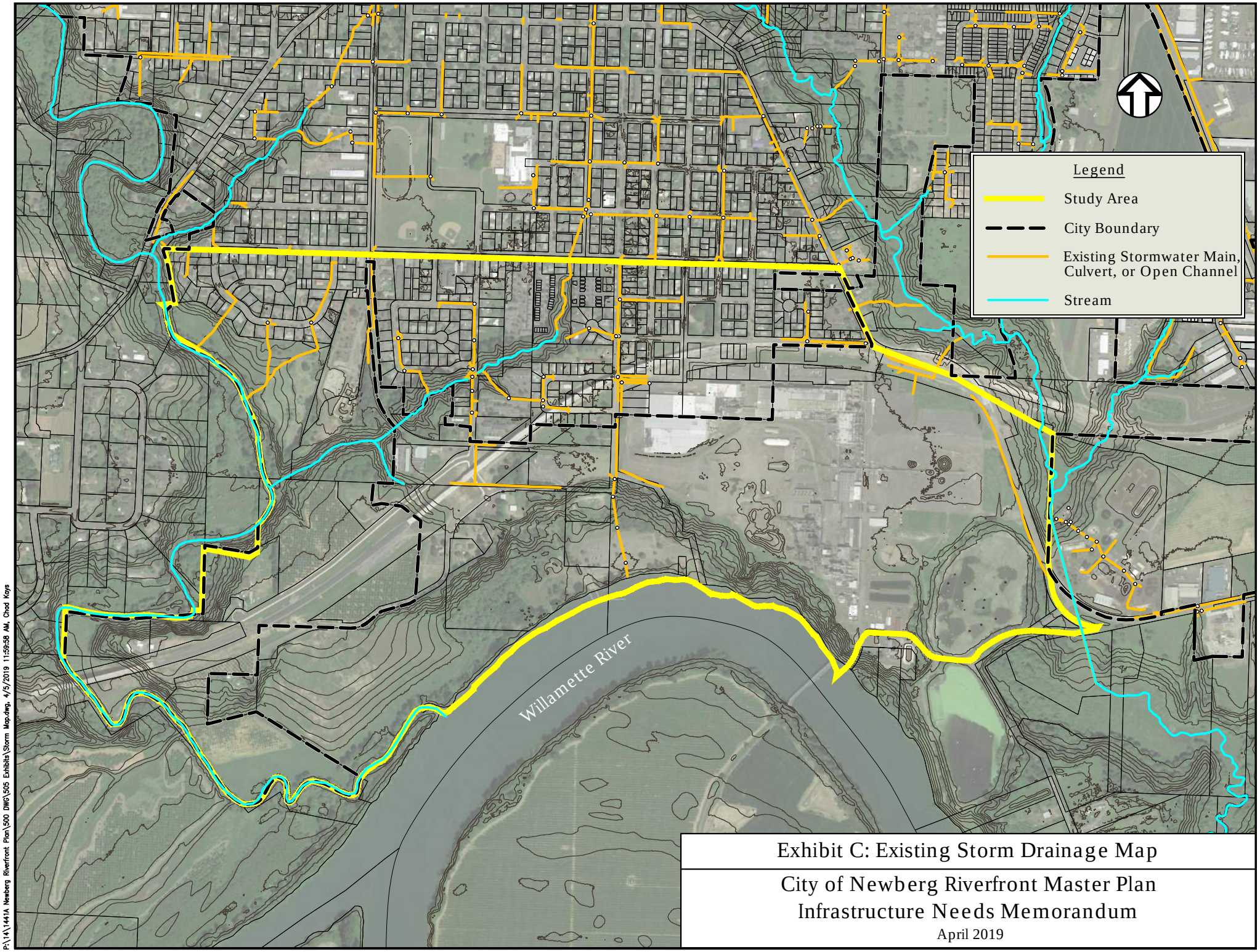

Exhibit C: Existing Storm Drainage Map

City of Newberg Riverfront Master Plan
Infrastructure Needs Memorandum
April 2019

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No improvements to the stormwater system within the planning area are currently included in the 2014 City of Newberg Stormwater Master Plan Update. The 2002 Riverfront Master Plan proposed stormwater lines along some of the roads proposed and recommended for improvement by that planning effort. It also proposed disposal of stormwater runoff into to the existing stormwater main outfalling to the Willamette River. The capacity of that existing stormwater main to accept additional flow was not discussed in the 2002 Plan.

Franchise Utilities

As part of this planning effort, the City of Newberg contacted privately-owned franchise utilities in order to generally ascertain the extent of their facilities within the planning area. These franchise utility companies currently provide electricity, gas, cable, and telephone services to customers within the planning area.

PGE provides electricity to Newberg, and has a substation on the riverfront industrial site. In contacting PGE, they were unaware of any known issues serving the area.

NW Natural provides natural gas within the planning area, though their mapped facilities appear to be largely located north of the Bypass. They do have a 12-inch high pressure gas line serving the riverfront industrial site. This line is also the primary feed for the City of Newberg.

Comcast and Frontier provide cable and telephone services within the planning area. Frontier has very little facilities within the planning area, and no facilities south of the Newberg-Dundee Bypass.

RECOMMENDED UTILITY INFRASTRUCTURE IMPROVEMENTS

Improvements to the existing water, wastewater, and stormwater infrastructure will be necessary in order to support the preferred land use alternative. Recommended improvements are described in the following paragraphs, organized according to the type of infrastructure. These recommendations are based on the City's standards, the City's GIS system, existing utility infrastructure plans, and engineering judgement. No water or wastewater modeling was completed as part of this planning effort.

It is important to note that recommendations are limited by the general nature of land use planning, and that further utility master planning will be necessary to confirm and elaborate on the recommendations made in this memorandum.

Water System

The area south of the Newberg-Dundee Bypass and a small area on the west side of the study area just north of the Bypass currently have no water distribution system. As this area develops, it will require an entirely new water distribution network. New water mains should be constructed within the footprint of proposed roadways. To serve new development south of the Bypass, a water distribution main can be extended west from the transmission main near the water treatment plant. This new water distribution main should extend to the western portion of the study area, and should connect to the existing water system to the north where possible to provide a fully looped system. To serve the north side of the Bypass, a water main could be extended from S College Street southwest along E Weatherly Way. This water main should also be connected to the water main serving the area south of the Bypass to provide a fully looped system.

The majority of the study area north of the Bypass is currently served by an existing water distribution network. The size of existing distribution mains are relatively small within this area, and will likely not provide sufficient fire flow for future connections as the area south of the Bypass develops. Some improvements will be necessary to the distribution system north of the Bypass in order to make distribution network connections to serve the planning area.

The minimum size of water distribution mains will be 8-inches, per City standards. Final sizing will require a more in depth analysis to ensure that minimum fire flow is maintained throughout the water system in accordance with City standards.

Recommended improvements to the existing potable water system are illustrated in *Exhibit D* on the following page and summarized in Table 1 below.

Table 1 – Recommended Water Infrastructure Improvements

Description	Sub-basin	Minimum Size	Length
Water Main	B	8-Inch	8,200 ft

It should be noted that the developer of the riverfront industrial site has the capability of using the existing non-potable water system infrastructure, and water rights.

Wastewater System

The planning area currently lacks a complete wastewater system, and will require extensive sewer infrastructure improvements to serve new development. In order to determine these system improvements, the study area was broken into six sub-basins according to the existing collection system and topography. These sub-basins are shown in *Exhibit E*. The wastewater infrastructure necessary to serve these sub-basins is illustrated on *Exhibit F* and summarized in Table 2 below.

Table 2 – Recommended Wastewater Infrastructure Improvements

Description	Sub-basin Served	Size/Capacity
Riverfront Lift Station	B	950 gpm[1]
Force Main B1	B	8-in[1], 1000 ft
Gravity Main B1	B	8-in, 2600 ft
Gravity Main B2	B	8-in, 1600 ft
Gravity Main B3	B	8-in, 3400 ft
Gravity Main B4	A, B, C, D	18-in[1], 1300 ft
Gravity Main C1	C	8-in, 500 ft
Gravity Main D1	D	10-in, 2400 ft

1. Capacity and size are from the City's 2018 Wastewater Master Plan

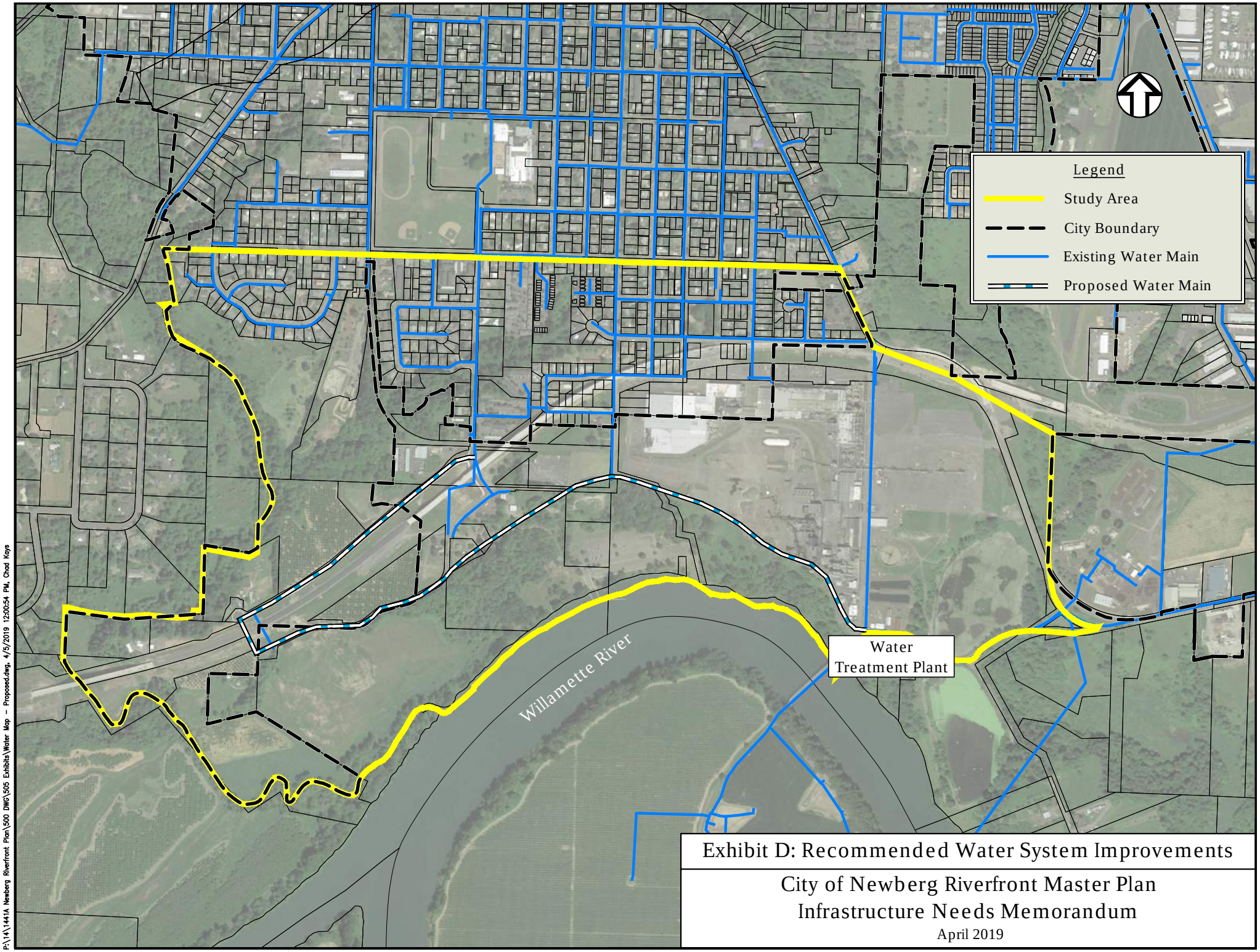

Exhibit D: Recommended Water System Improvements

City of Newberg Riverfront Master Plan
Infrastructure Needs Memorandum
April 2019

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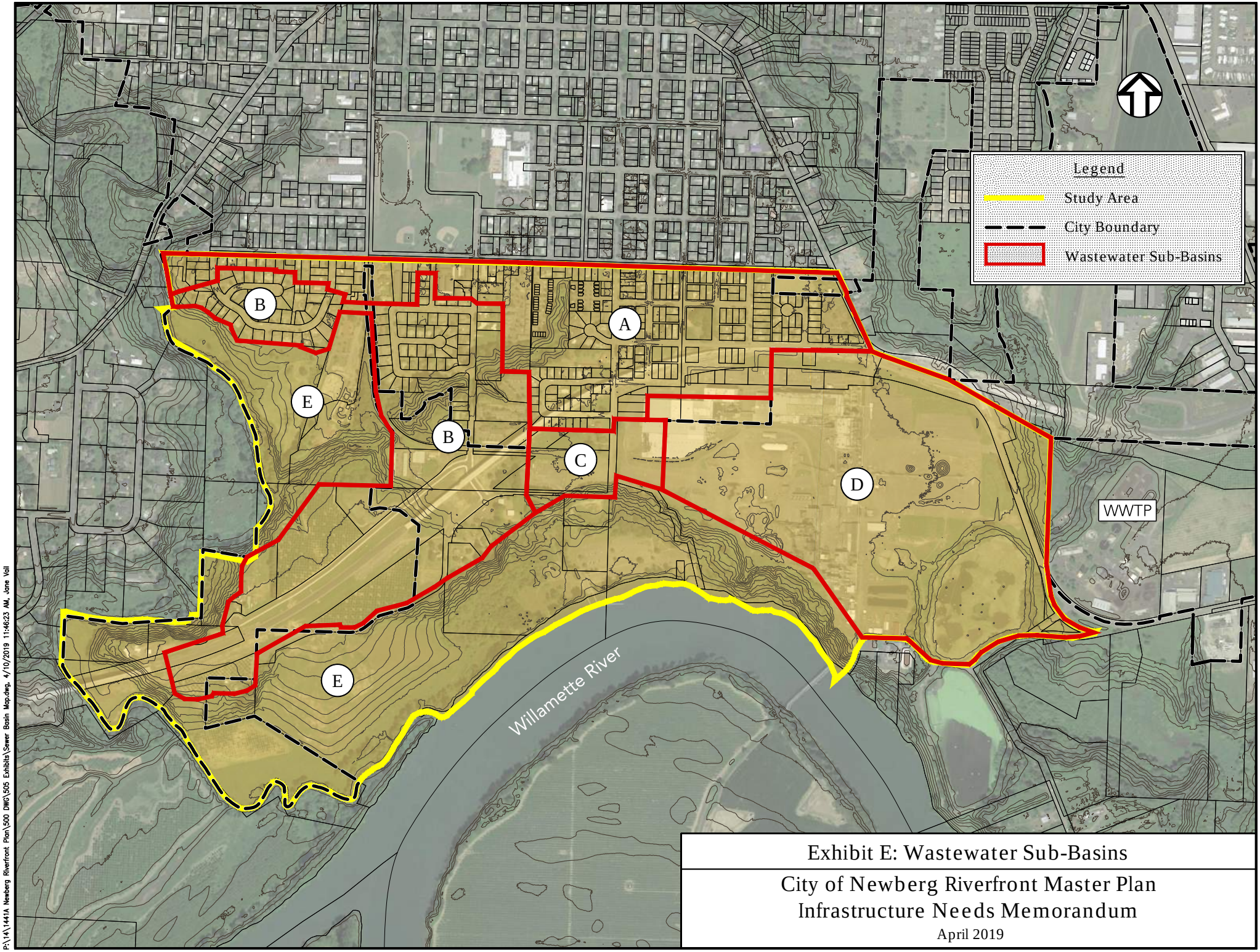

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Exhibit E: Wastewater Sub-Basins

City of Newberg Riverfront Master Plan
Infrastructure Needs Memorandum

April 2019

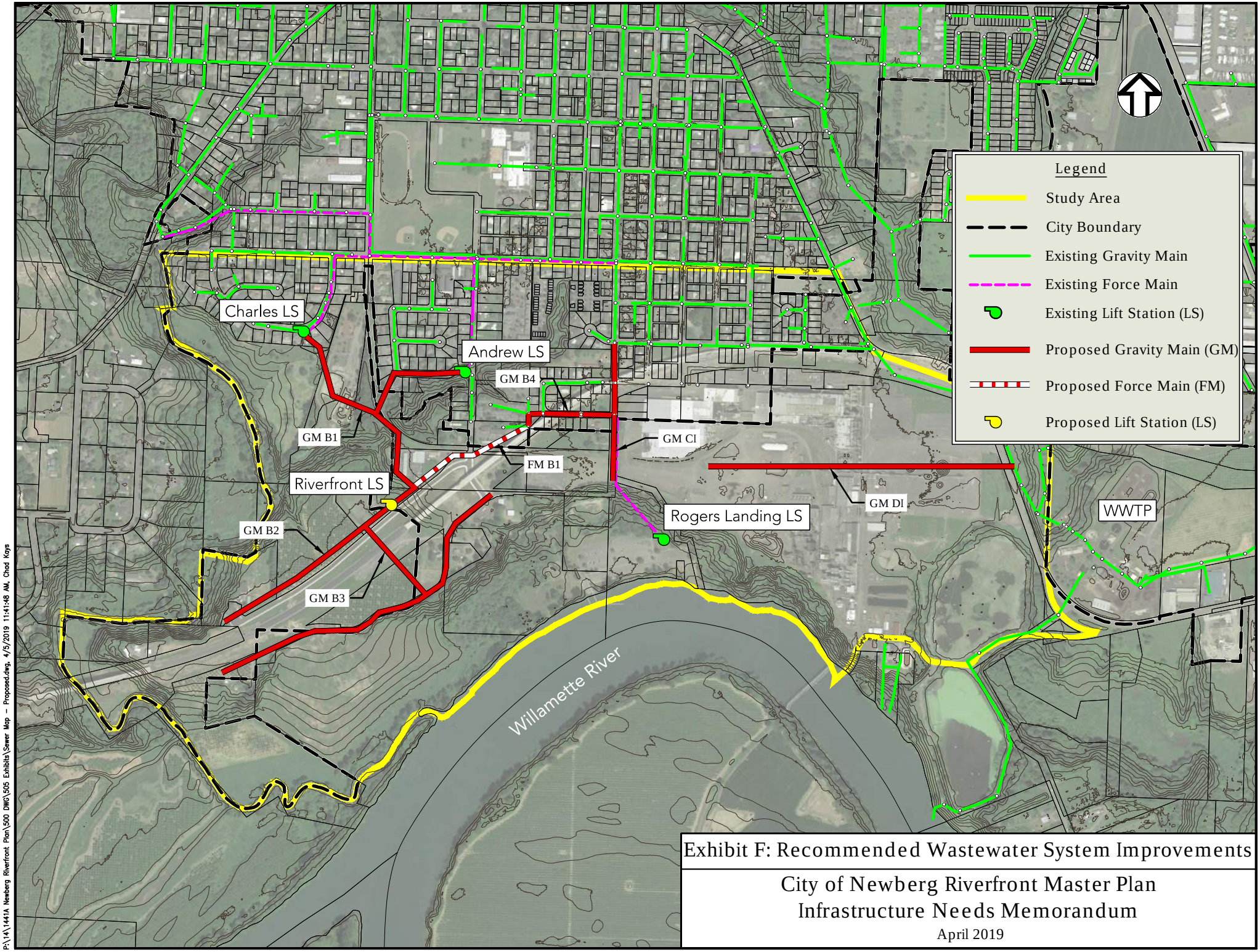

Exhibit F: Recommended Wastewater System Improvements

City of Newberg Riverfront Master Plan
Infrastructure Needs Memorandum
April 2019

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A detailed description of each sub-basin and the recommended improvement is described below.

Sub-Basin A. This sub-basin consists of the northern portion of the study area that is served by an existing network of gravity wastewater lines. Because this area is highly developed, and the proposed master plan does not significantly change land use, no new wastewater infrastructure is required beyond that recommended by the 2018 Wastewater Master Plan.

Sub-Basin B. This sub-basin consists of the western portion of the study area – currently served by the Charles Lift Station and Andrew Lift Station – and the additional area to be served by the proposed Riverfront Lift Station and associated collection system described in the Wastewater Master Plan. As discussed above, the Wastewater Master Plan recommended abandoning the Charles Lift Station and Andrew Lift Station. This will require upgrading the Riverfront Lift Station and force main, constructing several new gravity sewers, and upsizing one existing gravity sewer. No major changes are recommended to this proposed infrastructure, although minor adjustments to sewer alignments will be necessary to match proposed roads. This infrastructure is labeled as Gravity Main B1, B2, B3, and B4, and Force Main B1 on *Exhibit E*.

Sub-Basin C. This sub-basin consists of a mostly undeveloped land and a small portion of the riverfront industrial site in the vicinity of S River Street. Based upon the depth of the existing sewer in S. River Street (per City GIS), this area can be served by a gravity sewer extension, shown as Gravity Main C1 on *Exhibit E*.

Sub-Basin D. This area consists of the eastern portion of the riverfront industrial site. This sub-basin can be served by gravity lines flowing east into the existing trunk line on NE Wynooski Road, which currently conveys wastewater to the wastewater treatment plant. This line is labeled as Gravity Main D1 on *Exhibit E*.

Sub-Basin E. This sub-basin consists of the parks and open space within the study area, largely located within the flood plain and stream corridors. Rogers Landing is currently the only portion of this sub-basin with sewer service. Rogers Landing is served by a lift station, pumping wastewater to the collection system north of the Newberg-Dundee Bypass. Because most of this sub-basin lies within the flood plain, it is unlikely to see significant development. It has been suggested that the Rogers Landing area could be the future site of an amphitheater, as well as potential additional park improvements. Depending on the projected wastewater flows and the capacity of the existing lift station, improvements may be necessary to the lift station and potentially the force main. If new facilities are constructed outside of the Rogers Landing area, they will require new lift stations to convey flow to the collection system, because this sub-basin lies at a lower elevation than the rest of the City.

Final alignment and sizing of new sewer system infrastructure will be determined during final design of street infrastructure and development. Alignment and sizing will depend on the specific developments that are constructed, locations of roads, and exact depths of existing gravity lines.

Stormwater System

The existing stormwater system within the planning area consists of stormwater drainage collection and conveyance facilities north of the Bypass. All development will need to comply with the City's stormwater management requirements, as articulated in their Design Standards.

In accordance with these requirements, any development within the planning area will need to collect, treat, detain, convey, and dispose of the stormwater runoff generated by the development. This applies to public improvements that generate impervious surfaces – such as streets, sidewalks, and paths. It also applies to private developments, which construct roofs, streets, sidewalks, and parking lots.

Collection and conveyance of stormwater runoff will likely consist of a combination of underground structure and pipes, and low-impact development conveyance improvements, such as swales and flow-through planters. Treatment of stormwater runoff will likely consist of either mechanical or low-impact development treatment facilities. Detention of stormwater can take place using underground storage, ponds, and other methods. There is considerable flexibility as to the specific design of stormwater collection, conveyance, treatment, and detention facilities. A variety of factors will influence specific design solutions, such as site geography, available land surface, soil conditions, City preference, developer preference, construction cost, long-term maintenance costs, and aesthetics.

There may be some conveyance within the study area through underground stormwater pipes, which are often constructed within publicly-owned streets. Assuming the proposed and existing streets shown on the preferred alternative, we estimate a total of at least 12,000 linear feet of stormwater mains. This number does not account for the variation of street alignments that may occur as the City moves forward with planning and design, and does not include the construction of additional streets and associated storm conveyance.

Treated stormwater runoff is typically disposed of using infiltration into native soils or by conveyance into an adjacent stormwater facility or natural body of water. All methods of disposal have specific requirements and limitations. Disposal of stormwater runoff will depend on site-specific soil characteristics, the location of the site with respect to adjacent stormwater infrastructure, and the capacity of adjacent infrastructure.

Infiltration of treated stormwater runoff is often preferred over other methods because of its simplicity and relatively lower cost. However, native soils must be capable of infiltrating stormwater at or above a minimum rate for infiltration of runoff to be a viable disposal method. That capability can only be determined by onsite tests, and native soils can vary greatly in characteristics throughout an area.

According to the soils map included in the City's 2014 Stormwater Master Plan Update, native soils within the planning area are generally classified as having lower infiltration capability. This map is based on general information; the actual infiltration rates at specific locations within the planning area will vary. As each property develops, the developer will determine soil conditions and the viability of infiltration as a method of stormwater disposal. It should be noted that the Oregon Department of Environmental Quality requires registration of underground infiltration facilities such as drywells per their Underground Injection Control Program. It should also be noted that infiltration also requires consideration of existing groundwater levels and consideration of the environmental sensitivity of an area; infiltration of stormwater runoff into a floodplain or wetland is not typically acceptable.

If stormwater runoff cannot be disposed of by infiltration, it will need to be conveyed to another location, such as an adjacent stormwater pipe, pond, or infiltration facility. If an adjacent stormwater facility is available, the developer will need to demonstrate that it has capacity for disposing stormwater from the proposed development. If this adjacent stormwater facility is owned by other individuals or entities, rights to access, use, and maintenance will need to be negotiated between all parties.

Treated stormwater runoff can also be disposed of in an adjacent body of water. There are multiple stream corridors within the study area, including the Willamette River. It is important to note that disposal of stormwater runoff to these corridors may trigger additional permitting and engineering requirements according to the governing regulatory authorities. Disposal of stormwater runoff in these bodies of water should consider the hydraulic and erosion control implications of additional runoff, with the goal of protecting these existing stream corridors. They should also consider the characteristics of the treated runoff. The City's TDML Implementation Plan is the primary regulatory driver for stormwater management activities, and has specific parameters of concern for stormwater runoff, including bacteria, mercury, and water temperature. However, other regulatory authorities will have jurisdiction for disposal of treated stormwater runoff within stream corridors in the planning area. The developer will likely need to consult with an environmental permitting specialist in order to determine the specific regulatory requirements for their stormwater management improvements.

The construction of a regional stormwater facility for treatment, detention, and/or disposal may address many of the difficulties individual developers face with stormwater management. There are, however, very limited options for locating such a facility. Public ownership of land is limited within the project area to landfill property owned by Yamhill County to areas within the floodplain (such as Rogers Landing, leased by Yamhill County from the City and two private owners).

One area that might be considered for possible use as a regional stormwater facility are the existing lagoons at the southeast corner of the planning area, within the riverfront industrial site property. It could be feasible to repurpose these existing lagoons as stormwater detention ponds for treated stormwater runoff from the surrounding areas, with modifications to the existing outfall to allow controlled disposal of runoff to the Willamette River. These two lagoons currently hold water, and outfall to the Willamette River. In the past, the lagoons were used for disposal of paper mill process water; the degree of biological and/or chemical contamination, the dimensions, and the condition of the lagoons are relatively unknown.

Any use of these ponds for stormwater management will likely necessitate investigation of the condition of the lagoon basin floor for contaminants which might adversely affect the Willamette River. Depending on the degree of contamination and the requirements of regulatory authorities, cleanup might also be required. In addition, some agreement would need to be made for stormwater conveyance to the pond, pond use, access, and maintenance between the property owner, the City, and properties contributing stormwater.

Please note that we cannot recommend specific details as to proposed stormwater improvements. The sizing of stormwater facilities will depend entirely on development of each site, and how much onsite detention and/or infiltration is built.

Franchise Utilities

As part of this master planning effort, City staff spoke directly with franchise utilities within the planning area to elicit comments and concerns regarding the proposed plan.

When contacted for feedback, PGE noted that some industrial and commercial uses may have larger loads and require upgrades to their facilities. The extent of this work would be determined at the development phase. PGE was concerned that improvements protect their existing facilities in the area – particularly the substation on the riverfront industrial site.

In conversations with the City, NW Natural expressed concerns that their existing infrastructure is protected throughout future development, particularly the high pressure line serving Newberg (located on the riverfront industrial site).

Comcast had no concerns of note.

Frontier noted that they have minimal facilities within the planning area, and noted that with their current facilities they could serve around 200 new customers. Their facilities appear to be largely located north of the Bypass, so serving new customers south of the Bypass would require construction of new facilities – another 100 customers could be served with this work. Increasing service beyond that point would require more new facility construction and considerable expense on Frontier's part.

Appendix C

Cost Estimate Additional Information

Springbrook Road Improvements - Alternative 1 (E Crestview Drive directed east)

Item	Unit	Unit Price	Quantity	Cost
Parallel gravity main				
24-inch PVC gravity pipe	LF	$ 205	4,965	$ 1,017,825
Manhole 72-inch (>21-inch pipe)	EA	$ 16,500	17	$ 280,500
Highway boring	LF	$ 600	135	$ 81,000
Roadway restoration (full lane)	LF	$ 60	1,600	$ 96,000
Soil restoration	LF	$ 5	3,365	$ 16,825
Flow diversion structure	EA	$ 20,000	1	$ 20,000
Bypass pumping	LS	$ 50,000	1	$ 50,000
Upsize existing				
18-inch PVC gravity pipe	LF	$ 185	2,300	$ 425,500
Re-connect laterals	EA	$ 500	8	$ 4,000
Manhole 60-inch (18- to 21-inch pipe)	EA	$ 14,000	7	$ 98,000
Roadway restoration (full lane)	LF	$ 60	2,300	$ 138,000
Traffic Control (Highway)	LF	$ 10	2,300	$ 23,000
Control density backfill	LF	$ 165	2,300	$ 379,500
8-inch PVC gravity pipe	LF	$ 135	1,100	$ 148,500
Manhole 48-inch (<18-inch pipe)	EA	$ 12,000	4	$ 48,000
Bypass pumping	LS	$ 50,000	1	$ 50,000
			Subtotal (rounded)	$ 2,877,000
Fernwood PS upsize				
Upsize pump station	LS	$202,000	1	$ 202,000
			Subtotal (rounded)	$ 202,000
Mobilization	%	5	-	$ 153,950
			Subtotal (rounded)	$ 3,233,000
Contingency	%	30	-	$ 969,900
			Subtotal (rounded)	$ 4,203,000
Engineering and CMS	%	25	-	$ 1,050,750
Easement	AC	$ 30,000	2.0	$ 60,000
			Project Total Cost (rounded):	**$ 5,314,000**

Springbrook Road Improvements - Alternative 2 (E Crestview Drive directed west)

Item	Unit	Unit Price	Quantity	Cost
Parallel gravity main				
24-inch PVC gravity pipe	LF	$ 205	4,965	$ 1,017,825
Manhole 72-inch (>21-inch pipe)	EA	$ 16,500	17	$ 280,500
Highway boring	LF	$ 600	135	$ 81,000
Roadway restoration (full lane)	LF	$ 60	1,600	$ 96,000
Soil restoration	LF	$ 5	3,365	$ 16,825
Flow diversion structure	EA	$ 20,000	1	$ 20,000
Upsize existing				
21-inch PVC gravity pipe	LF	$ 195	2,300	$ 448,500
Re-connect laterals	EA	$ 500	8	$ 4,000
Manhole 60-inch (18- to 21-inch pipe)	EA	$ 14,000	7	$ 98,000
Roadway restoration (full lane)	LF	$ 60	2,300	$ 138,000
Traffic Control (Highway)	LF	$ 10	2,300	$ 23,000
Control density backfill	LF	$ 165	2,300	$ 379,500
			Subtotal (rounded)	$ 2,604,000
Aquarius subdivision				
15-inch PVC gravity pipe	LF	$ 170	4,400	$ 748,000
Manhole 48-inch (<18-inch pipe)	EA	$ 12,000	15	$ 180,000
Re-connect laterals	EA	$ 500	90	$ 45,000
Roadway restoration (full lane)	LF	$ 60	4,400	$ 264,000
			Subtotal (rounded)	$ 1,237,000
Mobilization	%	5	-	$ 192,050
			Subtotal (rounded)	$ 4,034,000
Contingency	%	30	-	$ 1,210,200
			Subtotal (rounded)	$ 5,245,000
Engineering and CMS	%	25	-	$ 1,311,250
Easement	AC	$ 30,000	2.0	$ 60,000
			Project Total Cost (rounded):	**$ 6,617,000**

Hess Creek Improvements (all phases)

	Item	Unit	Unit Price	Quantity	Cost
Phase 1					
	CIPP, 8 to 18-inch[1]	LF	$ 145	6,800	$ 986,000
	Flow monitoring	LS	$ 30,000	1	$ 30,000
				Subtotal (rounded)	$ 1,016,000
	Mobilization	%	5	-	$ 50,800
				Subtotal (rounded)	$ 1,067,000
	Contingency	%	10	-	$ 106,700
				Subtotal (rounded)	$ 1,174,000
	Engineering and CMS	%	15	-	$ 176,100
				Phase 1 Cost (rounded):	**$ 1,351,000**
	[1]Additional 30% added to unit price for Hess Creek accessibility constraints				
Phase 2					
	Parallel gravity main				
	27-inch PVC gravity pipe	LF	$ 220	4,700	$ 1,034,000
	24-inch PVC gravity pipe	LF	$ 205	900	$ 184,500
	15-inch PVC gravity pipe	LF	$ 170	1,200	$ 204,000
	12-inch PVC gravity pipe	LF	$ 160	1,900	$ 304,000
	Re-grading pipe	LF	$ 135	2,400	$ 324,000
	Re-connect laterals	EA	$ 500	200	$ 100,000
	Roadway restoration	LF	$ 30	9,800	$ 294,000
	Install access road	LF	$ 60	1,300	$ 78,000
	Manhole 48-inch (<18-inch pipe)	EA	$ 12,000	8	$ 96,000
	Manhole 72-inch (>21-inch pipe)	EA	$ 16,500	18	$ 297,000
	Existing pipe rehab/replacement				
	36-inch PVC gravity pipe	LF	$ 245	700	$ 171,500
	18-inch PVC gravity pipe	LF	$ 185	900	$ 166,500
	Manhole 60-inch (18- to 21-inch pipe)	EA	$ 14,000	3	$ 42,000
	Manhole 72-inch (>21-inch pipe)	EA	$ 16,500	4	$ 66,000
	Install access road	LF	$ 60	1,600	$ 96,000
	Soil restoration	LF	$ 5	1,600	$ 8,000
	Hess Creek constructability	%	150	-	$ 825,000
	Bypass pumping	LS	$ 60,000	1	$ 60,000
				Subtotal (rounded)	$ 4,351,000
	Mobilization	%	5	-	$ 217,550
				Subtotal (rounded)	$ 4,569,000
	Contingency	%	30	-	$ 1,370,700
				Subtotal (rounded)	$ 5,940,000
	Engineering and CMS	%	25	-	$ 1,485,000
	Floodplain hydraulic study	LS	$ 20,000	1	$ 20,000
	Permitting	LS	$ 15,000	1	$ 15,000
				Phase 2 Cost (rounded):	**$ 7,460,000**
Phase 3					
	Pump Station, 2700-gpm	EA	$ 1,200,000	1	$ 1,200,000
	12-inch force main	LF	$ 90	700	$ 63,000
	Highway Boring	LF	$ 600	160	$ 96,000
	Local grinder pump	EA	$ 9,500	1	$ 9,500
				Subtotal (rounded)	$ 1,369,000
	Mobilization	%	5	-	$ 68,450
				Subtotal (rounded)	$ 1,438,000
	Contingency	%	30	-	$ 431,400
				Subtotal (rounded)	$ 1,870,000
	Engineering and CMS	%	25	-	$ 467,500
	Easement	AC	$ 30,000	1.20	$ 36,000
	Permitting & wetland mitigation	LS	$ 165,000	1	$ 165,000
				Phase 3 Cost (rounded):	**$ 2,539,000**
				Project Total Cost (rounded):	**$ 11,350,000**

S River St and E Eleventh St Improvements

Item	Unit	Unit Price	Quantity	Cost
42-inch PVC gravity pipe	LF	$ 275	4,700	$ 1,292,500
36-inch PVC gravity pipe	LF	$ 245	1,900	$ 465,500
30-inch PVC gravity pipe	LF	$ 230	900	$ 207,000
Re-connect laterals	EA	$ 500	75	$ 37,500
Manhole 72-inch (>21-inch pipe)	EA	$ 16,500	23	$ 379,500
Highway boring	LF	$ 600	150	$ 90,000
Roadway restoration (full lane)	LF	$ 60	7,500	$ 450,000
Bypass pumping	LS	$ 50,000	1	$ 50,000
			Subtotal (rounded)	$ 2,972,000
Mobilization	%	5	-	$ 148,600
			Subtotal (rounded)	$ 3,121,000
Contingency	%	30	-	$ 936,300
			Subtotal (rounded)	$ 4,058,000
Engineering and CMS	%	25	-	$ 1,014,500
Flow monitoring	LS	$ 30,000	1	$ 30,000
			Project Total Cost (rounded):	**$ 5,103,000**

E Pinehurst Court

Item	Unit	Unit Price	Quantity	Cost
E Pinehurst Court				
Cap and abandon line	EA	$ 1,500	1	$ 1,500
8-inch PVC gravity pipe	LF	$ 135	300	$ 40,500
Re-grading pipe	LF	$ 135	400	$ 54,000
Manhole 48-inch (<18-inch pipe)	EA	$ 12,000	2	$ 24,000
Re-connect laterals	EA	$ 500	9	$ 4,500
Re-connect manholes	EA	$ 1,500	4	$ 6,000
Roadway restoration (full lane)	LF	$ 60	440	$ 26,400
Landscape restoration	LF	$ 20	260	$ 5,200
Bypass pumping	LS	$ 20,000	1	$ 20,000
			Subtotal (rounded)	$ 183,000
Mobilization	%	5	-	$ 9,150
			Subtotal (rounded)	$ 193,000
Contingency	%	30	-	$ 57,900
			Subtotal (rounded)	$ 251,000
Engineering and CMS	%	25	-	$ 62,750
Easement	AC	$ 30,000	0.12	$ 3,600
			Project Total Cost (rounded):	**$ 318,000**

N Main Street and S Wynooksi Street

Item	Unit	Unit Price	Quantity	Cost
N Main Street Improvements				
15-inch PVC gravity pipe	LF	$ 170	500	$ 85,000
Re-connect laterals	EA	$ 500	10	$ 5,000
Manhole 60-inch (18- to 21-inch pipe)	EA	$ 14,000	5	$ 70,000
Roadway restoration (full lane)	LF	$ 60	350	$ 21,000
Landscape restoration	LF	$ 20	150	$ 3,000
Bypass pumping	LS	$ 40,000	1	$ 40,000
			Subtotal (rounded)	$ 224,000
Item	**Unit**	**Unit Price**	**Quantity**	**Cost**
S Wynooski Street Improvements				
15-inch PVC gravity pipe	LF	$ 170	350	$ 59,500
Re-connect laterals	EA	$ 500	2	$ 1,000
Manhole 48-inch (<18-inch pipe)	EA	$ 12,000	1	$ 12,000
Re-connect manholes	EA	$ 1,500	1	$ 1,500
Roadway restoration (full lane)	LF	$ 60	350	$ 21,000
Bypass pumping	LS	$ 40,000	1	$ 40,000
			Subtotal (rounded)	$ 135,000
Mobilization	%	5	-	$ 17,950
			Subtotal (rounded)	$ 377,000
Contingency	%	30	-	$ 113,100
			Subtotal (rounded)	$ 491,000
Engineering and CMS	%	25	-	$ 122,750
			Project Total Cost (rounded):	**$ 614,000**

E Crestview Drive, Crestview Crossing

	Item	Unit	Unit Price	Quantity	Cost
	E Crestview Drive				
	8-inch PVC gravity pipe	LF	$ 135	2,500	$ 337,500
	Manhole 48-inch (<18-inch pipe)	EA	$ 12,000	9	$ 108,000
	Roadway restoration	LF	$ 30	2,500	$ 75,000
				Subtotal (rounded)	$ 521,000
	Mobilization	%	5	-	$ 26,050
				Subtotal (rounded)	$ 548,000
	Contingency	%	30	-	$ 164,400
				Subtotal (rounded)	$ 713,000
	Engineering and CMS	%	25	-	$ 178,250
	Easement	AC	$ 30,000	1.20	$ 36,000
				E Crestview Drive Cost (rounded):	**$ 928,000**
	Crestview Crossing				
	10-inch PVC gravity pipe	LF	$ 150	3,200	$ 480,000
	Manhole 48-inch (<18-inch pipe)	EA	$ 12,000	11	$ 132,000
	Highway boring	LF	$ 600	160	$ 96,000
	Roadway restoration	LF	$ 30	3,100	$ 93,000
				Subtotal (rounded)	$ 801,000
	Mobilization	%	5	-	$ 40,050
				Subtotal (rounded)	$ 842,000
	Contingency	%	30	-	$ 252,600
				Subtotal (rounded)	$ 1,095,000
	Engineering and CMS	%	25	-	$ 273,750
	Easement	AC	$ 30,000	1.50	$ 45,000
				Crestview Crossing Cost (rounded):	**$ 1,414,000**

Providence PS Infrastructure

	Item	Unit	Unit Price	Quantity	Cost
	Providence PS				
	8-inch PVC gravity pipe	LF	$ 135	2,000	$ 270,000
	Manhole 48-inch (<18-inch pipe)	EA	$ 12,000	7	$ 84,000
	Highway boring	LF	$ 600	160	$ 96,000
	Roadway restoration	LF	$ 30	1,900	$ 57,000
	Pump station, 150 gpm	EA	$ 400,000	1	$ 400,000
	6-inch force main	LF	$ 60	1,300	$ 78,000
				Subtotal (rounded)	$ 985,000
	Mobilization	%	5	-	$ 49,250
				Subtotal (rounded)	$ 1,035,000
	Contingency	%	30	-	$ 310,500
				Subtotal (rounded)	$ 1,346,000
	Engineering and CMS	%	25	-	$ 336,500
	Easement	AC	$ 30,000	1.70	$ 51,000
				Providence PS Cost (rounded):	**$ 1,734,000**

NE Chehalem Drive

	Item	Unit	Unit Price	Quantity	Cost
Phase 1					
	NE Chehalem Drive Infrastructure	LS	-	1	$ 1,683,000
				Subtotal (rounded)	$ 1,683,000
	Contingency	%	10	-	$ 169,000
				Subtotal (rounded)	$ 1,852,000
	Engineering and CMS	LS	-	1	$ 365,000
				Phase 1 Cost (rounded):	**$ 2,217,000**
Phase 2					
	12-inch PVC gravity pipe	LF	$ 160	1,400	$ 224,000
	8-inch PVC gravity pipe	LF	$ 135	900	$ 121,500
	Manhole 48-inch (<18-inch pipe)	EA	$ 12,000	8	$ 96,000
	Roadway restoration (full lane)	LF	$ 60	2,300	$ 138,000
				Subtotal (rounded)	$ 580,000
	Mobilization	%	5	-	$ 29,000
				Subtotal (rounded)	$ 609,000
	Contingency	%	30	-	$ 182,700
				Subtotal (rounded)	$ 792,000
	Engineering and CMS	%	25	-	$ 198,000
				Phase 2 Cost (rounded):	**$ 990,000**
Phase 3 (Chehalem and Creekside PS displacement)					
	15-inch PVC gravity pipe	LF	$ 170	400	$ 68,000
	12-inch PVC gravity pipe	LF	$ 160	5,700	$ 912,000
	8-inch PVC gravity pipe	LF	$ 135	1,500	$ 202,500
	Bore (creek crossing)	LF	$ 600	100	$ 60,000
	Manhole 48-inch (<18-inch pipe)	EA	$ 12,000	26	$ 312,000
	Roadway restoration (full lane)	LF	$ 60	700	$ 42,000
	Soil restoration	LF	$ 5	6,900	$ 34,500
	Rock Allowance	LS	$ 300,000	1	$ 300,000
	Pump station demolition/removal (including building)	LS	$ 22,000	1	$ 22,000
	Pump station demolition/removal (no building)	LS	$ 11,000	1	$ 11,000
				Subtotal (rounded)	$ 1,964,000
	Mobilization	%	5	-	$ 98,200
				Subtotal (rounded)	$ 2,063,000
	Contingency	%	30	-	$ 618,900
				Subtotal (rounded)	$ 2,682,000
	Engineering and CMS	%	25	-	$ 670,500
	Environmental Permitting and Mitigation	LS	$ 50,000	1	$ 50,000
	Easement	AC	$ 30,000	3.17	$ 95,100
				Phase 3 Cost (rounded):	**$ 3,498,000**
				Project Total Cost (rounded):	**$ 6,705,000**

Riverfront PS and Improvements

	Item	Unit	Unit Price	Quantity	Cost
Phase 1					
	18-inch PVC gravity pipe	LF	$ 185	1,500	$ 277,500
	8-inch PVC gravity pipe	LF	$ 135	6,800	$ 918,000
	Re-connect laterals	EA	$ 500	15	$ 7,500
	Manhole 60-inch (18- to 21-inch pipe)	EA	$ 14,000	5	$ 70,000
	Manhole 48-inch (<18-inch pipe)	EA	$ 12,000	23	$ 276,000
	Roadway restoration (full lane)	LF	$ 60	8,300	$ 498,000
	Pump station, 550 gpm	EA	$ 600,000	1	$ 600,000
	8-inch force main	LF	$ 70	1,300	$ 91,000
				Subtotal (rounded)	$ 2,738,000
	Mobilization	%	5	-	$ 136,900
				Subtotal (rounded)	$ 2,875,000
	Contingency	%	30	-	$ 862,500
				Subtotal (rounded)	$ 3,738,000
	Engineering and CMS	%	25	-	$ 934,500
	Easement	AC	$ 30,000	3.81	$ 114,400
				Phase 1 Cost (rounded):	**$ 4,787,000**
Riverfront Industrial Line					
	10-inch PVC gravity pipe	LF	$ 150	2,600	$ 390,000
	Manhole 48-inch (<18-inch pipe)	EA	$ 12,000	9	$ 108,000
	Roadway restoration (full lane)	LF	$ 60	2,600	$ 156,000
				Subtotal (rounded)	$ 654,000
	Mobilization	%	5	-	$ 32,700
				Subtotal (rounded)	$ 687,000
	Contingency	%	30	-	$ 206,100
				Subtotal (rounded)	$ 894,000
	Engineering and CMS	%	25	-	$ 223,500
	Easement	AC	$ 30,000	1.19	$ 35,900
				Riverfront Industrial Line Cost (rounded):	**$ 1,154,000**
Phase 2 (Charles and Andrew PS displacement)					
	10-inch PVC gravity pipe	LF	$ 150	1,100	$ 165,000
	8-inch PVC gravity pipe	LF	$ 135	2,100	$ 283,500
	Manhole 48-inch (<18-inch pipe)	EA	$ 12,000	7	$ 84,000
	Bore (creek crossing)	LF	$ 600	100	$ 60,000
	Bore (railroad crossing)	LF	$ 600	100	$ 60,000
	Roadway restoration	LF	$ 30	600	$ 18,000
	Soil restoration	LF	$ 5	1,500	$ 7,500
	Pump station demolition/removal (no building)	LS	$ 11,000	2	$ 22,000
				Subtotal (rounded)	$ 535,000
	Mobilization	%	5	-	$ 26,750
				Subtotal (rounded)	$ 562,000
	Contingency	%	30	-	$ 168,600
				Subtotal (rounded)	$ 731,000
	Engineering and CMS	%	25	-	$ 182,750
	Environmental Permitting and Mitigation	LS	$ 165,000	1	$ 165,000
	Easement	AC	$ 30,000	1.00	$ 30,000
				Phase 2 Cost (rounded):	**$ 1,109,000**
				Project Total Cost (rounded):	**$ 5,896,000**

Pump Station Improvements (Short-term)

Site	Recommended Improvement	Recommended Completion Time	Cost
Charles Pump Station	Add manhole cover lock	1-5 Years	$1,700
	Install removable bollards in front for traffic protection	1-5 Years	$2,000
		Subtotal	*$3,700*
Chehalem Pump Station	Upgrade generator maintenance records	1-2 Years	$900
		Subtotal	*$900*
Creekside Pump Station	Install bollards for traffic protection	1-5 Years	$2,000
	Replace heater with heat tape in the valve enclosure for freeze protection	1-5 Years	$1,400
	Remount wash water backflow preventer at least 12-inches aboveground	1-5 Years	$3,500
	Relocate the portable generator connection point so it is 34 inches aboveground	1-5 Years	$1,500
	Add fencing around the station	1-5 years	$8,200
		Subtotal	*$16,600*
Fernwood Pump Station	Verify pump operating point and adjust operation (if needed) to improve capacity	Year 1	$1,400
	Check and correct (if needed) hazardous area seal-offs	1-2 Years	$2,000
	Install steel safety grating at the valve vault	1-5 Years	$1,600
	Install flow directing inlet at the influent pipe to the wet well	1-5 Years	$8,500
	Remove unused equipment from the building	1-5 Years	$1,500
	Repaint building doors	1-5 Years	$900
		Subtotal	*$15,900*
Highway 240 Pump Station	Install steel safety grating at the valve vault	1-5 Years	$1,600
	Repaint building doors	1-5 Years	$900
	Install flow directing inlet at the influent pipe to the wet well	1-5 Years	$8,500
	Install steel safety grating at the flow meter vault	1-5 Years	$1,600
		Subtotal	*$12,600*
Sheridian Pump Station	Add strip heater unit in electrical enclosure	1-2 Years	$400
	Replace burnt-out LED lights for depth display in control panel	1-5 Years	$2,400
	Remount wash water backflow preventer at least 12-inches aboveground	1-5 Years	$3,500
	Add fencing around the station	1-5 years	$8,200
	Replace heat tape with electrical heater	1-5 Years	$1,000
		Subtotal	*$15,500*
		Lift Station Improvements Subtotal	*$66,000*
		Contingency (30%)	$19,800
		Engineering (35%)	$30,100
		Administration (2%)	$1,800
		Lift Station Total Costs (rounded)	**$118,000**

Pump Station Improvements (Long-term)

Site	Recommended Improvement	Recommended Completion Time	Cost
Fernwood Lift Station	Add video monitoring	11-20 Years	$41,400
	Add flow meter on the discharge pipe	1-10 years	$25,100
	Install backflow control on overflow	1-10 Years	$6,100
		Subtotal	*$72,600*
Highway 240 Lift Station	Add video monitoring	11-20 Years	$41,400
	Replace pump guide rails	5-10 Years	$5,500
		Subtotal	*$46,900*
Sheridian Lift Station	Replace conductive level sensor with pressure transducer level sensor	11-20 Years	$7,100
	Add video monitoring	11-20 Years	$41,400
	Install backflow control on overflow	1-10 Years	$6,100
	Remove mixing valve	1-10 Years	$1,200
	Install pressure gauges on discharge pipes	5-10 Years	$2,000
	Add flow meter on the discharge pipe	5-10 years	$25,100
	Install a permanent ladder in the valve vault	5-10 Years	$6,100
	Install a dedicated standby generator	5-10 Year	$49,100
		Subtotal	*$138,100*
		Subtotal	$257,600
		Contingency (30%)	$77,300
		Engineering (35%)	$117,300
		Administration (2%)	$6,700
		Lift Station Total Costs (rounded)	**$459,000**

Appendix D

Priority 1 Project Sheets

Collection System Project: Hess Creek Phase 1 - CIPP
Project Identifier: 1.a

Objective: Cured-in-place pipe lining of the upper portion of the Hess Creek trunk line to reduce I/I influence and extend the life of the pipe (dark red line on location map below). Two pipe segments along this portion do not need to be lined as they will be upsized in Phase 2. Flow monitoring in the basin will also be completed to inform the design phase of Hess Creek Phase 2 Project.

Key Issues: Access to the Hess Creek trunk line is limited and can be difficult. Truck access is very limited.

Item	Cost (2021)
CIPP, 8 to 18-inch[1]	$ 986,000
Flow monitoring	$ 30,000
Construction Subtotal (rounded)	***$ 1,016,000***
Mobilization	$ 51,000
Contingency	$ 107,000
Engineering and CMS	$ 177,000
Total Project Cost (rounded)	***$ 1,351,000***

[1]Additional 30% added to unit price for Hess Creek accessibility constraints

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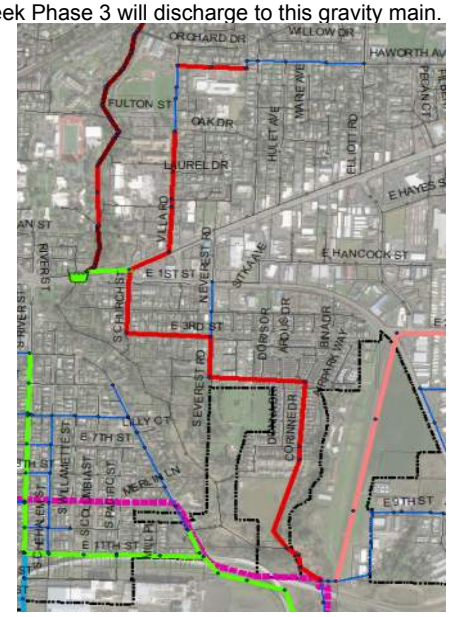
Collection System Project: Hess Creek Phase 2 - Parallel Gravity Main
Project Identifier: 1.b

Objective: Resolve undersized downstream pipeline along N Villa Road. Construct gravity line parallel to the Hess Creek canyon and reduce flow going to the Hess Creek trunk line. The new pump station in Hess Creek Phase 3 will discharge to this gravity main.



Key Issues: The most downstream segments of this project are in the Hess Creek canyon and acces is limited. Groundwater could be high in this area as well.

Item	Cost (2021)
Parallel gravity main	
27-inch PVC gravity pipe	$ 1,034,000
24-inch PVC gravity pipe	$ 184,500
15-inch PVC gravity pipe	$ 204,000
12-inch PVC gravity pipe	$ 304,000
Re-grading pipe	$ 324,000
Re-connect laterals	$ 100,000
Roadway restoration	$ 294,000
Install access road	$ 78,000
Manhole 48-inch (<18-inch pipe)	$ 96,000
Manhole 72-inch (>21-inch pipe)	$ 297,000
Existing pipe rehab/replacement	
36-inch PVC gravity pipe	$ 171,500
18-inch PVC gravity pipe	$ 166,500
Manhole 60-inch (18- to 21-inch pipe)	$ 42,000
Manhole 72-inch (>21-inch pipe)	$ 66,000
Install access road	$ 96,000
Soil restoration	$ 8,000
Hess Creek constructability	$ 825,000
Bypass pumping	$ 60,000
Construction Subtotal (rounded)	***$ 4,351,000***
Mobilization	$ 218,000
Contingency	$ 1,371,000
Engineering and CMS	$ 1,485,000
Floodplain hydraulic study	$ 20,000
Permitting	$ 15,000
Total Project Cost (rounded)	***$ 7,460,000***

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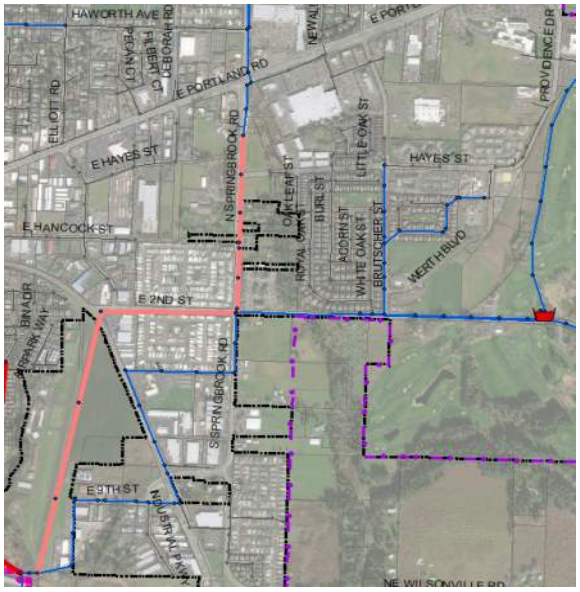
Collection System Project: Springbrook Road
Project Identifier: 1.c

Objective: Increase capacity of the Springbrook Road trunk line and firm capacity of Fernwood Pump Station to accommodate development in the basin. Improvements include upsizing the firm capacity of Fernwood Pump Station, upsizing a portion of the existing Springbrook line north of E Fernwood Road, and a new parallel gravity line added west on E Second St from the E Fernwood Road intersection.



Key Issues: Pipeline will need to be bored under HWY 219. Easement negotiation with Sportsman Airpark.

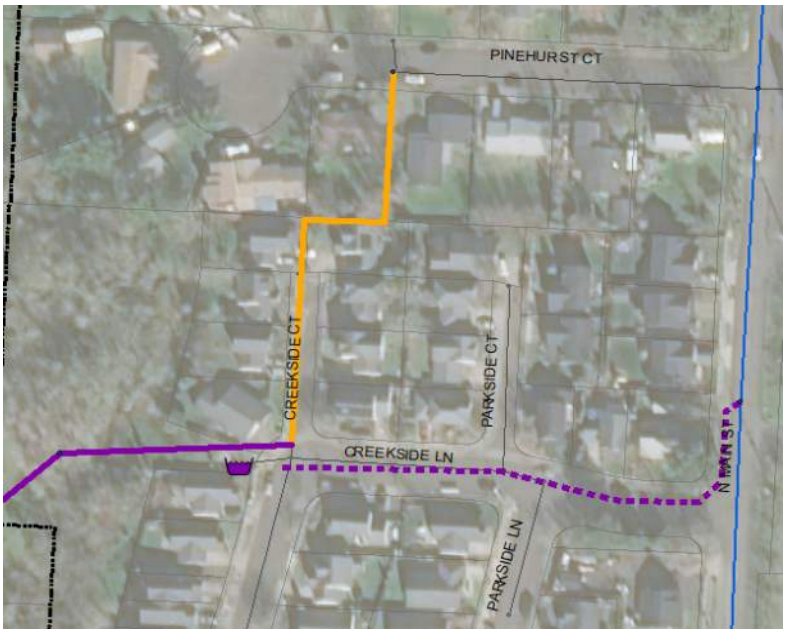
Item	Cost (2021)
Parallel gravity main	
24-inch PVC gravity pipe	$ 1,017,825
Manhole 72-inch (>21-inch pipe)	$ 280,500
Highway boring	$ 81,000
Roadway restoration (full lane)	$ 96,000
Soil restoration	$ 16,825
Flow diversion structure	$ 20,000
Bypass pumping	$ 50,000
Upsize existing	
18-inch PVC gravity pipe	$ 425,500
Re-connect laterals	$ 4,000
Manhole 60-inch (18- to 21-inch pipe)	$ 98,000
Roadway restoration (full lane)	$ 138,000
Traffic Control (Highway)	$ 23,000
Control density backfill	$ 379,500
8-inch PVC gravity pipe	$ 148,500
Manhole 48-inch (<18-inch pipe)	$ 48,000
Bypass pumping	$ 50,000
Fernwood PS upsize	
Upsize pump station	$ 202,000
Construction Subtotal (rounded)	***$ 3,079,000***
Mobilization	$ 154,000
Contingency	$ 970,000
Engineering and CMS	$ 1,051,000
Easement	$ 60,000
Total Project Cost (rounded)	***$ 5,314,000***

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our professional opinion of accurate costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

Collection System Project: E Pinehurst Court
Project Identifier: 1.d

Objective: Eliminate overflows at E Pinehurst Court. The grade of E Pinehurst Court and shallow gravity main produce a potential overflow site when the trunk line on N Main Street flow close to full. This project will re-direct flow from E Pinehurst Court south to existing lines on Creekside Court and to the Creekside Pump Station basin.

Key Issues: Easements will be needed to connect to Creekside court. There are local grinder pumps on E Pinehurst that could potentially be removed if the vertical alignment allows; this should be evaluated during design.



Item	Cost (2021)
Cap and abandon line	$ 1,500
8-inch PVC gravity pipe	$ 40,500
Re-grading pipe	$ 54,000
Manhole 48-inch (<18-inch pipe)	$ 24,000
Re-connect laterals	$ 4,500
Re-connect manholes	$ 6,000
Roadway restoration (full lane)	$ 26,400
Landscape restoration	$ 5,200
Bypass pumping	$ 20,000
Construction Subtotal (rounded)	***$ 183,000***
Mobilization	$ 10,000
Contingency	$ 58,000
Engineering and CMS	$ 63,000
Easement	$ 3,600
Total Project Cost (rounded)	***$ 318,000***

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our professional opinionof accurate costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

Collection System Project: Pump Station Improvements (Short-term)
Project Identifier: 1.e

Objective: This project includes a variety of short-term improvements to existing pump stations. The Dayton PS was replaced recently and has no short-term improvement recommendations. Andrew PS also does not have any short-term improvement recommendations.

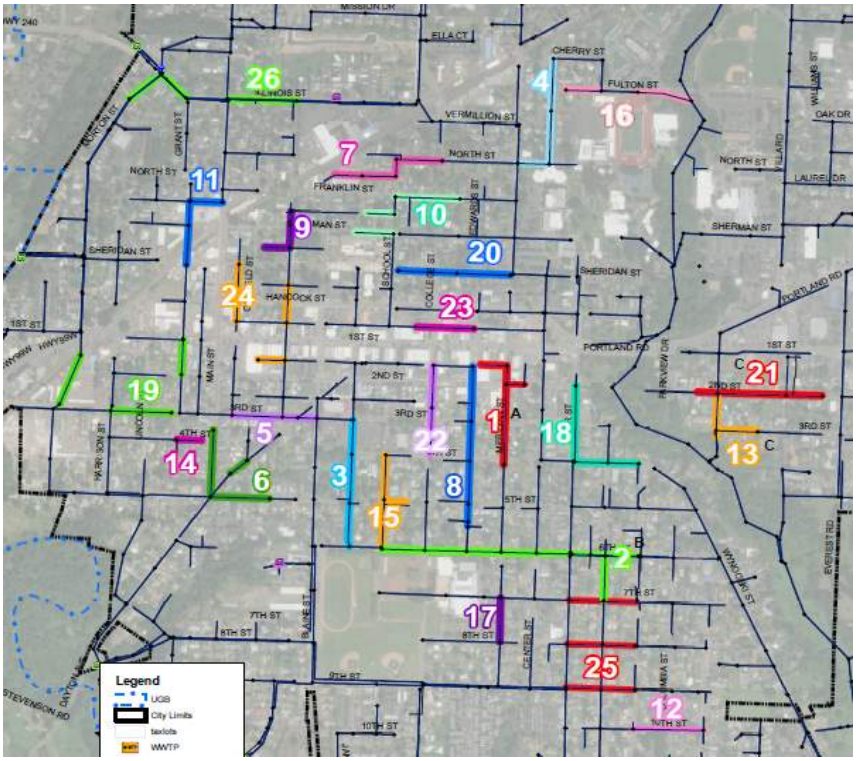
Item	Cost (2021)
Charles Pump Station	$ 3,700
Chehalem Pump Station	$ 900
Creekside Pump Station	$ 16,600
Fernwood Pump Station	$ 15,900
HWY 240 Pump Station	$ 12,600
Sheridan Pump Station	$ 15,500
Construction Subtotal (rounded)	***$ 66,000***
Contingency	$ 19,800
Engineering and CMS	$ 30,100
Administration	$ 1,800
Total Project Cost (rounded)	***$ 118,000***

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our professional opinionof accurate costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

Collection System Project: I/I Projects
Project Identifier: 1.f

Objective: Reduce I/I in the system. Focus annual pipeline replacement in areas of high I/I as identified in the 2018 WWMP. Potentially postpone larger capital improvements on trunk lines and at WWTP by reducing I/I influence and peak flows in the system.

Key Issues: I/I data should be updated periodically to provide current recommendations for reducing I/I in the system. Coordination with other utilities could provide cost-savings for the City.



Item	Cost (2021)
I/I Projects	$ 2,700,000
Total Project Cost (rounded)	***$ 2,700,000***

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our professional opinionof accurate costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

Collection System Project: E Crestview Drive Infrastructure
Project Identifier: 1.g

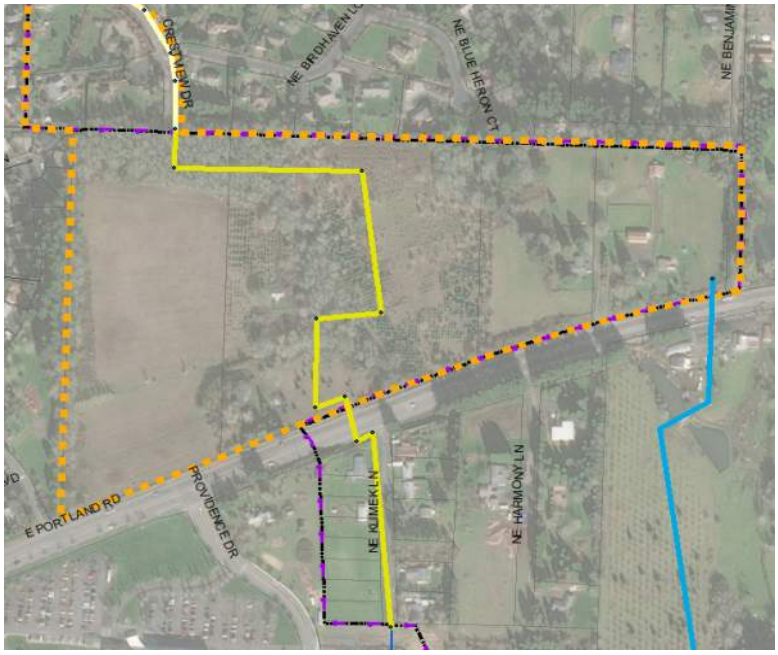
Objective: Development driven infrastructure along E crestview Drive. Proposed infrastructure based on City provided drawings.

Item	Cost (2021)
8-inch PVC gravity pipe	$ 337,500
Manhole 48-inch (<18-inch pipe)	$ 108,000
Roadway restoration	$ 75,000
Construction Subtotal (rounded)	***$ 521,000***
Mobilization	$ 27,000
Contingency	$ 165,000
Engineering and CMS	$ 179,000
Easement	$ 36,000
Total Project Cost (rounded)	***$ 928,000***

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our professional opinionof accurate costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

Collection System Project: Crestview Crossing Infrastructure
Project Identifier: 1.h

Objective: Development driven infrastructure for the Crestview Crossing area. Proposed infrastructure is based on the Crestview Crossing PUD (March 2019) Report from the City.



Item	Cost (2021)
10-inch PVC gravity pipe	$ 480,000
Manhole 48-inch (<18-inch pipe)	$ 132,000
Highway boring	$ 96,000
Roadway restoration	$ 93,000
Construction Subtotal (rounded)	***$ 801,000***
Mobilization	$ 41,000
Contingency	$ 253,000
Engineering and CMS	$ 274,000
Easement	$ 45,000
Total Project Cost (rounded)	***$ 1,414,000***

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our professional opinionof accurate costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

Collection System Project: Maintenance Yard Improvements
Project Identifier: 1.i

Objective: A Master Plan was completed for the City maintenance yard. This project was in the City's draft CIP 2017-2022 at the time of the 2018 WWMP. The project will include major site work, new fleet building, and eventually new administration building. The maintenance yard is utilized by a number of City divisions.

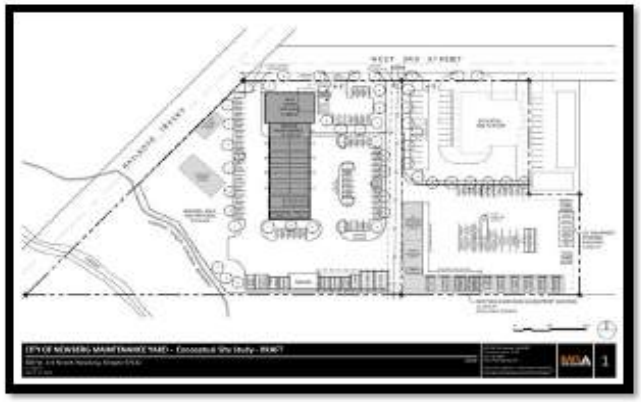


FIGURE 1 CONCEPTUAL PUBIC WORKS MAINTENANCE YARD PLAN

Item	Cost (2021)
Project Total Cost (rounded)	$ 804,000
Cost from 2018 WWMP - includes mob., eningeering, and admin. From sewer utility portion (increased by ENR)	

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Exhibit "B" to Planning Commission Resolution 2021-366
Findings – File CPTA20-0004

APPROVAL CRITERIA

A. Statewide Planning Goals (the "Goals")

GOAL 1: CITIZEN INVOLVEMENT
To develop a citizen involvement program that ensures the opportunity for citizens to be involved in all phases of the planning process.

Finding: The City meets this requirement by having various citizen committees and/or commission with opportunities for the public to testify on general or specific matters. For the Wastewater Master Plan – Addendum Riverfront Master Plan 2021 it included a Citizen Advisory Committee that met three times, a work session was held with the City Council on April 5, 2021, went before the Newberg Planning Commission on April 8, 2021 and Newberg City Council on May 3, 2021, which provided the opportunity for public comment. Finally, notice was published in the Newberg Graphic newspaper and posted in four public places.

The amendment is subject to the Type IV Legislative process, which requires public notification and public hearings before the Planning Commission and the City Council. This process has been established by the City and determined to be consistent with Goal I of the Oregon Statewide Planning Goals. The public hearing notice of the action and decision, and the hearings on this case before the Planning Commission and the City Council are all recognized as opportunities for citizen participation.

The Goal is met.

GOAL 2: LAND USE PLANNING
To establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and actions.

Finding: This Goal requires that actions related to land use be consistent with acknowledged comprehensive plans of cities and counties. The City of Newberg last updated its Wastewater Master Plan in 2018. The Addendum Riverfront Master Plan 2021 updates the 2018 Wastewater Master Plan to implement the 2019 Riverfront Master Plan and will be incorporated by reference into the Newberg Comprehensive Plan as noted in Exhibit "C".

Development of the 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A" and Exhibit "C" was based on an adequate factual base as documented in 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021. The 2019 Riverfront Master Plan evaluated alternative land use arrangements that were considered, and a Preferred Alternative was selected. Implementation measures in the proposed 2018 Wastewater Master Plan – Addendum

Riverfront Master Plan 2021 are consistent with and adequate to carry out relevant Comprehensive Plan policies and intended types of development for land use designations as noted in these findings, including the protection of natural and cultural resources.

This Goal is met.

GOAL 3: AGRICULTURAL LANDS
To preserve and maintain agricultural lands.

Finding: Not applicable because the proposal does not propose any land use regulation changes to agricultural lands outside of the Newberg Urban Growth Boundary.

GOAL 4: FOREST LANDS
To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

Finding: Not applicable because the proposal does not propose any land use regulation changes to forest lands outside of the Newberg Urban Growth Boundary.

GOAL 5: NATURAL RESOURCES, SCENIC AND HISTORIC AREAS, AND OPEN SPACES
To protect natural resources and conserve scenic and historic areas and open spaces.

Finding: The proposed amendments will not negatively impact inventoried Goal 5 resources because the amendments do not change protections that already exist in the Newberg Municipal Code to protect these resources. Newberg has an acknowledged Stream Corridor designation, inventoried historic resources, and identified open spaces in compliance with Goal 5.

This Goal is met.

GOAL 6: AIR, WATER AND LAND RESOURCES QUALITY
To maintain and improve the quality of the air, water and land resources of the state.

Finding: Goal 6 addresses the quality of air, water, and land resources. In the context of a comprehensive plan amendment, a local government complies with Goal 6 by explaining why it is reasonable to expect that the proposed uses authorized by the plan amendment will be able to satisfy applicable federal and state environmental standards, including air and water quality standards. The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 address the land use pattern and density consistent with the acknowledged Newberg Comprehensive Plan to ensure that air, water and land resource quality through efficient use of the land supply through the provision of wastewater facilities.

Newberg has an acknowledged Comprehensive Plan that complies with this goal. Protections are

already in place for air, water, and land resource quality. This proposal does not modify the existing goals and policies.

This Goal is met.

GOAL 7: AREAS SUBJECT TO NATURAL HAZARDS
To protect people and property from natural hazards.

Finding: Newberg has an acknowledged Comprehensive Plan that complies with this goal. This proposal does not modify the City's natural hazards requirements such as flood plain areas. This proposal does not modify the existing goals and policies.

This Goal is met.

GOAL 8: RECREATIONAL NEEDS
To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.

Finding: Newberg has an acknowledged Comprehensive Plan that complies with this goal. This proposal does not modify the City's recreational needs goals and policies.

This Goal is met.

GOAL 9: ECONOMIC DEVELOPMENT
To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 provides for adequate wastewater system for all residential, commercial, and industrial uses that are anticipated in the acknowledged Newberg Comprehensive Plan through the identification of necessary wastewater system improvements based on projected population growth which will ensure a diverse and stable economic base of the community over the 20-year planning horizon.

2019 Riverfront Master Plan proposal envisions the riverfront as an economically thriving area with a mix of residential, commercial, industrial, and employment uses and enhanced transportation connections between the Riverfront and Newberg's downtown. The adopted changes to the Comprehensive Plan and Map included a new mixed use area on the Riverfront Mill Site that is intended to provide a flexible mix of light industrial and employment uses that will support the City's diverse employment opportunities. The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 ensures an adequate wastewater system to support economic activities.

This Goal is met.

GOAL 10: HOUSING
To provide for the housing needs of citizens of the state.

Finding: The 2019 Riverfront Master Plan proposal envisions the riverfront as an economically thriving area with a mix of residential, commercial, industrial, and employment uses and enhanced transportation connections between the Riverfront and Newberg's downtown. The adopted changes to the Comprehensive Plan and Map included as part of CPTA20-0001/CPMA20-0002/DCA20-0001/ZMA20-0002 increased medium- and high-density residential areas to provide more opportunities for affordable and work-force housing. The Comprehensive Plan changes in CPTA20-0001/CPMA20-0002/DCA20-0001/ZMA20-0002 recognized the following residential analysis.

In the CPTA Housing Land Needs and Buildable Land Supply Analysis:

Newberg's Comprehensive Plan shows a need for additional MDR (Medium Density Residential) and COM (Commercial) land. In 2005, the City Council adopted amendments to the Comprehensive Plan, including updated residential land need and supply numbers for LDR (Low Density Residential), MDR (Medium Density Residential) and HDR (High Density Residential) land designations. The updates were based on data from the Housing and Residential Land Needs Report compiled by Johnson-Gardner in 2004. The amendments were adopted and acknowledged through the post-acknowledgment plan amendment process in 2005. The 2005 Comprehensive Plan has residential land data for the 20-year period from 2005-2025, and the future planning period out to 2040. This data shows that the City had a demonstrated need for 173 buildable acres of MDR (Medium Density Residential) through 2025, and an additional 191 acres of HDR land through 2040 (see table below). Buildable land includes vacant and redevelopable land in the existing Urban Growth Boundary (UGB).

Newberg Comprehensive Plan, Table V-7 Buildable Residential Land Needs vs. Supply				
Plan Designation	**Buildable Acres Needed 2005-2025**	**Buildable Acres in UGB (2004)**	**Surplus (Deficit) for 2005-2025**	**Buildable Acres Needed 2026-2040**
LDR	612	359	(253)	735
MDR	173	142	(31)	191
HDR	89	13	(76)	83
Total	**874**	**514**	**(380)**	**1009**

In 2009 the City proposed an update to the Housing Element of the Comprehensive Plan. This item was appealed to LUBA and remanded; it has not yet been revised and readopted, so the 2005 amendments are the latest acknowledged estimates. A preliminary Buildable Lands Inventory (BLI) was completed for the City in 2016 utilizing the Simplified Method for Urban Growth Boundary (UGB) expansion; however, the BLI has not been finalized because several issues with the methodology were identified by the consultant and City staff.

Since 2015 there have been six Comprehensive Plan Map amendments including:

- CPA-15-001/ZMA3-15-001 – Martell Commons – 5.91 acres going from LDR to HDR
- CPMA18-0001/ZMA18-0002 – 1109 S River Street – 1.33 acres going from LDR to HDR
- CPMA18-0005/ZMA18-0002 – 501 and 507 E Illinois Street – 2.87 acres going from MDR to HDR
- CPMA18-0006 – 1303 S River Street (Riverlands) – 1.56 acres going from COM to MDR
- CPMA19-0001/ZMA19-0001 – 502 S St. Paul Highway (Beaudry) – 1.11 acres going from MDR to IND
- CPMA20-0001/ZMA20-0001 - 717 N College Street - .08 acres from LDR to MDR and .49 acres from COM to MDR

The above changes to HDR, MDR, and IND acreage are utilized along with additional data found within the staff reports from these previous comprehensive plan updates to update the 2005 buildable lands data.

Data was drawn from the six previous comprehensive plan map and zoning map amendments. Below is the population excerpt for the next 20 years as provided by Portland State University's Population Research Center. As illustrated below, the City of Newberg 2020 estimated population is 24,877 and is estimated to grow by 17,500 to a total of 42,377. The projected increase in population indicates a continued need for additional residential housing.

Table 1: Population Forecast 2020-2060

City	2020	2025	2030	2035	2040	2045	2050	2055	2060
Newberg	24,877	26,557	28,432	30,576	32,780	34,929	37,247	39,907	42,377
Change		+1,680	+1,857	+2,144	+2,204	+2,149	+2,318	+2,660	+2,470
% Increase		6.7%	6.9%	7.5%	7.2%	6.5%	6.6%	7.1%	6.1%

Source: Population Research Center, Portland State University, March 31, 2020. Proposed forecasts represent populations as of July 1 of each year

Table 2: Buildable Residential Needs vs. Supply after Proposed Comp Plan Change 2020-2035

Land Designation	Buildable Acres Needed	Buildable Acres Before Comp Plan Change	Building Acres After Comp Plan Change	Surplus/(Deficit) Before Comp Plan Change	Surplus/(Deficit) After Comp Plan Change
LDR	301	385	384.91	84	83.91
MDR	132	81.57	82.64	(50.43)	(49.36)
HDR	46	9	12.7	(37)	(33.33)
Total	479	475.57	480.25	(3.43)	(8.78)

Table 2 utilizes the data from the six comprehensive map amendments and the Riverfront Master Plan amendment (CPMA20-0002/ZMA20-0002), due to this data being the most up-to-date for residential buildable land. As illustrated in Table 2 there is a deficit of 49.36 acres of MDR and 33.33 acres of HDR land after the adoption of the Riverfront Master Plan amendment. This does not take into consideration the COM/RD designation which will allow mixed commercial with commercial activities on the ground floor and residential above. There is no density minimum or maximum for residential on the COM/RD designation above the ground floor which needs to be commercial. Exhibit "A" provides additional information on the uses. Overall the Riverfront area proposed residential designations increased the number of potential residential units.

The above analysis is based on the 2005 Housing Needs Analysis (HNA). In 2021 the City Council accepted the 2021 HNA (it was not officially adopted as a precursor to a potential UGB expansion). The 2021 HNA identified an overall deficiency of 81 acres (37 acres MDR, and 44 acres of HDR) of residential land.

Efficient development of residentially zoned land located within the City can provide the opportunity for additional housing to meet the needs of the citizens of Newberg. The Comprehensive Plan and Development Code amendments to implement the Riverfront Master Plan create the opportunity for a mix of housing types within the Riverfront Master Plan area. This will provide flexibility to accommodate a variety of housing types including those that can be utilized for affordable housing and rental housing and complies with the goal.

Amending the Comprehensive Plan – 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 reflects the intent of the Riverfront Master Plan that includes the following land use elements:

- Riverfront Industrial
- Riverfront Commercial
- Mixed Employment

- Community Facilities
- Residential (R-2 & R-3)

In addition to this analysis the Riverfront Master Plan included the following data on residential development.

Appendix B: Estimates of Residential Capacity within Land Use Alternatives
UPDATED 8/12/2019 to include Updates to Alternative E

Alternative E				
Land Use	**Acres**	**Existing Residential Units**	**New Residential Units**	**Total Residential Units**
*Medium Density Residential**	92.2	459	227	686
*High Density Residential**	25.1	221	67	288
*Mixed Commercial***	7.6	N/A	45	45
Mixed Employment	21.5	N/A	N/A	N/A
Industrial	94.5	N/A	N/A	N/A
Parks & Open Spaces	164.5	N/A	N/A	N/A
TOTAL	**396**	**680**	**339**	**1,019**

**New residential units calculated based on the following current zoning regulations:*

- *MDR: R-2, averaging 9 units/gross acre*
- *HDR: R-3, averaging 16.5 units/gross acre*

***New residential Units for Mixed Commercial calculated as 1/3 of total acres based on HDR density of 16.5 units/gross acre*

Of the units estimated in MDR in the above calculation is a 132 lot detached single family residential subdivision for which 19 building permits have been issued and homes are under construction. A 45 unit apartment project in HDR is under construction that was included in the Existing Residential Units calculation. The adopted CPMA20-0002/ZMA20-0002 per Ordinance No. 2020-2868 captured the future new MDR (227-132=95) 95 units, HDR residential units of 67 and the Mixed Commercial residential units of 45.

The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 ensures an adequate wastewater system to support the future housing within the Riverfront Master Plan area.

The Goal is met.

GOAL 11: PUBLIC FACILITIES AND SERVICES
To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 outlines the provision of the City of Newberg's wastewater system for conveyance, treatment, and capital improvement program as identified in Exhibit "A". The plan lays out the necessary improvements for the system and extension of the wastewater system to service all lands within the Newberg Urban Growth Boundary in a timely, orderly and efficient arrangement for urban development.

This Goal is met.

GOAL 12: TRANSPORTATION
To provide and encourage a safe, convenient and economic transportation system.

Finding: Not applicable because the proposal does not address a transportation system.

GOAL 13: ENERGY CONSERVATION
To conserve energy.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 has taken into consideration the acknowledged Newberg Comprehensive Plan and the Population Forecasts for Newberg prepared by Portland State University in June 2017 to provide an energy efficient conveyance and treatment of the wastewater system within the Newberg Urban Growth Boundary.

This Goal is met.

GOAL 14: URBANIZATION
To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.

Finding: The proposed amendments do not include an expansion of the Urban Growth Boundary. There are properties within the Riverfront Master Plan area that are not annexed into the city limits but are within the Urban Growth Boundary. Annexation of these properties will be critical to providing needed wastewater infrastructure and realizing the development vision for the area. Development of the Riverfront area will maintain Newberg's identity and enhance the quality living environment by balancing growth and providing cultural activities.

This Goal is met.

GOAL 15: WILLAMETTE RIVER GREENWAY
To protect, conserve, enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway.

Finding: Not applicable because the proposal does not propose any land use regulation changes to the Willamette River Greenway.

B. Newberg Comprehensive Plan

II. GOALS AND POLICIES

A. CITIZEN INVOLVEMENT

GOAL: To maintain a Citizen Involvement Program that offers citizens the opportunity for involvement in all phases of the planning process.

Finding: The City meets this requirement by having various citizen committees with opportunities for the public to testify on general or specific matters. For the Wastewater Master Plan – Addendum Riverfront Master Plan 2021 it included a Citizen Advisory Committee that met two times, went before the Newberg Planning Commission on April 8, 2021 and Newberg City Council on May 3, 2021, which provided the opportunity for public comment. Finally, notice was published in the Newberg Graphic newspaper and posted in four public places.

The amendment is subject to the Type IV Legislative process, which requires public notification and public hearings before the Planning Commission and the City Council. This process has been established by the City and determined to be consistent with Goal I of the Oregon Statewide Planning Goals. The public hearing notice of the action and decision, and the hearings on this case before the Planning Commission and the City Council are all recognized as opportunities for citizen participation.

The Goal is met.

B. LAND USE PLANNING

GOAL: To maintain an on-going land use planning program to implement statewide and local goals. The program shall be consistent with natural and cultural resources and needs.

POLICY: 2. The Comprehensive Plan and implementing ordinances shall be reviewed continually and revised as needed. Major reviews shall be conducted during the State periodic review process.

Finding: This Goal requires that actions related to land use be consistent with acknowledged comprehensive plans of cities and counties. The City of Newberg last updated its Wastewater Master Plan in 2018. The Addendum Riverfront Master Plan 2021 updates the 2018 Wastewater Master Plan to implement the 2019 Riverfront Master Plan and will be incorporated by reference into the Newberg Comprehensive Plan as noted in Exhibit "C".

Development of the 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A was based on an adequate factual base as documented in 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021. The 2019 Riverfront Master Plan evaluated alternative land use arrangements that were considered, and a Preferred Alternative was selected. Implementation measures in the proposed 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 are consistent with and adequate to carry out relevant Comprehensive Plan policies and intended types of development for land use designations as noted in these findings, including the protection of natural and cultural resources.

The proposed amendment to the Comprehensive Plan and Development Code comply with this Goal.

This Goal is met.

C. AGRICULTURAL LANDS
GOAL: To provide for the orderly and efficient transition from rural to urban land uses.

Finding: Not applicable because the proposal does not propose any land use regulation changes to agricultural lands outside of the Newberg Urban Growth Boundary.

D. WOODED AREAS
GOAL: To retain and protect wooded areas.

Finding: Not applicable because the proposal does not propose any land use regulation changes to the Stream Corridor that protects wooded areas within the Newberg Urban Growth Boundary.

E. AIR, WATER, AND LAND RESOURCE QUALITY
GOAL: To maintain and, where feasible, enhance the air, water and land resource qualities within the community.

POLICY: 1. Development shall not exceed the carrying capacity of the air, water or land resource base.

Finding: Newberg has an acknowledged Comprehensive Plan that complies with this goal. Protections are already in place for air, water, and land resource quality. The population forecast information will be used to assist in evaluating future land use planning efforts on the carrying capacity of the air, water or land resource base. This proposal does not modify the existing goals and policies.

This Goal is met.

F. AREAS SUBJECT TO NATURAL HAZARDS
GOAL: To protect life and property from flooding and other natural hazards.

Finding: Newberg has an acknowledged Comprehensive Plan that complies with this goal. This proposal does not modify the City's natural hazards requirements such as flood plain areas. This proposal does not modify the existing goals and policies.

This Goal is met.

G. OPEN SPACE, SCENIC, NATURAL, HISTORIC AND RECREATIONAL RESOURCES
GOALS:
1. To ensure that adequate land shall be retained in permanent open space use and that natural, scenic and historic resources are protected.

2. To provide adequate recreational resources and opportunities for the citizens of the community and visitors.
3. To protect, conserve, enhance and maintain the Willamette River Greenway.

Finding: Newberg has an acknowledged Comprehensive Plan that complies with this goal. This proposal does not modify the City's recreational needs goals and policies. The population forecast information will be used to assist in evaluating future land use planning efforts related to open space, scenic historic and recreational resources.

These Goals are met.

H. THE ECONOMY
GOAL: To develop a diverse and stable economic base.

POLICY: 1. General Policies. b. The City shall encourage economic expansion consistent with local needs.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 provides for adequate wastewater service provision for all residential, commercial, industrial and institutional uses that are anticipated in the acknowledged Newberg Comprehensive Plan through the identification of necessary wastewater system improvements based on projected population growth which will ensure a diverse and stable economic base of the community over the 20-year planning horizon.

The 2019 Riverfront Master Plan proposal envisions the riverfront as an economically thriving area with a mix of residential, commercial, industrial, and employment uses and enhanced transportation connections between the Riverfront and Newberg's downtown. The adopted changes to the Comprehensive Plan and Map included a new mixed use area on the Riverfront Mill Site that is intended to provide a flexible mix of light industrial and employment uses that will support the City's diverse employment opportunities. The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 amendment ensures an adequate wastewater system to support economic activities.

This Goal is met.

I. HOUSING
GOAL: To provide for diversity in the type, density and location of housing within the City to ensure there is an adequate supply of affordable housing units to meet the needs of City residents of various income levels. (Ordinance 2006-2634)

Finding: The 2019 Riverfront Master Plan proposal envisions the riverfront as an economically thriving area with a mix of residential, commercial, industrial, and employment uses and enhanced wastewater system. The adopted changes to the Comprehensive Plan and Map included as part of CPTA20-0001/CPMA20-0002/DCA20-0001/ZMA20-0002 increased medium- and high-density residential areas to provide more opportunities for affordable and workforce housing. The analysis above under A. Statewide Planning Goals (the "Goals"), GOAL 10: HOUSING, To provide for the housing needs of citizens of the state, details how the proposed 2018 Wastewater Master Plan –

Addendum Riverfront Master Plan 2021 amendment ensures an adequate wastewater system to support housing.

This Goal is met.

J. URBAN DESIGN

GOAL 1: To maintain and improve the natural beauty and visual character of the City.
GOAL 2: To develop and maintain the physical context needed to support the livability and unique character of Newberg.

Finding: Not applicable because the proposal does not propose any land use regulation changes to urban design policies or regulations.

K. TRANSPORTATION

GOAL 1: Establish cooperative agreements to address transportation based planning, development, operation and maintenance.
GOAL 2: Establish consistent policies which require concurrent consideration of transportation/land use system impacts.
GOAL 3: Promote reliance on multiple modes of transportation and reduce reliance on the automobile.
GOAL 4: Minimize the impact of regional traffic on the local transportation system.
GOAL 5: Maximize pedestrian, bicycle and other non-motorized travel throughout the City.
GOAL 6: Provide effective levels of non-auto oriented support facilities (e.g. bus shelters, bicycle racks, etc.).
GOAL 7: Minimize the capital improvement and community costs to implement the transportation plan.
GOAL 8: Maintain and enhance the City's image, character and quality of life.
GOAL 9: Create effective circulation and access for the local transportation system.
GOAL 10: Maintain the viability of existing rail, water and air transportation systems.
GOAL 11: Establish fair and equitable distribution of transportation improvement costs.
GOAL 12: Minimize the negative impact of a Highway 99 bypass on the Newberg community.
GOAL 13: Utilize the Yamhill County Transit Authority (YCTA) Transit Development Plan (TDP) as a Guidance Document.
GOAL 14: Coordinate with Yamhill County Transit Area.
GOAL 15: Implement Transit-Supportive Improvements.

Finding: No applicable because the proposal does not address a transportation system.

L. PUBLIC FACILITIES AND SERVICES

GOAL: To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban development.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 outlines the provision of the City of Newberg's wastewater system for conveyance, treatment, and capital improvement program as identified in Exhibit "A". The plan lays out the necessary improvements

for the system and extension of the wastewater system to service all lands within the Newberg Urban Growth Boundary in a timely, orderly and efficient arrangement for urban development.

This Goal is met.

M. ENERGY

GOAL: To conserve energy through efficient land use patterns and energy- related policies and ordinances.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 has taken into consideration the acknowledged Newberg Comprehensive Plan and the Population Forecasts for Newberg prepared by Portland State University in June 2017 to provide an energy efficient conveyance and treatment of the wastewater system within the Newberg Urban Growth Boundary.

This Goal is met.

N. URBANIZATION

GOALS:

1. To provide for the orderly and efficient transition from rural to urban land uses.
2. To maintain Newberg's identity as a community which is separate from the Portland Metropolitan area.
3. To create a quality living environment through a balanced growth of urban and cultural activities.

Finding: The proposed amendments do not include an expansion of the Urban Growth Boundary. There are properties within the Riverfront Master Plan area that are not annexed into the city limits but are within the Urban Growth Boundary. Annexation of these properties will be critical to providing needed wastewater infrastructure and realizing the development vision for the area. Development of the Riverfront area will maintain Newberg's identity and enhance the quality living environment by balancing growth and providing cultural activities.

These Goals are met.

C. Oregon Revised Statutes and Oregon Administrative Rules

Applicable Oregon Revised Statute

197.712 Commission duties; comprehensive plan provisions; public facility plans; state agency coordination plans; compliance deadline; rules.
(2) By the adoption of new goals or rules, or the application, interpretation or amendment of existing goals or rules, the Land Conservation and Development Commission shall implement all of the following:
(e) A city or county shall develop and adopt a public facility plan for areas within an urban growth boundary containing a population greater than 2,500 persons. The public facility plan shall include rough cost estimates for public projects needed to provide sewer, water and transportation for the land uses contemplated in the comprehensive plan and land use regulations. Project timing and financing provisions of public facility plans shall not be considered land use decisions.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 is an element of the City of Newberg public facility plan covering the Urban Growth Boundary of the City and updates the 2018 Wastewater Master Plan. The City of Newberg population is 24,120 which is larger than the baseline population requirement to have a public facilities plan. The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 includes cost estimates for infrastructure improvements based on the land uses contemplated in the comprehensive plan and land use regulations and meets the requirement.

Applicable Oregon Administrative Rules (OARs)

OAR Chapter 660, Division 11 Public Facilities Planning

OAR 660-011-0000

Purpose

The purpose of this division is to aid in achieving the requirements of Goal 11, Public Facilities and Services, OAR 660-015-0000(11), interpret Goal 11 requirements regarding public facilities and services on rural lands, and implement ORS 197.712(2)(e), which requires that a city or county shall develop and adopt a public facility plan for areas within an urban growth boundary containing a population greater than 2,500 persons. The purpose of the plan is to help assure that urban development in such urban growth boundaries is guided and supported by types and levels of urban facilities and services appropriate for the needs and requirements of the urban areas to be serviced, and that those facilities and services are provided in a timely, orderly and efficient arrangement, as required by Goal 11. The division contains definitions relating to a public facility plan, procedures and standards for developing, adopting, and amending such a plan, the date for submittal of the plan to the Commission and standards for Department review of the plan.

Finding: The City of Newberg is a community of 24,120 individuals with an acknowledged Comprehensive Plan and Urban Growth Boundary. Because the population is greater than 2,500 Newberg is required to have an adopted public facility plan (Wastewater Master Plan). The City of

Newberg currently has a 2018 Wastewater Master Plan which is proposed to be updated by the 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 to assure that urban development in the Urban Growth Boundary is guided and supported by types and levels of urban facilities and services appropriate for the needs and requirements of the urban area to be serviced, and that wastewater facilities are provided in a timely, orderly and efficient arrangement. The proposed 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021is consistent with the Purpose of OAR 660-011-0000.

OAR 660-011-0005

Definitions

(1) "Public Facilities Plan": A public facility plan is a support document or documents to a comprehensive plan. The facility plan describes the water, sewer and transportation facilities which are to support the land uses designated in the appropriate acknowledged comprehensive plans within an urban growth boundary containing a population greater than 2,500. Certain elements of the public facility plan also shall be adopted as part of the comprehensive plan, as specified in OAR 660-11-045.

Finding: The City of Newberg population forecast as of July 2017, as determined by Portland State University Population Research Center, was 23,480. The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 is being adopted as a support document and as part of the Newberg Comprehensive Plan. The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 supports the land use designations in the acknowledged Newberg Comprehensive Plan which covers the Newberg Urban Growth Boundary. The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 as part of the overall Public Facilities Plan meets the definition of OAR 660-011-0005(1).

(2) "Rough Cost Estimates": Rough cost estimates are approximate costs expressed in current-year (year closest to the period of public facility plan development) dollars. It is not intended that project cost estimates be as exact as is required for budgeting purposes.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", contains cost estimates as noted under OAR 660-011-0010 and meets the definition.

(3) "Short Term": The short term is the period from year one through year five of the facility plan.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", contains a short term horizon of Priority 1 projects covering the first 5 years consistent with the definition of OAR 660-011-0005(3).

(4) "Long Term": The long term is the period from year six through the remainder of the planning period.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", contains a long term horizon of six years to the end of the planning horizon of 20-years consistent

with the definition of OAR 660-011-0005(3).

(5) "Public Facility": A public facility includes water, sewer, and transportation facilities, but does not include buildings, structures or equipment incidental to the direct operation of those facilities.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", is a public facility per the definition of OAR 660-011-0005(5).

(6) "Public Facility Project": A public facility project is the construction or reconstruction of a water, sewer, or transportation facility within a public facility system that is funded or utilized by members of the general public.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", contains identified projects per the definition of OAR 660-011-0005(6).

(7) "Public Facility Systems": Public facility systems are those facilities of a particular type that combine to provide water, sewer or transportation services.

For purposes of this division, public facility systems are limited to the following:

(a)Water:

(A) Sources of water;

(B) Treatment system;

(C) Storage system;

(D) Pumping system;

(E) Primary distribution system.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 is not a water master plan and does not apply.

(b) Sanitary sewer:

(A) Treatment facilities system;

(B) Primary collection system.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", is a part of the Public Facility System and includes the required elements of OAR 660-011-0005(7)(b)

(c) Storm sewer

(A) Major drainageways (major trunk lines, streams, ditches, pump stations and retention basins);

(B) Outfall locations.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 is not a Storm Sewer Plan and does not apply.

(8) "Land Use Decisions": In accordance with ORS 197.712(2)(e), project timing and financing provisions of public facility plans shall not be considered land use decisions as specified under ORS 197.015(10).

Finding: The City of Newberg has a rolling Five Year Capital Improvement Program that addresses project timing and financing and is not considered a land use decision per OAR 660-011-0005(8). The Five Year Capital Improvement Program for wastewater is included as Exhibit "B", Attachment 2.

(9) "Urban Growth Management Agreement": In accordance with OAR 660-003-0010(2)(c), and urban growth management agreement is a written statement, agreement or set of agreements setting forth the means by which a plan for management of the unincorporated area within the urban growth boundary will be completed and by which the urban growth boundary may be modified (unless the same information is incorporated in other acknowledged documents).

Finding: The City of Newberg has a Newberg Urban Area Growth Management Agreement with Yamhill County that was initially adopted in 1979 (as amended) that is an agreement on the management of the unincorporated area within the Newberg Urban Growth Boundary and contains requirements on how the Urban Growth Boundary may be modified consistent with the definition in OAR 660-011-0005(9). This Agreement is included as Exhibit "B", Attachment 1.

OAR 660-011-0010

The Public Facility Plan

(1) The public facility plan shall contain the following items:

(a) An inventory and general assessment of the condition of all the significant public facility systems which support the land uses designated in the acknowledged comprehensive plan;

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", includes an assessment of the condition of the overall wastewater system that supports the designated uses in the acknowledged Newberg Comprehensive Plan and meets the requirement.

(b) A list of the significant public facility projects which are to support the land uses designated in the acknowledged comprehensive plan. Public facility project descriptions or specifications of these projects as necessary;

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", Section 12, Table 12-2, page 12-3 and Appendix K, Table 5-1, page 5-2 identifies the priority projects with descriptions to support the estimated population and land uses identified in the acknowledged Newberg Comprehensive Plan and meets the requirement.

(c) Rough cost estimates of each public facility project;

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", Section 12, Table 12-2, page 12-3 and Appendix K, Table 5-1, page 5-2 provides costs estimates for projects and meets the requirement.

(d) A map or written description of each public facility project's general location or service area;

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", contains descriptions and maps of the public facility projects and meets the requirement.

(e) Policy statement(s) or urban growth management agreement identifying the provider of each public facility system. If there is more than one provider with the authority to provide the system within the area covered by the public facility plan, then the provider of each project shall be designated;

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", identifies that the City of Newberg is the wastewater service provider within the city limits and as annexations occur to lands within the Urban Growth Boundary. This is consistent with the Newberg Urban Area Growth Management Agreement included as Exhibit "B", Attachment 1 and meets the requirement.

(f) An estimate of when each facility project will be needed; and

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", Section 12, Table 12-2, page 12-3 and Appendix K, Table 5-1, page 5-2 includes an estimate of the time horizons of when wastewater system capital improvements are estimated to occur. This is broken out in the horizons of Priority 1 projects (1-5 years) and long term projects (Priority 2, 3 & 4; 6-20 years) which meets the requirement.

(g) A discussion of the provider's existing funding mechanisms and the ability of these and possible new mechanisms to fund the development of each public facility project or system.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", Section 12, Table 12-2, page 12-3 and Appendix K, Table 5-1, page 5-2 identifies the proposed capital improvement projects, costs and funding mechanisms and meets the requirement.

(2) Those public facilities to be addressed in the plan shall include, but need not be limited to those specified in OAR 660-011-0005(5). Facilities included in the public facility plan other than those included in OAR 660-011-0005(5) will not be reviewed for compliance with this rule.

Finding: OAR 660-011-0005(5)(c) identifies wastewater and its subsets of treatment facilities system and primary collection system. The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 addresses these components as noted in Exhibit "A" and meets the requirement.

(3) It is not the purpose of this division to cause duplication of or to supplant existing applicable facility plans and programs. Where all or part of an acknowledged comprehensive plan, facility master plan either of the local jurisdiction or appropriate special district, capital improvement program, regional functional plan, similar plan or any combination of such plans meets all or some of the requirements of this division, those plans, or programs may be incorporated by reference into the public facility plan required by this division. Only those referenced portions of such documents shall be considered to be a part of the public facility plan and shall be subject to the administrative procedures of this division and ORS Chapter 197.

Finding: The City of Newberg is proposing to update the existing wastewater system master plan and adopt the 2017 Water Master Plan – Addendum Riverfront Master Plan 2021. Other than the proposed Wastewwater Capital Improvement Plan included as Exhibit "A" no other special district or regional functional plan is being referenced or is applicable.

OAR 660-011-0015

Responsibility for Public Facility Plan Preparation

(1) Responsibility for the preparation, adoption and amendment of the public facility plan shall be specified within the urban growth management agreement. If the urban growth management agreement does not make provision for this responsibility, the agreement shall be amended to do so prior to the preparation of the public facility plan. In the case where an unincorporated area exists within the Portland Metropolitan Urban Growth Boundary which is not contained within the boundary of an approved urban planning area agreement with the County, the County shall be the responsible agency for preparation of the facility plan for that unincorporated area. The urban growth management agreement shall be submitted with the public facility plan as specified in OAR 660-011-0040.

Finding: The Newberg Urban Area Growth Management Agreement, Exhibit "B", Attachment 1, Section V. Urban Services identifies the City of Newberg as the ultimate provider of urban services within the Urban Growth Boundary and specifically notes that service expansion plans are the responsibility of the City of Newberg, which meets the requirement of OAR 660-011-0015.

(2) The jurisdiction responsible for the preparation of the public facility plan shall provide for the coordination of such preparation with the city, county, special districts and, as necessary, state and federal agencies and private providers of public facilities. The Metropolitan Service District is responsible for public facility plans coordination within the District consistent with ORS 197.190 and 268.390.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", has been coordinated with Yamhill County. No other service providers are responsible for wastewater service provisions within the Newberg Urban Growth Boundary, which meets the

requirement of OAR 660-011-0015(2). As part of the Post Acknowledgement Plan Amendment process through the Oregon Department of Land Conservation and Development and other State agencies that have an interest in Newberg's Wastewater Master Plan will be notified to be in compliance with OAR Chapter 333, Division 61.

(3) Special districts, including port districts, shall assist in the development of the public facility plan for those facilities they provide. Special districts may object to that portion of the facilities plan adopted as part of the comprehensive plan during review by the Commission only if they have completed a special district agreement as specified under ORS 197.185 and 197.254(3) and (4) and participated in the development of such portion of the public facility plan.

Finding: Chehalem Park and Recreation District provides park and trail system development within the Riverfront Master Plan area. The Chehalem Park and Recreation District participated in the preparation of the Riverfront Master Plan and preparation of the 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021. There is no special district agreement between the City and Chehalem Park and Recreation District.

(4) Those state agencies providing funding for or making expenditures on public facility systems shall participate in the development of the public facility plan in accordance with their state agency coordination agreement under ORS 197.180 and 197.712(2)(f).

Finding: No State agency funding sources have been identified at this time for capital expenditures to implement the 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021. Future opportunities may be identified.

OAR 660-011-0020

Public Facility Inventory and Determination of Future Facility Projects

(1) The public facility plan shall include an inventory of significant public facility systems. Where the acknowledged comprehensive plan, background document or one or more of the plans or programs listed in OAR 660-011-0010(3) contains such an inventory, that inventory may be incorporated by reference. The inventory shall include:

(a) Mapped location of the facility or service area;

(b) Facility capacity or size; and

(c) General assessment of condition of the facility (e.g., very good, good, fair, poor, very poor).

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", contains an inventory of all significant wastewater facility systems and includes a mapped location, facility capacity and size, and an assessment of the condition of the wastewater system in compliance with OAR 660-011-0020(1)(a-c) and meets the requirement.

(2) The public facility plan shall identify significant public facility projects which are to support the

land uses designated in the acknowledged comprehensive plan. The public facility plan shall list the title of the project and describe each public facility project in terms of the type of facility, service area, and facility capacity.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", identifies wastewater system facility projects that support the projected population and land uses designated in the acknowledged Newberg Comprehensive Plan, and lists by project title and description each project within the plan in compliance with OAR 660-011-0020(2) and meets the requirement.

(3) Project descriptions within the facility plan may require modifications based on subsequent environmental impact studies, design studies, facility master plans, capital improvement programs, or site availability. The public facility plan should anticipate these changes as specified in OAR 660-011-0045.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", identifies capital improvement projects over the next 20 years. As these projects are further developed through the City's 5-Year Wastewater Capital Improvement Program (Exhibit "B", Attachment 2) and as project designs start, the environmental impacts, facility master plans and capital improvement program adjustments may be necessary and will be addressed at that time and any necessary project description modifications in the 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 will be addressed, which meets the requirement.

OAR 660-011-0025

Timing of Required Public Facilities

(1) The public facilities plan shall include a general estimate of the timing for the planned public facility projects. This timing component of the public facilities plan can be met in several ways depending on whether the project is anticipated in the short term or long term. The timing of projects may be related directly to population growth, e.g., the expansion or new construction of water treatment facilities. Other facility projects can be related to a measure of the facility's service level being met or exceeded, e.g., a major arterial or intersection reaching a maximum vehicle-per-day standard. Development of other projects may be more long term and tied neither to specific population levels nor measures of service levels, e.g., sewer projects to correct infiltration and inflow problems. These projects can take place over a long period of time and may be tied to the availability of long-term funding. The timing of projects may also be tied to specific years.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", includes a general estimate of the timing of the planned public improvements based on population and urban development activities within the Newberg Urban Growth Boundary. The timing is broken down into time horizons of Priority 1 projects (1-5 years) and long term projects Priority 2, 3 & 4 in the 6-20 year horizon which meets the requirement of OAR 660-011-0025(1).

(2) Given the different methods used to estimate the timing of public facilities, the public facility plan shall identify projects as occurring in either the short term or long term, based on those factors

which are related to project development. For those projects designated for development in the short term, the public facility plan shall identify an approximate year for development. For those projects designated for development over the long term, the public facility plan shall provide a general estimate as to when the need for project development would exist, e.g., population level, service level standards, etc. Timing provisions for public facility projects shall be consistent with the acknowledged comprehensive plan's projected growth estimates. The public facility plan shall consider the relationships between facilities in providing for development.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", identifies short-term and longer term projects identified as horizons of Priority 1 projects in the 1-5 years with the balance identified in the 6-20 year horizon. The Plan does identify the estimated year within the 1-5 year horizon, but also notes the individual schedule for each project will be refined during pre-design phase for each proposed improvement. The City is utilizing its 5-Year Capital Improvement Program to identify the timing of the short term projects. A copy of the most recent 5-Year Capital Improvement Program is included as Exhibit "B", Attachment 2. Long term projects are correlated to population growth estimates provided by Portland State University, 2017, which must be used for planning purposes. The requirement to comply with OAR 660-011-0025(2) has been met.

(3) Anticipated timing provisions for public facilities are not considered land use decisions as specified in ORS 197.712(2)(e), and, therefore, cannot be the basis of appeal under ORS 197.610(1) and (2) or 197.835(4).

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", identifies Priority 1 – 4 projects with Priority 1 in the first five year horizon.

OAR 660-011-0030

Location of Public Facility Projects

(1) The public facility plan shall identify the general location of the public facility project in specificity appropriate for the facility. Locations of projects anticipated to be carried out in the short term can be specified more precisely than the locations of projects anticipated for development in the long term.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", Section 12 and Appendix K identifies the general location of short term and long term projects in compliance with OAR 660-011-0030(1) and meets the requirement.

(2) Anticipated locations for public facilities may require modifications based on subsequent environmental impact studies, design studies, facility master plans, capital improvement programs, or land availability. The public facility plan should anticipate those changes as specified in OAR 660-011-0045.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", identifies capital improvement projects over the next 20 years. As these projects are further

developed through the City's 5-Year Capital Improvement Plan and project designs start then environmental impacts, facility master plans and capital improvement program adjustments may be necessary and will be addressed at that time and any necessary project description modifications in the 2018 Wastewater Master Plan will be addressed, which meets the requirement.

OAR 660-011-0035

Determination of Rough Cost Estimates for Public Facility Projects and Local Review of Funding Mechanisms for Public Facility Systems

(1) The public facility plan shall include rough cost estimates for those sewer, water, and transportation public facility projects identified in the facility plan. The intent of these rough cost estimates is to:

(a) Provide an estimate of the fiscal requirements to support the land use designations in the acknowledged comprehensive plan; and

(b) For use by the facility provider in reviewing the provider's existing funding mechanisms (e.g., general funds, general obligation and revenue bonds, local improvement district, system development charges, etc.) and possible alternative funding mechanisms. In addition to including rough cost estimates for each project, the facility plan shall include a discussion of the provider's existing funding mechanisms and the ability of these and possible new mechanisms to fund the development of each public facility project or system. These funding mechanisms may also be described in terms of general guidelines or local policies.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", contains cost estimates for the wastewater system. The Newberg City Council accepted the 2020-2025 Wastewater Capital Improvement Program and the funding sources for the wastewater improvements. This overall process meets the requirement of OAR 660-011-0035(1)(a). The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", identifies the funding methodology for wastewater system improvements in compliance with OAR 660-011-0035(1)(b). The City is also evaluating an urban renewal program for possible wastewater funding. An Urban Renewal Feasibility Study was accepted on July 20, 2020 by Resolution 2020-3685 and an urban renewal agency was established on August 17, 2020 by Ordinance No. 2020-2865. The urban renewal plan and report is now under development. This overall process meets the requirement of OAR 660-011-0035(1)(a). The 2017 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", identifies the funding methodology for wastewater system improvements in compliance with OAR 660-011-0035(1)(b).

(2) Anticipated financing provisions are not considered land use decisions as specified in ORS 197.712(2)(e) and, therefore, cannot be the basis of appeal under ORS 197.610(1) and (2) or 197.835(4).

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", has financing provisions included in Section 13 for System Development Charges and City funded responsibilities to implement the Wastewater Master Plan and meets the requirement. System

Development Charge adjustments for the Riverfront area are pending per the urban renewal plan and report development and will addressed pending the outcome of formation the urban renewal program.

OAR 660-011-0040

Date of Submittal of Public Facility Plans

The public facility plan shall be completed, adopted, and submitted by the time of the responsible jurisdiction's periodic review. The public facility plan shall be reviewed under OAR Chapter 660, Division 25, "Periodic Review" with the jurisdiction's comprehensive plan and land use regulations. Portions of public facility plans adopted as part of comprehensive plans prior to the responsible jurisdiction's periodic review will be reviewed pursuant to OAR Chapter 660, Division 18, "Post Acknowledgment Procedures".

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 will be reviewed under OAR Chapter 660, Division 18, "Post Acknowledgment Procedures" as the City of Newberg is not currently in a Periodic Review process under OAR Chapter 660, Division 25 and meets the requirement.

OAR 660-011-0045

Adoption and Amendment Procedures for Public Facility Plans

(1) The governing body of the city or county responsible for development of the public facility plan shall adopt the plan as a supporting document to the jurisdiction's comprehensive plan and shall also adopt as part of the comprehensive plan:

(a) The list of public facility project titles, excluding (if the jurisdiction so chooses) the descriptions or specifications of those projects;

(b) A map or written description of the public facility projects' locations or service areas as specified in sections (2) and (3) of this rule; and

(c) The policy(ies) or urban growth management agreement designating the provider of each public facility system. If there is more than one provider with the authority to provide the system within the area covered by the public facility plan, then the provider of each project shall be designated.

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", is being adopted as a supporting document to the acknowledged Newberg Comprehensive Plan and is being adopted as part of the Newberg Comprehensive Plan as noted in Exhibit "C" and complies with OAR 660-011-0045(1). The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021 includes a listing of projects as identified in Exhibit "A" and meets the requirement of OAR 660-011-0045(1)(a). A map of the location of wastewater system improvements is included in Exhibit "A" and meets the requirement of OAR 660-011-0045(1)(b). The Newberg Urban Area Growth Management Agreement (Exhibit "B", Attachment 1) identifies that the City of

Newberg is the service provider of the wastewater system within the Urban Growth Boundary and the Newberg city limits and meets the requirement of OAR 660-011-0045(1)(c).

(2) Certain public facility project descriptions, location or service area designations will necessarily change as a result of subsequent design studies, capital improvement programs, environmental impact studies, and changes in potential sources of funding. It is not the intent of this division to:

(a) Either prohibit projects not included in the public facility plans for which unanticipated funding has been obtained;

(b) Preclude project specification and location decisions made according to the National Environmental Policy Act; or

(c) Subject administrative and technical changes to the facility plan to ORS 197.610(1) and (2) or 197.835(4).

Finding: The 2018 Wastewater Master Plan – Addendum Riverfront Master Plan 2021, Exhibit "A", has a list of capital projects to be implemented over the 20 year period. As new funding options may be identified in the future or environmental reviews requiring modifications to a proposed project, the plan may have to be revisited on an as needed basis in conformance with OAR 660-011-0045(2)(a-c).

(3) The public facility plan may allow for the following modifications to projects without amendment to the public facility plan:

(a) Administrative changes are those modifications to a public facility project which are minor in nature and do not significantly impact the project's general description, location, sizing, capacity, or other general characteristic of the project;

(b) Technical and environmental changes are those modifications to a public facility project which are made pursuant to "final engineering" on a project or those that result from the findings of an Environmental Assessment or Environmental Impact Statement conducted under regulations implementing the procedural provisions of the National Environmental Policy Act of 1969 (40 CFR Parts 1500-1508) or any federal or State of Oregon agency project development regulations consistent with that Act and its regulations.

(c) Public facility project changes made pursuant to subsection (3)(b) of this rule are subject to the administrative procedures and review and appeal provisions of the regulations controlling the study (40 CFR Parts 1500-1508 or similar regulations) and are not subject to the administrative procedures or review or appeal provisions of ORS Chapter 197, or OAR Chapter 660 Division 18.

Finding: No administrative or technical changes are anticipated at this time for the 2018 Wastewater Master Plan. If these situations arise the City of Newberg will comply with the provisions of OAR 660-011-0045(3)(a-b).

(4) Land use amendments are those modifications or amendments to the list, location or provider of,

public facility projects, which significantly impact a public facility project identified in the comprehensive plan and which do not qualify under subsection (3)(a) or (b) of this rule. Amendments made pursuant to this subsection are subject to the administrative procedures and review and appeal provisions accorded "land use decisions" in ORS Chapter 197 and those set forth in OAR Chapter 660 Division 18.

Finding: No land use amendments are anticipated at this time that would trigger OAR 660-011-0045(4). If such amendments occur in the future the City of Newberg will comply with OAR 660-011-0045(4).

D. Newberg Municipal Code

Chapter 15.100 LAND USE PROCESSES AND PROCEDURES

15.100.060 Type IV procedure – Legislative.

A. Type IV Actions Are Legislative. The planning commission shall hold a public hearing and make a recommendation to the city council. The city council shall hold another public hearing and make a final decision.

B. Legislative actions include, but are not limited to:

1. Amendments to the Newberg comprehensive plan text;
2. Amendments to the Newberg development code;
3. The creation of any land use regulation.

C. The public hearing before the planning commission shall be held in accordance with the requirements of this code. Notice of a hearing on a legislative decision need not include a mailing to property owners or posting of property (refer to NMC 15.100.200 et seq.).

D. Interested persons may present evidence and testimony relevant to the proposal. If criteria are involved, the planning commission shall make findings for each of the applicable criteria.

E. The city council shall conduct a new hearing pursuant to this code. At the public hearing, the staff shall present the report of the planning commission and may provide other pertinent information. Interested persons shall be given the opportunity to present new testimony and information relevant to the proposal that was not heard before the planning commission.

F. To the extent that a finding of fact is required, the city council shall make a finding for each of the applicable criteria and in doing so may sustain or reverse a finding of the planning commission. In granting an approval, the city council may delete, add, or modify any of the provisions in the proposal or attach certain conditions beyond those warranted for the compliance with standards if the city council determines that the conditions are necessary to fulfill the approval criteria.

G. The city council's decision shall become final upon the effective date of the ordinance or resolution.

Finding: Public hearings with the Planning Commission and the City Council will be required to finalize a decision regarding the application for the amendment to the Comprehensive Plan

This requirement can be met.

Conclusion: The proposed Comprehensive amendment meets the applicable requirements of the Statewide Planning Goals, and the Newberg Comprehensive Plan, and should be approved.

Newberg Urban Area
Growth Management Agreement

Adopted by Newberg City Council on July 2, 1979 and Yamhill County Board of Commissioners on June 20, 1979; As Amended by Newberg City Council on November 2, 1998 and Yamhill County Board of Commissioners on December 3, 1998; As Further Amended by Newberg City Council on June 5, 2000 and Yamhill County Board of Commissioners on December 14, 2000.

Preface

Seen from above, the modern city edges imperceptibly out of its setting. There are no clear boundaries. Just now the white trace of the super highway passed through cultivated fields; now it is an asphalt image of streets and buildings. As one drives in from the airport or looks out from the train window, clumps of suburban houses, industrial complexes, and occasional green space flash by; it is hard to tell where city begins or county ends." (Oscar Handlin, "The Modern City as a Field of Historical Study" in The Historian and the City (Cambridge, Mass. 1963, p.1).

I. Introduction

The City of Newberg and Yamhill County recognize the need for coordination and cooperation in the management of growth in and around the Newberg Urban Area. This agreement is formulated in accordance with this principle.

This agreement establishes a process for maintaining ongoing planning efforts, designed to keep pace with growth and change. It is essential that intergovernmental coordination be maintained to assure the citizens of the City of Newberg and Yamhill County that growth occurs in an orderly and efficient manner.

To that end, this agreement sets forth the means by which a plan for management of the unincorporated area within the Urban Growth Boundary will be implemented and by which the Urban Growth Boundary may be modified.

II. Definitions

Area of Influence - An area of land designated by the City of Newberg and Yamhill County that extends one mile outside Newberg's Urban Growth Boundary wherein the County will give the City an opportunity to participate in land use actions to be taken by the County.

Urban Growth Boundary - A line jointly adopted by the City of Newberg and Yamhill County that encircles the City and separates rural and urbanizable land. Newberg's Urban Growth Boundary is shown on the attached map.

III. General

1. Plan Map Conflicts. The 1979 Comprehensive plan Land Use Map adopted by the City of Newberg on July 2, 1979 shall be the plan map for the area within the Urban Growth Boundary, and shall replace conflicting portions of the Yamhill County Comprehensive Plan Map (1974) pertinent to this area. Where said maps conflict, Yamhill County shall initiate the process necessary for consideration of a map amendment.

2. Urban Growth Boundary. In accordance with the comprehensive Plan of the City of Newberg, the jointly adopted Urban Growth Boundary shall define the geographical limits of urbanization. The City of Newberg shall prepare for the orderly extension of public facilities and services within the boundary. -Lands outside the boundary shall be maintained in accordance with the Yamhill County Comprehensive

3. Urbanization. The City of Newberg and Yamhill County shall encourage urbanization within the boundary to occur in an orderly and efficient manner, resulting in a compact, balanced urban center meeting long-term economic and social needs of the residents of the area regardless of political boundaries.

4. Implementation and Coordination. The very nature of planning requires continual refinement of various elements of the Comprehensive Plan. This includes the preparation of implementing ordinances, refinement plans and functional plans. As the Newberg Comprehensive Plan is implemented, the City and County will work together in a coordinated effort to achieve the goals of the Yamhill County and Newberg Comprehensive Plans.

5. Concurrence and Recommendation. The legitimate interests of the City and County overlap within the City's Urban Growth Boundary and Area of Influence. This agreement attempts to resolve these overlapping interests by providing for concurrence of City and County governing bodies for certain decisions and by providing for recommendations of one governing body to the other for other decisions.

    a. Concurrence. Where concurrence is required, the City and County shall agree upon a decision. If agreement cannot be reached, procedures outlined in ORS 197.300 may be invoked.

    b. Recommendation. Where a recommendation is required, the City and County need not agree upon a decision. The procedures are these: The right to object to any item referred to a jurisdiction for a recommendation shall be deemed to have been waived unless the referring jurisdiction is notified otherwise within thirty days; the time limit for consideration of items referred for recommendation shall begin to run from the time the item is received by the jurisdiction whose recommendation is being solicited; each jurisdiction shall have standing to appeal the decision of the other governing body.

IV. Term of this Agreement; Amendment

1. The term of this agreement runs from July 2, 1979, to July 2, 1980, and may be extended thereafter by increments of one year. During the term of the agreement or extension, the agreement may be changed by mutual consent of the parties hereto. This agreement is automatically renewed at the end of such term or extension unless either party hereto requests revision of the agreement by so notifying the other party at least ninety days before the end of the current term or extension.

V. Urban Services

1. The City of Newberg is recognized as the ultimate provider of urban services within the Urban Growth Boundary. To this end:

   a. Special Districts. Before Yamhill County shall create any special district for the provision of utilities, transportation, or other public facilities or services, the matter shall be referred to the City of Newberg for a recommendation. The County shall not act contrary to such recommendation.

   b. Service Capacity. Development within the Urban Growth Boundary shall not exceed the capacity of existing services.

   c. Annexation. Annexation shall occur in accordance with the Newberg Comprehensive Plan. Before final action by the City Council on an annexation proposal, the proposal shall be forwarded to the Board of County Commissioners for its recommendation. In order to provide the board with advance notice of reasoning for a proposed annexation, the findings adopted by the City Planning Commission shall be referred to the board following the Commission action.

   d. Service Expansion Plans. As the ultimate provider of urban services, the City shall prepare and from time to time update utility expansion plans. These plans shall provide a basis for the extension of services within the Urban Growth Boundary and as such shall be referred to Yamhill County for information and comment.

   e. Roads. The County and City shall cooperatively develop an implementation policy regarding streets and roads within the Urban Growth Boundary which is consistent with the City Comprehensive Plan. Such policy shall include, but not be limited to, the following:

      (1) The circumstances under which the City will assume ownership of and maintenance responsibility for County roads within the corporate limits.

      (2) The conditions under which new public streets and roads will be developed within the urban Growth Boundary.

(3) The conditions under which existing roads designated as future arterial in the City Comprehensive Plan will be improved.

(4) The conditions under which County and other roads should meet City standards within the Urban Growth Boundary. Roads should be compatible with City street alignments and extensions. Upon annexation of property, roads adjacent to (and which serve) such property should also be annexed.

f. The County and the City through its departments shall coordinate their planning efforts and actions that affect land use with those of special districts.

VI. Establishment of the Newberg Urban Area Management Commission

The City of Newberg and Yamhill County do hereby establish the Newberg Urban Area Management Commission (NUAMC) as a hearings officer in accordance with ORS 215.406. The NUAMC shall be composed of the following members:

- Commissioner of the Yamhill County Board of Commissioners designated by the board.

- Mayor or council person of the City of Newberg designated by the Council.

- Member of Newberg Planning Commission designated by the City Council.

- Member of the Yamhill County Planning Commission Designated by the Board of County Commissioners.

- Member of the Newberg-Dundee P.A.C. designated by the Board of County Commissioners.

- Member of the Newberg Citizen Involvement Advisory Committee designated by the City Council.

- Member-at-large chosen by the above NUAMC members and ratified by the City Council and County Board.

Duties and Responsibilities. The NUAMC shall function in accordance with by-laws to be adopted by the Newberg City Council and the Yamhill County Board of Commissioners.

It shall be the responsibility of the Newberg Urban Area Management Commission to hold hearings, make findings, and present its decision to City and County governing bodies as outlined in this agreement and the by-laws.

VII. Establishment of Land Use Review Procedures

1. Urban Growth Boundary Amendment

Amendment of the Urban Growth Boundary may be initiated by the Yamhill County Board of Commissioners, the Newberg City Council, or by an individual owner(s) of property who request(s) inclusion in or exclusion from the Urban Growth Boundary.

Amendment of the Urban Growth Boundary shall be treated as a map amendment to both the City and County Comprehensive Plan maps.

The joint fee for individual amendment shall be the sum of fees established from time to time by each governing body.

Each application shall include a map and sufficient information to make a decision based on the following factors:

a. Demonstrated need to accommodate long-range urban population growth requirements consistent with LCDC goals;

b. Need for housing, employment opportunities, and livability;

c. Orderly and economic provision for public facilities and services;

d. Maximum efficiency of land uses within and on the fringe of the existing urban area;

e. Environmental, energy, economic and social consequences;

f. Retention of agricultural land as defined, with Class I being the highest priority for retention and Class VI the lowest priority; and,

g. Compatibility of the proposed urban uses with nearby agricultural activities.

Applications shall be filed with the Newberg Planning Department which shall collect the joint fee and forward the Yamhill County fee along with notice to the Yamhill County Department of Planning and Development. Applications must be complete prior to consideration by the Newberg Urban Area Management Commission.

Applications shall be accumulated and referred quarterly to the Newberg Urban Area Management Commission for a Public Hearing for which at least ten days advance public notice shall be given by publication in a newspaper of general circulation in the County (or published in the territory so concerned--ORS 215.060).

Following the Public Hearing, the NUAMC shall make and forward its findings and decision directly to the governing body of each jurisdiction which shall then make a determination based

upon the facts and record presented at the NUAMC hearing and shall not be required to hold a public hearing thereon.

Nothing included in this process requires or prohibits the City or County from referring the application to its respective Planning Commissions for information.

If the governing bodies do not concur in their final decision within sixty days of referral of the matter to them by the NUAMC, a joint meeting shall be held to resolve differences. If agreement cannot be reached, procedures for resolutions of conflict provided within ORS 197.300 may be invoked.

2. Comprehensive Plan Amendment

   a. Inside U.G.B., but outside city limits. This amendment shall be filed with Yamhill County, and shall otherwise be treated as an amendment to the Urban Growth Boundary.

   b. Inside city limits. The application shall be processed by the City of Newberg and shall be referred to Yamhill County for a recommendation.

   c. Outside the Urban Growth Boundary, but within the "Area of Influence". This amendment shall be processed by Yamhill County and shall be referred to the City of Newberg for a recommendation.

3. Zone Changes

The City of Newberg and Yamhill County recognize that each jurisdiction has authority to zone within its legal boundaries. However, the Urban Growth Boundary recognizes the eventual assumption of authority by the City of Newberg. Therefore, the following procedures are established:

   a. Zone change outside city limits but within the Urban Growth Boundary. Prior to filing an application with Yamhill County, the applicant shall apply for and receive a recommendation from the City of Newberg concerning the requested land use action. Requests shall be processed following the procedures outlined in the Addendum to this agreement, Section 2, item 5 (b). No fee shall be charged for processing a recommendation from the City of Newberg. Applications submitted without this recommendation will be deemed incomplete. The application then shall be processed in accordance with Yamhill County ordinances, except that the application will be referred to the NUAMC for a hearing in lieu of the Yamhill County Planning Commission. Appeals of the NUAMC decision shall be heard by the Yamhill County Board of Commissioners.

   b. Inside city limits. The application shall be processed by the City of Newberg and shall be referred to Yamhill County for information and/or comment.

c. Outside the Urban Growth Boundary but within the "Area of Influence". The application shall be processed by Yamhill County and shall be referred to the City of Newberg for information and/or comment.

4. Other Items Affecting Land Use

a. Items having a substantial impact upon land use under the jurisdiction of Yamhill County within Newberg's Area of Influence shall be referred to the City of Newberg for information and comment. Items having a substantial impact upon land use under the jurisdiction of Yamhill County within Newberg's U.G.B. shall be reviewed by the City of Newberg. Prior to filing an application with Yamhill County, the applicant shall apply for and receive a recommendation from the City of Newberg concerning the requested land use action. Requests shall be processed following the procedures outlined in the Addendum to this agreement, Section 2, item 5 (b). No fee shall be charged for processing a recommendation from the City of Newberg. Applications submitted without this recommendation will be deemed incomplete. Items not having a substantial impact may be so referred. Items having a substantial impact upon land use shall include but are not limited to:

(1) Conditional Use Permits, (Excluding Temporary Hardship Dwellings)

(2) Planned Unit Developments

(3) Subdivisions and Partitions

(4) Public Improvement Projects

(5) Health Hazards

(6) Special Exceptions

(7) Capital Improvement Programs

(8) Major Transportation Improvements

b. Within the U.G.B., when Yamhill County ordinances require a Planning Commission public hearing on any of the above items, either as a recommendation or as a final action, the application shall be referred to NUAMC who shall hear the matter in lieu of the Yamhill County Planning Commission. Appeals of the NUAMC decision shall be heard by the Yamhill County Board of Commissioners.

c. Items having substantial impact upon land use under the jurisdiction of the City of Newberg shall be referred to Yamhill County for information and/or comment. Items not having a substantial impact may be so referred. Items having a substantial impact upon land use shall include but are not limited to:

(1) Conditional Use Permits

(2) Planned Unit Developments

(3) Subdivisions and Partitions

(4) Public Improvement Projects

(5) Extension of the Public Sewer, Water or Storm Drainage systems

(6) Capital Improvement Programs

(7) Major Transportation Improvements

5. Any of the above applications which may affect an agency identified in the City of Newberg or Yamhill County agency coordination list shall be referred to said agency for information and/or comment.

ADDENDUM TO NEWBERG URBAN AREA GROWTH MANAGEMENT AGREEMENT

This Addendum to Newberg Urban Area Growth Management Agreement pursuant to Newberg City Ordinance #1967 dated July 2, 1979 (hereinafter "Addendum") is made by agreement between Yamhill County ("County") and the City of Newberg ("City").

RECITALS

A. The City and the County have previously entered into an intergovernmental agreement known as the Newberg Urban Area Growth Management Agreement ("NUAGMA") pursuant to Newberg City Ordinance #1967 dated July 2, 1979 and Yamhill County Ordinance 214 dated June 20, 1979, setting forth their respective rights and responsibilities with respect to the Urban Growth Boundary (UGB) and Area of Influence.

B. The County and the City have previously adopted an Urban Reserve Area for the City of Newberg as required by OAR Chapter 660, Division 21, as shown on their comprehensive plan and zoning maps, plan policies and land use regulations, to guide the management of these areas in accordance with the requirements of OAR Chapter 660 Division 21. Newberg City Ordinance 95-2397, Yamhill County Ordinance 596 (copies attached).

C. The Urban Reserve Area is intended over time to be incorporated into an urban growth boundary. Because full urban services are not yet available in the area, urban level development is not permitted. Very limited rural development of property can occur in the area, but only when such usage is consistent with and does not impede the future urbanization of property.

D. The purpose of this Addendum is to clarify planning and zoning intents and add provisions to the existing intergovernmental agreement for the purpose of satisfying the requirements of OAR Chapter 660, Division 21 relating to Urban Reserve Areas.

AGREEMENT

NOW, THEREFORE, the City and County agree as follows:

Section 1 Definitions:

(1) "Urban Reserve Area" has the same meaning as set forth in OAR 660-021-0010 (1), and means lands outside of an urban growth boundary identified as highest priority for inclusion in the urban growth boundary when additional urbanizable land is needed in accordance with the requirements of Goal 14.

Section 2. Compliance with OAR Chapter 660, Division 21. In accordance with the applicable requirements of Chapter 660, Division 21, City and County agree as follows:

(1) As required by OAR 660-021-0040(3):

(a) The County shall prohibit zone amendments allowing more intensive uses, including higher residential density, than permitted at the date of this agreement.

(2) As required by OAR 660-021-0050(1), unless otherwise agreed to, designation of the local government responsible for building code administration and land use regulation in the URA shall be:

(a) Prior to inclusion within the UGB: County

(b) After inclusion within the UGB : County

(c) After annexation into the city: City

(3) Designation of service responsibility, as required by OAR 660-021-0050(2):

(a) The local government or special district responsible for services (including sewer, water, fire protection, parks, transportation, storm water) for areas within the URA are designated and shown on map(s) attached hereto and incorporated herein as Exhibit "1A."

(b) The areas projected for future urban service responsibility after inclusion in the urban growth boundary are shown on map(s) attached hereto and incorporated herein as Exhibit "1A."

(4) As required by OAR 660-021-0050(3), the terms and conditions under which service responsibility will be transferred or expanded, for areas where the provider of service is expected to change over time, is described in Exhibit "1B," attached hereto and incorporated herein.

(5) As required by OAR 660-021-0050(4), procedures for notification and review of land use actions to ensure involvement by all affected local governments and special districts:

(a) Within the Urban Reserve Area, Comprehensive Plan Amendments, zone changes, and other applications affecting land use, including conditional use, PUDs, subdivisions and partitions, public improvement projects, health hazards, capital improvement programs and major transportation improvements, shall be processed by Yamhill County. Prior to filing an application with Yamhill County, the applicant shall apply for and receive a recommendation from the City of Newberg concerning the requested land use decision. Applications submitted without this recommendation will be deemed incomplete.

(b) Upon request or application for a recommendation on a requested land use decision in the URA, the City shall use the following procedures in developing a recommendation (see Exhibit 1C for criteria to be used by the City in the recommendation process):

(1) Applicant shall file with the City a substantially complete Yamhill County application and include a future development plan as provided in this agreement.

(2) The City staff or City Council may refer the application to the City Planning Commission for a recommendation to the City Council.

(3) The recommendation to Yamhill County shall be from the City Council.

(4) Notice of any hearings shall be to the general public and any hearings shall be legislative in nature. Additional notice may be provided as the City deems necessary. This shall not be a quasi-judicial hearing since the City of Newberg is making a recommendation.

(5) The City of Newberg shall furnish to the applicant its recommendation to Yamhill County within 60 days of the date that the request for recommendation is filed with the City of Newberg. City staff may request additional information from the applicant concerning the application prior to making a recommendation. Unless otherwise agreed between City and applicant, failure to furnish the recommendation within 60 days will waive the requirement to have a recommendation accompany the application.

(6) The City reserves the right to make additional recommendations and comments concerning the application to Yamhill County during the Yamhill County process.

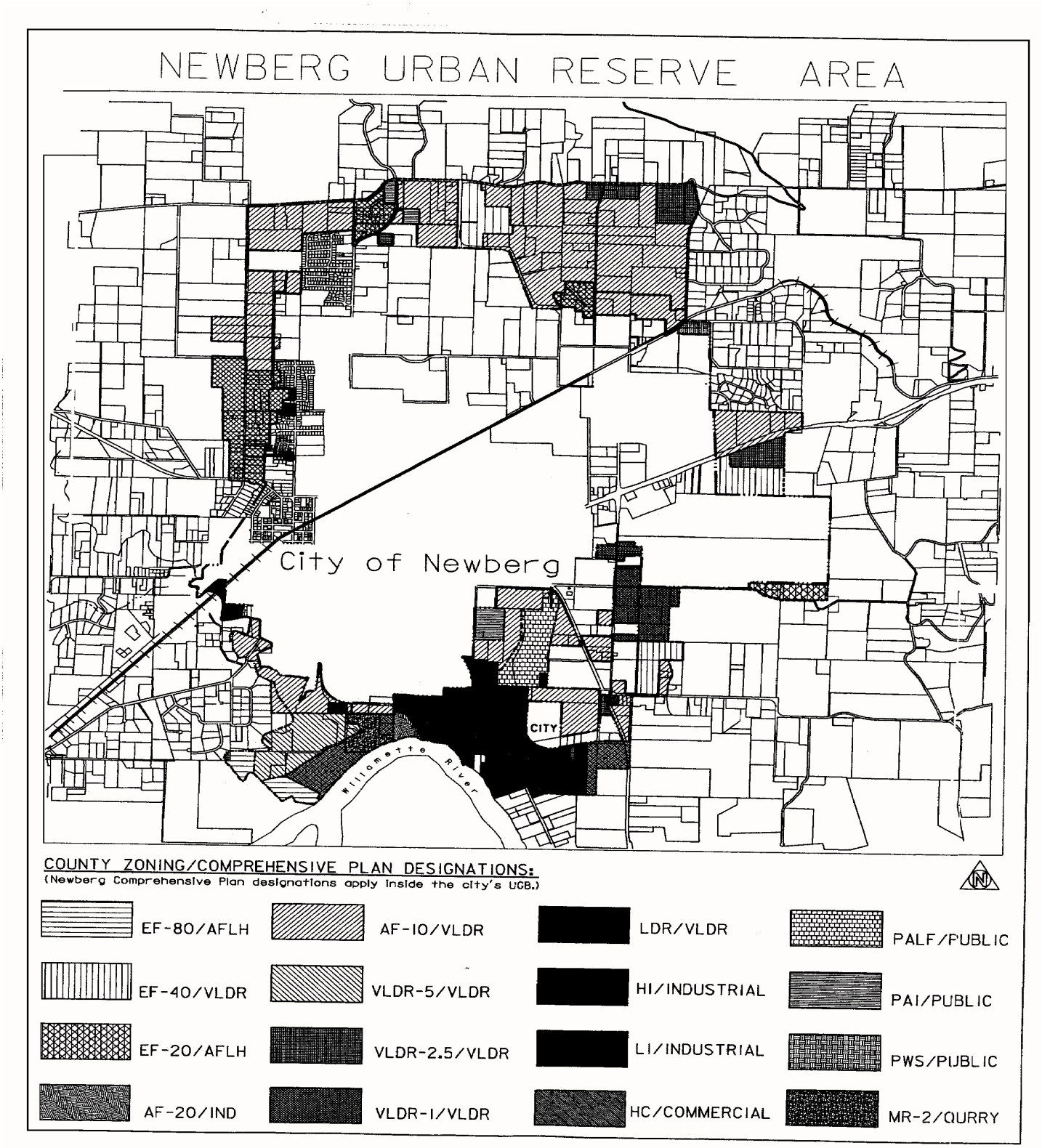
(7) Nothing in this agreement limits the rights of either party in participating in the land use process before either jurisdiction.

(8) Nothing in this agreement shall be construed as mandatory county approval criteria.

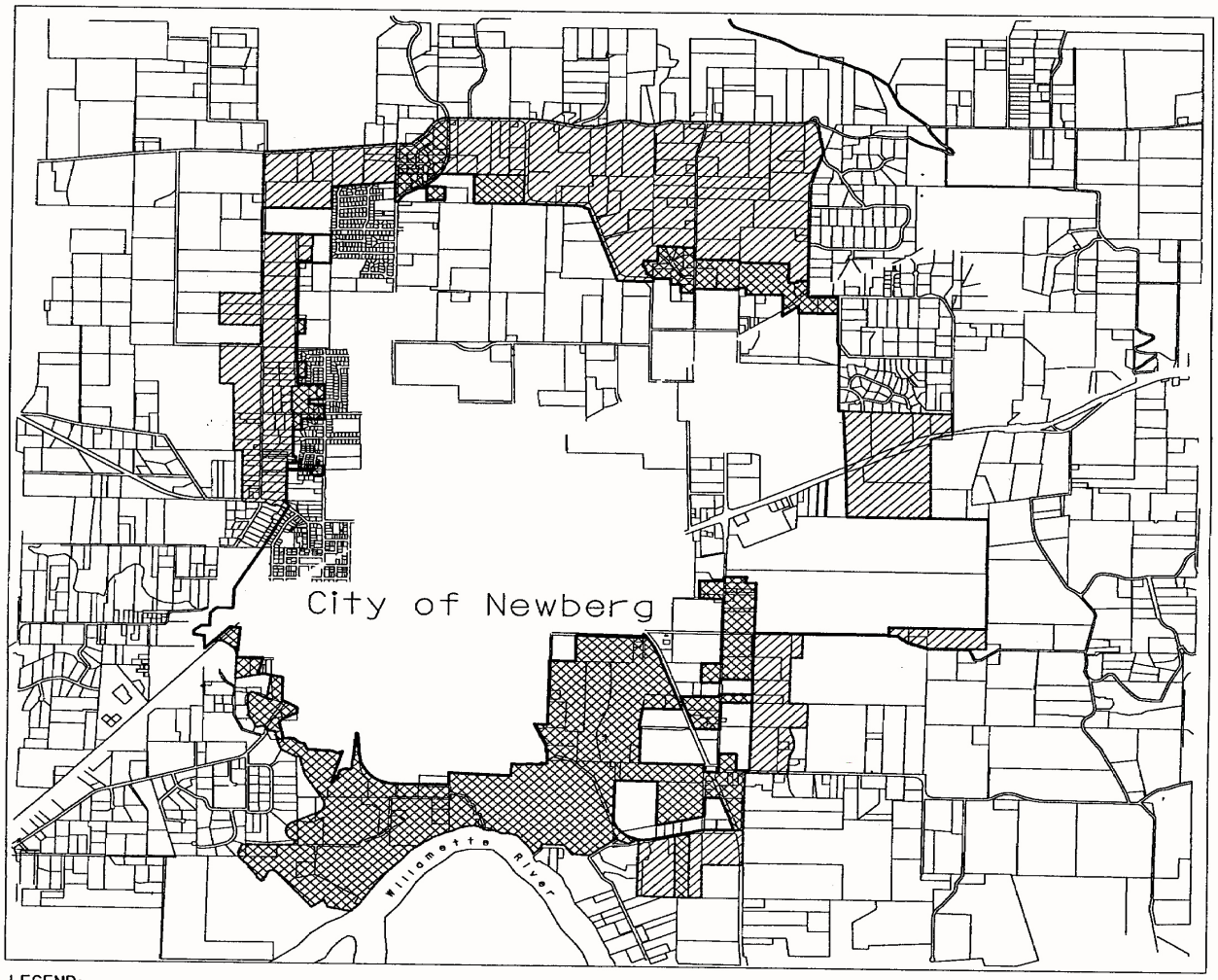
Section 3. In all other respects, the Newberg Urban Area Growth Management Agreement shall remain in full force and effect.

Section 4. Effective Date. This Addendum becomes effective on November 2, 1998.

EXHIBIT 1A
URBAN RESERVE AREA MAPS



NEWBERG URBAN RESERVE AREA



LEGEND:

Urban Reserve Area

Urban Growth Boundary

City Boundary Line

Urban Reserve Area

Urban Growth Boundary

Special Districts:
Yamhill County Extension Service
Yamhill County Soil and Water Conservation Service
School District 29J, Newberg
Yamhill Educational Service District
Newberg Fire Protection District
Chehalem Park and Recreation District
Portland Community College

EXHIBIT 1B
URBAN SERVICE TRANSITION POLICIES

Service Responsibility in General The following "Existing Service Provider" shall be responsible for providing public services within the Urban Reserve Areas. The "Future Urban Service Provider" is the provider projected to have responsibility after inclusion in the UGB or in the City depending on the terms and conditions identified below. The timing for changing the responsible service provider will be flexible, depending on citizen needs and location of properties.

Service	Existing Service Provider	Future Urban Service Provider
Sanitary Disposal	No Public Provider	City of Newberg
Water	Service Districts	City of Newberg
Fire Protection	Newberg Rural Fire District	City of Newberg
Parks & Recreation	Chehalem Park and Recreation District/Yamhill County	Chehalem Park and Recreation District/Yamhill County
Transportation	Yamhill County/ODOT	City of Newberg/ODOT
Storm Water	Yamhill County	City of Newberg

Terms and Conditions under which Service Responsibility will be transferred or expanded.

D. Special Districts. The City shall agree to the formation of any special district within the Urban Reserve Area prior to the approval of the formation of the district by Yamhill County. This provision shall not apply to County-wide service districts formed under ORS Chapter 451.

B. Annexation**.** Annexation of property from the URA may be permitted if contiguous to City limits and shall occur in accordance with the Newberg Comprehensive Plan. Before final action by the City Council on an annexation proposal, the proposal shall be forwarded to the Board of County Commissioners for a recommendation. In order to provide the Board with advance notice of a proposed annexation, the findings adopted by the City Planning Commission shall be referred to the Board following the Planning Commission action.

C. Service Expansion Plans. Service expansion plans shall be consistent with the Newberg Urban Area Growth Management Agreement. As the future provider of sanitary disposal, storm water and water services, the City shall prepare and from time to time update utility expansion plans. These plans shall provide a basis for the extension of services within the Urban Growth Boundary, and as such shall be referred to Yamhill County for information and comment.

D. Transition Policies Relating to Service Responsibility

1. Sanitary Sewer Service There will be no public provider of these services until City services are available, except in the case of a state mandate due to a health hazard. At the time of annexation, the City will require hook-up to City sanitary sewer services. Nothing in this provision shall limit the ability of individuals to provide services on their own private property within the Urban Reserve Area.

2. Potable Water Service The City of Newberg shall be the sole and only public provider of water in this area, except for existing water districts, unless new districts are expanded or created through mutual agreement by the City and the County. Nothing in this provision shall limit the ability of individuals to provide services on their own private property within the Urban Reserve Area.

3. Fire Protection The Newberg Rural Fire District provides fire protection services to property within the Urban Reserve Area and the Urban Growth Boundary. The City will provide fire protection services to property within the city limits.

4. Parks and Recreation Chehalem Park and Recreation District and Yamhill County provide park and recreation services within the Urban Reserve Area and the Urban Growth Boundary. Chehalem Park and Recreation District and Yamhill County will remain providers of these services within the city limits unless agreed otherwise.

5. Transportation and Street Improvements Yamhill County provides Transportation services on county roads within the Urban Reserve Area. Yamhill County policies for transfer of jurisdiction are outlined in the Yamhill County Transportation System Plan Section 5.1, Policy 1.5, and Section 5.2.2, Goals and Policies 4, 5, 6 (See attachment Exhibit 1. B.). In summary, the policy is to transfer jurisdiction and maintenance responsibilities to the city upon annexation and improvement to City standards.

   Roads in the Urban Reserve Area ultimately are to be developed to City standards. Development in the Urban Reserve Area shall provide adequate transportation facilities to serve the development as provided in Yamhill County ordinances.

   The Oregon Department of Transportation provides transportation services on state highways within the Urban Reserve area. The department retains jurisdiction and maintenance responsibilities on all state highways after incorporation into the UGB and annexation except in special cases where jurisdiction is transferred to the City or County by a specific agreement.

6. Storm Water Management Yamhill County provides public storm water management services to property where required within the Urban Reserve Area. The City will provide storm water management services to property within the city limits. Transition of public storm water management services will follow transition of road maintenance responsibilities.

ATTACHMENT TO EXHIBIT 1B

County Transportation Plan (Page 73): The Transportation System Plan (TSP) of Yamhill County provides in Section 5.1, Policy 1.5, Section 5.2.2, Goals and Policies 4, 5, and 6 as follows:

> ***Yamhill County TSP Policy*** *1.5. The lead agency for transportation project review shall be:*
>
> *a: Yamhill County for facilities outside the UGBs*
>
> *b. The affected city for facilities within the UGBs*
>
> *c. The State of Oregon. Yamhill County and affected cities on projects i n v o l v i n g state-owned facilities.*
>
> ***Yamhill County TSP Policy*** *4. It is the policy of Yamhill County to coordinate the County Transportation System Plan with the transportation plans of the ten incorporated cities within Yamhill County. The County will emphasize continuity in the classification of roads and appropriate design standards for roadways which link urban areas with rural areas outside Urban Growth Boundaries. At the time of UGB amendment Yamhill County and the City involved shall agree on classification and design standards of all County Roads within the proposed UGB area prior to finalization of the amendment.*
>
> ***Yamhill County TSP Policy 5*** *County policy will encourage the expeditious transfer of jurisdiction of roadways to incorporated cities in conjunction with annexation. It is the policy of Yamhill County that developers of property who propose annexation and who have frontage on a road that does not meet City road standards shall have the primary responsibility for upgrading the road to City standards. Roads shall be upgraded at the time of annexation, or the developer shall sign an agreement with the City to upgrade the road, at the time of development. Transfer of jurisdiction shall require the approval of both the County and the City, in accordance with provisions in Oregon Revised Statutes 373.270.*
>
> ***Yamhill County TSP Policy 6.*** *It is the policy of Yamhill County to require the transfer, or an agreement to transfer with specific time lines and milestones as part of the agreement, jurisdiction of County roadways within urban growth boundaries to their respective cities at the time of annexation.*

EXHIBIT 1C
CRITERIA AND SUBMITTALS FOR CITY RECOMMENDATION REGARDING DEVELOPMENT IN THE URA

A. Criteria: Generally, the following criteria will be used by the City of Newberg in developing City recommendations regarding land use development in the Urban Reserve Area. It is the City's intent to recommend that the County only allow development in the Urban Reserve Area that is limited in scope and that is consistent with the future urban development of the property.

1. Future Development Plan: The City Council shall recommend approval, recommend approval with conditions, or recommend against the future development plan in accordance with the following criteria:

(a) The current development shall not cause more than 10 percent of the property to be used for site improvements including buildings, parking areas, improved recreation areas, and storage areas, unless the City agrees the development intensity will not prohibit future urban development.

(b) The future development plan shall allow for the efficient future urban development of the remainder of the property. It shall allow for construction of future urban streets and utilities, and shall allow for required setbacks to current and future property lines.

(c) The plan is consistent with adopted plans and policies for the area, such as street or utility plans and policies in this agreement.

2. The City may recommend that the application be approved with conditions, which may include, but are not limited to: an agreement to annex, a deferred improvement agreement for future public facilities; construction of necessary street improvements, storm drains, or other public facilities; dedication of right-of-way, easements for utilities; special setbacks from planned right-of-ways.

B. Submittal Requirements

1. A future development plan shall be required for any development in the Urban Reserve Area requiring a Yamhill County Type B or Type C review, excluding any development that involves a change in use to existing buildings only. The future development plan shall be used solely to evaluate the current proposal's compatibility with potential future urban development. It does not bind or commit the applicants, property owners, review bodies, or governing bodies to approve or carry out the proposed future development.

2. The future development plan shall show how the property could be fully developed when incorporated into the city. The plan shall be drawn to scale and shall include the following:

(a) The location of potential future streets within and surrounding the site.

(b) The location of potential future sewer, water, and storm drainage facilities within and surrounding the site.

(c) The location and approximate dimensions of potential future lot lines.

(d) Setback lines for proposed structures from current and proposed property lines.

CAPITAL IMPROVEMENT PROGRAM

March 15, 2021

FISCAL YEARS 2021-2026

The Capital Improvement Program (CIP) is the implementation plan for identified software, City facilities, transportation, storm drainage, water, and wastewater projects. The CIP may change based on the community's needs, available budget, regulatory impacts, etc.

CAPITAL IMPROVEMENT PROGRAM

Table of Contents

INTRODUCTION

The City Council Goals of Customer Service; Diversity, Equity, and Inclusion; Affordable Workforce Housing; Urban Renewal; and Sustainability flow directly and work in conjunction with the Community Vision that was adopted in 2019.

> **A NEWberg Community Vision:** IN 2040, NEWBERG IS A GEM OF THE WILLAMETTE VALLEY – MIRRORING THE SURROUNDING BUCOLIC LANDSCAPES, ITS CULTIVATED RELATIONSHIPS, FLOURISHING CULTURE, THOUGHTFULLY ENHANCED SENSE OF PLACE, STRONG LOCAL ECONOMY, AND COLLABORATIVE LEADERSHIP NOURISH OUR THRIVING COMMUNITY.

- COMMUNITY ENGAGEMENT In Newberg, engagement is a part of who we are. We give our time, talents and treasures to strengthen the community. We blend service into our jobs and institutions, help each other, and pride ourselves in donating and shopping locally. Our authentic relationships serve as a strong foundation for a supportive community
- COMMUNITY LEADERSHIP Our leaders come from diverse groups, backgrounds, and sectors throughout the community and surrounding region. They foster creative, two-way communications and collaborate to ensure Newberg's long-term success.
- CULTURAL ASSETS Newberg residents take pride in all that our community offers. As a cultural hub, there is a range of accessible artistic events and recreational activities as well as many local shops and restaurants you can wander into with friends.
- ECONOMIC DEVELOPMENT Newberg's economy thrives by leveraging our geographic amenities and the capabilities of local businesses and organizations. We create family wage jobs through a strong business and workforce development program. We retain and attract businesses to Newberg and have a vibrant downtown.
- LIVABILITY & DEVELOPMENT Newberg is a well-planned community where the built environment blends seamlessly into surrounding, natural landscapes. Our small-town character, accessibility and affordability create a sense of belonging where individuals, families, and people of all ages love to live, work, and play.

The capital infrastructure needs within the five year Capital Improvement Program (CIP) are identified through a variety of sources, including master plans, City Council goals, the Community Vision, operational needs, regulatory obligations and funding availability. The City has completed updates of the utility system master plans over the last several years to address the reduced growth and demand shown in previous master plans. Technical updates to these plans are currently underway to address the Riverfront Master Plan. These plans show a variety of projects in all locations.

The City Council committed to providing well maintained streets to our citizens when the Transportation Utility Fee was adopted and implemented in 2017. The goal was to maintain the current condition of the roadway system which is one of the most valuable assets the City owns. In the intervening years the City has improved a significant number of road segments and has maintained the overall condition of the asset. One complicating factor is the need for adequate utilities under the pavement. This provides the challenge of coordinating the roadway needs with the underground utility needs. The need

for sidewalks and ADA facilities within our public rights-of-way continue. There will be a renewed commitment to address those locations that will provide the greatest benefit (i.e. Critical Routes noted in the 2007 ADA Pedestrian Bike Plan; and School Routes).

The City continues to focus its efforts towards establishing a high quality and adequate potable water supply, storage, and distribution system. The City's utility systems are vulnerable to damage resulting from a Cascadia Subduction Zone earthquake. Because of this, additional requirements have been added by the State to complete a seismic risk assessment and mitigation plan as a part of five year updates to the Water System Master Plans. The seismic risk assessment was completed in 2020 and several of the projects proposed are incorporated into this five year program. Phases 1 & 2 of the Safe, Reliable Water project was also completed in 2020, and Phase 3 of the project is moving forward based on the City Council's direction to provide additional resiliency to the City's potable water system.

As in the past, the focus of the wastewater program is to aggressively repair and/or replace inadequate portions of the wastewater system. Several projects to eliminate and/or reduce the stormwater that infiltrate the wastewater pipes were completed in the last several years and there has been a noticeable reduction (37%) in Inflow and Infiltration in those basins. These projects will continue. The City will continue upgrades to the Wastewater Treatment Plant with roofing repairs, structural repairs to the existing oxidation ditches, remodel of the office building and studies addressing the capacity of the plant.

Capital projects within the City are funding by a variety of mechanisms. They include:

- Enterprise Funds: these funds are revenues from monthly rates (water, wastewater and stormwater) paid by customers. These funds can only be spent on projects in those systems.
- Gas Taxes: these are revenues from both Federal and State gas taxes. These funds can only be spent on roadway projects. At least 1% of the state gas taxes must be spent on bicycle and pedestrian facilities.
- Transportation Utility Funds: these are revenues paid monthly by customers. These funds must be used on existing pavement and ADA requirements.
- System Development Charges: these funds are paid by developers and can only be used on capacity increasing projects.
- Grants: these are funds received from a variety of locations.

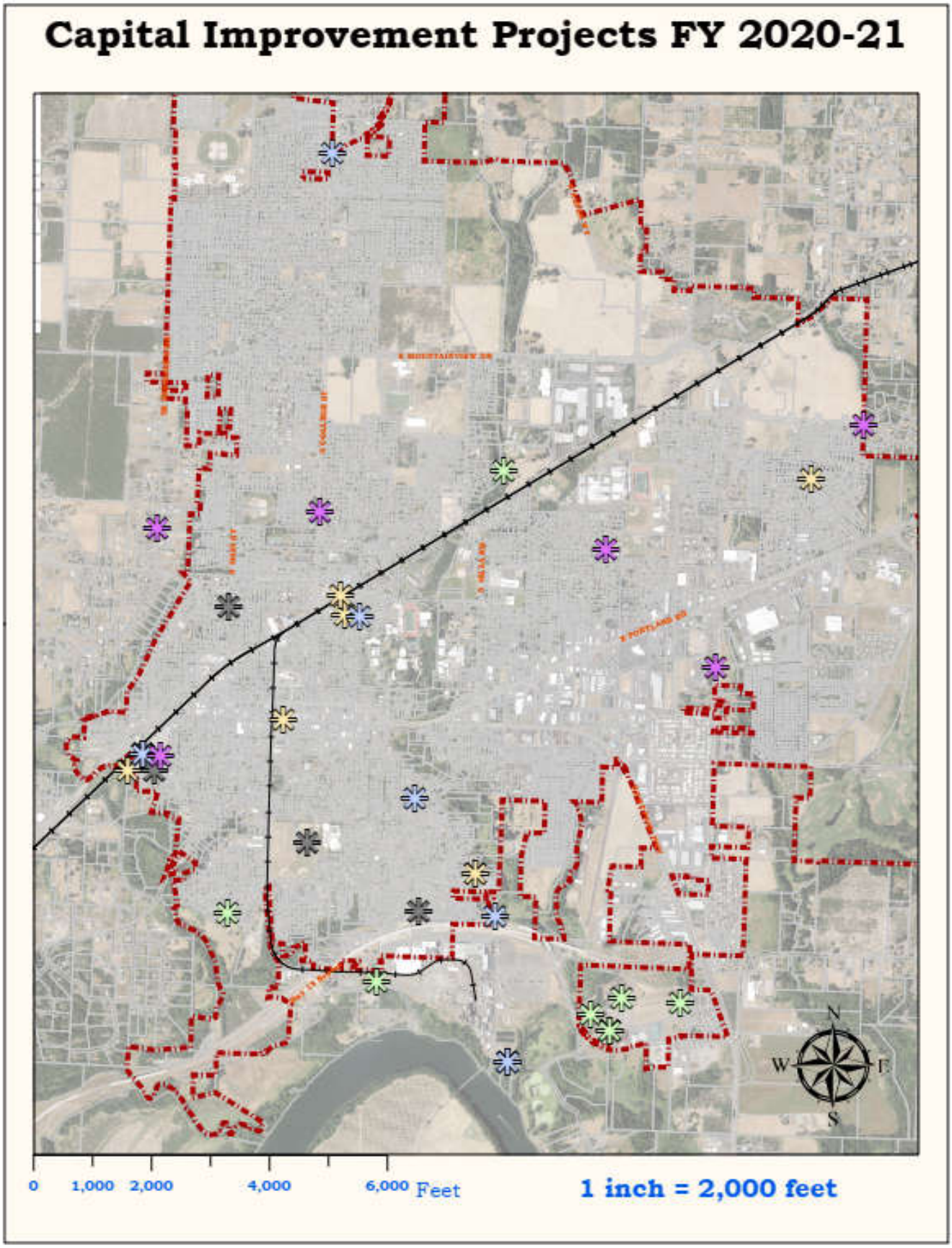
The Public Works Engineering Division works closely with Public Works Operations and Maintenance Divisions to complete the identified projects on an annual basis. The fiscal year 2021-2022 Capital Improvement Program implements the planning, design, and construction of the capital infrastructure needs of the City by prioritizing projects based on an analysis of the master plans and other studies in combination with the availability of funding. The scheduled projects in the years beyond FY 2021-2022 are not intended to be a spending commitment, but are included to show a proposed plan for the projects that are considered to be a priority at this particular snapshot in time.

CAPITAL IMPROVEMENT PROGRAM

	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25	FY25/26
TOTAL WASTEWATER PROJECTS	$ 3,743,070	$ 4,178,697	$ 1,934,127	$ 3,303,369	$ 3,024,546	$ 2,865,726
TOTAL STORMWATER PROJECTS	$ 122,500	$ 859,799	$ 327,818	$ 752,795	$ 262,298	$ 338,810
TOTAL TRANSPORTATION PROJECTS	$ 605,252	$ 2,471,570	$ 1,593,727	$ 1,644,538	$ 1,580,648	$ 2,108,997
TOTAL WATER PROJECTS	$ 2,275,879	$ 6,897,642	$ 4,772,608	$ 3,356,477	$ 2,479,571	$ 5,526,619
TOTAL MULTI FUNDED PROJECTS	$ 1,580,087	$ 7,005,792	$ 286,106	$ 675,305	$ 347,782	$ 273,182
TOTAL CAPITAL PROJECT PROGRAM	**$8,306,788**	**$21,456,582**	**$8,954,824**	**$9,733,604**	**$7,695,248**	**$11,112,998**

A map of the Capital Improvement Projects for FY 2021-2022 is shown on the following page.

CAPITAL IMPROVEMENT PROGRAM



CAPITAL IMPROVEMENT PROGRAM

FY	DEPT	Projected Cost	Notes (Funding Sources, Etc.)	Project Description
21/22	MULTIPLE	$2,757,000	GAS TAX, STORMWATER, SDCs	N ELLIOTT RD: 99W TO NEWBERG HS
21/22	MULTIPLE	$1,915,067	TRANSPORTATION SDCs, STATE, CRESTVIEW XING, OTHER	E CRESTVIEW DR: N SPRINGBROOK TO 99W
21/22	MULTIPLE	$1,308,000	SDCs	CHEHALEM DRIVE EXTENSION PROJECT
21/22	MULTIPLE	$820,633	ODOT	N COLLEGE ST BIKE LANES AND SIDEWALKS
21/22	MULTIPLE	$139,500	GAS, STORMWATER, TRANSPORTATION SDCs	N SPRINGBROOK RD
21/22	MULTIPLE	$65,592	UTILITIES, SDCs	PWM FACILITY MASTER PLAN
21/22	STORMWATER	$303,164		LIBRA ST IMPROVEMENTS
21/22	STORMWATER	$215,000		800 BLOCK WYNOOSKI EXTENSION
21/22	STORMWATER	$135,000		PAVEMENT FIXES
21/22	STORMWATER	$79,568		WYNOOSKI ST FROM 7TH TO 800 BLOCK LINING
21/22	STORMWATER	$78,568		VERMILLION ST - EAST OF 219
21/22	STORMWATER	$45,000		RR DITCH - STUDY AND FIX
21/22	STORMWATER	$2,500		MASTER PLAN
21/22	TRANSPORTATION	$1,891,350		PAVEMENT MAINTENANCE PROGRAM
21/22	TRANSPORTATION	$365,222		MAIN ST / ILLINOIS INTERSECTION STUDY
21/22	TRANSPORTATION	$165,000		ADA/SIDEWALK IMPROVEMENTS
21/22	TRANSPORTATION	$150,000		SAFE ROUTES TO SCHOOL
21/22	WASTEWATER	$1,525,000		PLC Study and Replacement
21/22	WASTEWATER	$600,000		OXIDATION DITCH
21/22	WASTEWATER	$530,460		WWTP HYDRAULICS
21/22	WASTEWATER	$500,000		HESS CREEK LINING
21/22	WASTEWATER	$400,000		INFLOW & INFILTRATION PROJECTS
21/22	WASTEWATER	$252,941		SOLAR FARM
21/22	WASTEWATER	$212,180		RIVERFRONT PUMP STATION
21/22	WASTEWATER	$88,167		WWTP SAWDUST BAYS
21/22	WASTEWATER	$68,959		DEHYDRATION UNIT
21/22	WASTEWATER	$1,000		OPERATIONS REMODEL
21/22	WATER	$1,859,871		REDUNDANT WATER SUPPLY
21/22	WATER	$1,220,000		BELL WEST PUMP STATION
21/22	WATER	$900,407		WTP FILTER COVERS
21/22	WATER	$562,754		EMERGENCY CONNECTIONS & CONTROLS AT WTP
21/22	WATER	$365,750		FIXED BASE RADIO READ
21/22	WATER	$281,377		HB 2001 WATERLINE
21/22	WATER	$250,000		ROUTINE MAIN REPLACEMENT PROGRAM
21/22	WATER	$232,000		FIRE FLOW CAPACITY IMPROVEMENTS
21/22	WATER	$168,826		SEISMIC IMPROVEMENTS - WATERLINE REPLACEMENT
21/22	WATER	$166,575		HB 2001 WATERLINE - 5TH
21/22	WATER	$50,000		AIMA
21/22	WATER	$22,510		NEW HYDRANTS AND VALVES
21/22	WATER	$12,381		HB 2001 WATERLINE

IMPORTANT NOTICE TO ALL USERS:

DISCLAIMER AND LIMITATION OF LIABILITY
This information is not guaranteed to be accurate and may contain errors and omissions. The City of Newberg provides NO WARRANTY AS TO THE MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE FOR ANY INFORMATION HEREIN.

This map is created from various data sources and is subject to change without notice. This map is intended for general planning purposes only.

Coordinate System: NAD83 Oregon North
Projection: Lambert Conformal Conic
Datum: North American 1983
false easting: 8,202,099.7375
false northing: 0.0000
central meridian: -120.5000
standard parallel 1: 44.3333
standard parallel 2: 46.0000
latitude of origin: 43.6667
Units: Foot
Document Path: O:\GIS\MapRequest\Paul\Pavement Projects\CIP 2021_2022 11x17.mxd
Date Saved: 2/24/2021 11:31:43 AM
Author: Keith McKinnon, GIS Analyst

City of Newberg

MULTI-FUNDED PROJECTS

The following project summary sheets were developed from a variety of sources. The projects affect all of the enterprise funds and include things like improvements to facilities and major software purchases. This section also includes infrastructure projects that have funding from multiple utilities.

MULTI FUNDED PROJECTS	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25	FY25/26
Public Works Maintenance Facility Master Plan	$ 120,000	$ 131,184	$ 131,184	$ 25,000	$ 25,000	$ 25,000
N College Street Bike Lanes and Sidewalks/Waterline Relocation/Additional Valves	$ 284,949	$ 820,633				
N Springbrook Road	$ 15,000	$ 139,500	$ 218,545	$ 675,305	$ 347,782	$ 273,182
NE Chehalem Drive Water & Wastewater Ext	$ 65,205	$ 1,308,000				
N Elliott Road: 99W to Newberg High School	$ 850,000	$ 2,757,000				
E Crestview Drive: 99W to Springbrook Road	$ 244,933	$ 1,915,067				
TOTAL MULTI FUNDED PROJECTS	**$ 1,580,087**	**$ 7,071,384**	**$ 349,729**	**$ 700,305**	**$ 372,782**	**$ 298,182**

MULTI-FUNDED PROJECT

Maintenance Facility Project

A master plan has been completed on what the newly expanded maintenance yard could look like. The rest of the improvements include major site work, fleet building and eventually a new administration building. A fully functional maintenance facility is critical to serve the existing and long term day to day needs of the City and to adequately respond to natural disasters with the needed man power and equipment.

PROPOSED FUNDING

The project is to be funded by utility funds, and system development charges.

MEDIUM PRIORITY PROJECT

The council has identified increased sustainability as priorities for Newberg. The proposed improvements will further this goal. Along with responding to council goals the project will:

- Increase health and safety
- Reduce costs
- Provides for existing and future capacity

HISTORY OF THE PROJECT

In 2015, it was determined that the City had outgrown the existing 2.1 acre maintenance yard and purchased property next to the existing location to expand the yard by 3.9 acres. A facility plan was then conducted to determine the specific needs on this site.

STATE MANDATED FEATURES

NA

CONTACT

maintenance@newbergoregon.gov

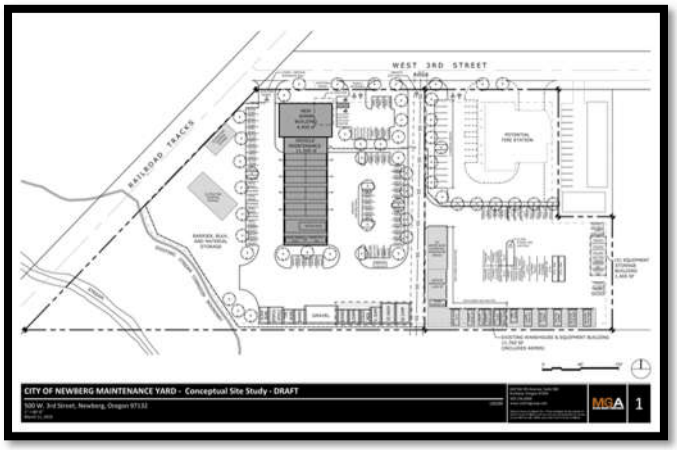


FIGURE 1 CONCEPTUAL PUBLIC WORKS MAINTENANCE YARD PLAN

CAPITAL IMPROVEMENT PROGRAM

MULTI-FUNDED PROJECT

E Crestview Drive;
99W to Springbrook Road

The project will improve E Crestview Drive which connects residents in Northern Newberg with Highway 99W. Road improvements will make the road safer for walking and biking, improve road conditions, and brings the street up to major collector street standards.

PROPOSED FUNDING

- Transportation System Development Charges: $1,100,000
- State of Oregon: $740,000
- Remaining balance: funded by Springbrook Properties and JT Smith's Crestview Crossing Planned Unit Development
- Other – the water and wastewater lines will be funded by utility rates and system development charges

HIGH PRIORITY PROJECT

The Council has identified increased sustainability and improved diversity, equity, and inclusion as priorities for Newberg. Improving roads and constructing sidewalks and bike lanes will allow community members better access to services near the hospital and encourages more walking and bike use. Along with responding to Council goals the project will:

- Increase health and safety
- Reduce costs
- Coordinates with larger planned projects
- Has additional funding opportunities available

HISTORY OF THE PROJECT

E Crestview Drive is an important transportation link to the northern portion of the City. The city's 2016 Transportation System Plan (TSP) identified the need to reconstruct E Crestview Drive to major collector street standards between N Springbrook Road and the Newberg city limit line. In December 2015, Regional Solutions awarded the City of Newberg a $740,000 grant for construction of E Crestview Drive from Highway 99W to N Springbrook Road.

MANDATED FEATURES

The state and federal governments require that bike facilities and ADA facilities be constructed on any roadway that will be constructed, reconstructed or relocated.

- ORS366.514, enacted in 1971, requires that roadways being built, or reconstructed, include both pedestrian and bicycle facilities.
- The ADA law requires newly designed and constructed or altered State and local government facilities, public accommodations, and commercial facilities to be readily accessible to and usable by individuals with disabilities.

CONTACT

brett.musick@newbergoregon.gov

Visit the Crestview Drive Project webpage

MULTI-FUNDED PROJECT

NE Chehalem Drive
Water & Wastewater Extension Project

This project extends the public wastewater line from the existing terminus on the east side of Chehalem Creek on Hwy 240 to NE Chehalem Drive and then north on NE Chehalem Drive towards the intersection with E Columbia Drive.

This master plan project (M-18) would extend the public water line from the existing terminus on the east side of Chehalem Creek on Hwy 240 to NE Chehalem Drive. The new waterline will connect with an existing waterline on NE Chehalem Drive south of Hwy 240. A future project (M-19) would extend the waterline on NE Chehalem Drive to E Columbia Drive.

PROPOSED FUNDING

This will be paid for out of system development charges.

MEDIUM PRIORITY PROJECT

This project will provide additional capacity for future development. Fire flow deficiencies in the area of W Illinois are also addressed with this project.

HISTORY OF THE PROJECT

There have been several development inquiries in this area and the wastewater and water line extensions would allow for orderly future development. The 2017 Water Master Plan identified that this area has a fire flow and pressure deficiency. The cost and complexity of designing, constructing and permitting utility crossings of the un-named tributary of Chehalem Creek has been identified as prohibitive for private development of the water and wastewater extensions to this portion of the City's Urban Growth Boundary (UGB).

MANDATED FEATURES

NA

CONTACT

brett.musick@newbergoregon.gov

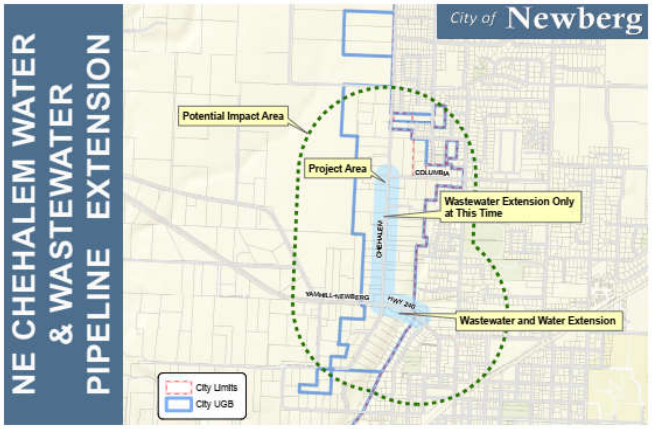


FIGURE 4 EXTENDING THE PUBLIC WASTEWATER LINE

Visit the NE Chehalem Drive Water and Wastewater Extension Project webpage

WASTEWATER PROJECTS

The Wastewater Program provides planning, design and construction of improvements for the City's public wastewater utility system. This program area includes the lift stations, wastewater treatment plant, and wastewater collection and conveyance system.

The following project list was developed from the 2018 Wastewater Master Plan and other associated studies, while considering the available funds from the wastewater utility rates and system development charges.

WASTEWATER PROJECTS	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25	FY25/26
Inflow & Infiltration Projects	$ 1,100,000	$ 400,000	$ 437,091	$ 450,204	$ 463,710	$ 477,621
WWTP Sawdust Bays	$ 661,942	$ 88,167	$ -	$ -	$ -	$ -
Operations Remodel	$ 472,000	$ 1,000	$ -	$ -	$ -	$ -
Compost Sale Pile Cover	$ -	$ -	$ -	$ 191,336	$ -	$ -
Roofing Replacement	$ -	$ -	$ 76,491	$ 73,158	$ -	$ -
Coating for PS; Fernwood & Creekside	$ 135,000	$ -	$ -	$ -	$ -	$ -
Hess Creek Lining	$ 250,000	$ 500,000	$ -	$ -	$ -	$ -
Structural Improvements to Ex. Oxidation Ditch	$ 251,469	$ 600,000	$ -	$ -	$ -	$ -
I & I Report	$ -	$ -	$ 225,102	$ -	$ -	$ -
Dehydration Unit Burner Rebuild	$ -	$ 68,959	$ -	$ -	$ -	$ -
PLC Study and Replacment	$ 20,000	$ 1,525,000	$ -	$ -	$ -	$ -
WWMP Update	$ 80,000	$ -	$ -	$ -	$ -	$ -
Pinehurst Court	$ -	$ -	$ -	$ 337,653	$ -	$ -
Lift Station Short Term Improvements	$ -	$ -	$ 102,716	$ -	$ -	$ -
Painting & Maintenance to WWTP	$ 20,600	$ -	$ -	$ -	$ -	$ -
WWTP Hydraulic	$ -	$ 530,450	$ -	$ -	$ -	$ -
Clarifier Study	$ 55,000	$ -	$ -	$ -	$ -	$ -
Hess Creek Phase 2	$ -	$ -	$ -	$ 1,125,509	$ 1,738,911	$ 2,388,105
River Street PS	$ -	$ 212,180	$ 1,092,727	$ 1,125,509	$ -	$ -
N. Springbrook Trunkline	$ -	$ -	$ -	$ -	$ 821,925	$ -
WWTP Solar Panel Farm	$ 697,059	$ 252,941	$ -	$ -	$ -	$ -
TOTAL WASTEWATER PROJECTS	**$ 3,743,070**	**$ 4,178,697**	**$ 1,934,127**	**$ 3,303,369**	**$ 3,024,546**	**$ 2,865,726**

WASTEWATER PROJECT

Dehydration Unit Burner Rebuild

The dehydration unit at the Waste Water Treatment Plant is used to dry sawdust for our composting process. The burner on the dehydration unit provides the heat for drying the sawdust, and typically runs around 1,400 degrees. The burner is a steel tower structure that is lined with fire brick on the inside to protect the steel from the high heat environment. The rebuild involves removing all the existing brick, stacking new brick and installing a coating over the top of it which reduces the erosion of the brick and extends the life.

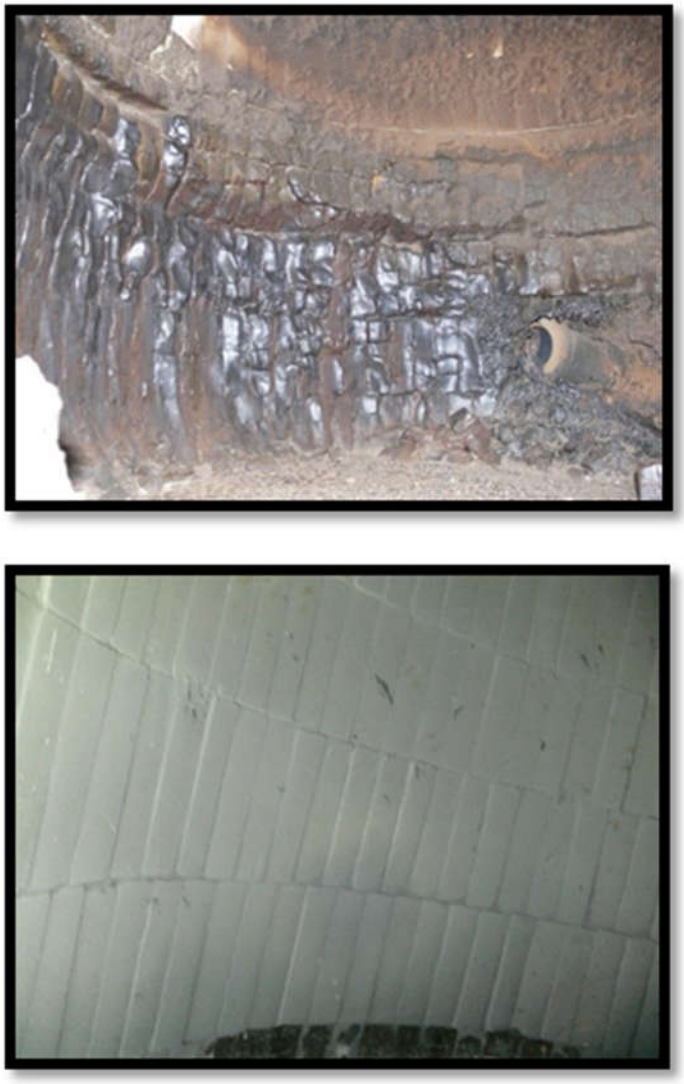


FIGURE 6 DEHYDRATION UNIT BURNER BEFORE AND AFTER CONDITION

PROPOSED FUNDING

This project will be paid by the wastewater rate revenues.

MEDIUM PRIORITY PROJECT

The Council has identified increased sustainability as a priority for Newberg. Along with responding to Council goals the project will reduce costs.

HISTORY OF THE PROJECT

The Dehydration Unit went online in December 2009, the burner had to be rebuilt in 2012 as it did not originally include protective coating. Based upon the most recent inspection in 2018, it is still in good condition.

MANDATED FEATURES

NA

CONTACT

operations@newbergoregon.gov

WASTEWATER PROJECT

Sawdust Bays at the
Wastewater Treatment Plant

The additional 4 bay structure will allow us to move the sawdust that is used to create our class A compost closer to where we use it, will provide us an additional 2 bays that we can use for compost curing, and still leave us two additional bays to use to keep either recycled compost or sale compost dry during the winter.

FIGURE 7 EXISTING CURING BAYS

PROPOSED FUNDING

This project will be paid by the wastewater rate revenue funds.

MEDIUM PRIORITY PROJECT

The Council has identified increased sustainability as a priority for Newberg. Along with responding to Council goals the project will reduce costs.

HISTORY OF THE PROJECT

The current compost cure bay setup is configured to allow the use of three (3) covered storage bays as curing bays. They are equipped with blowers and temperature probes that enable us to use them to cure compost to meet our class A compost temperature requirements. The sawdust currently fills the two remaining bays of the five total bays available. The sawdust needs to be in 2 bays to protect it from the weather, but also to allow us to turn over our sawdust supply and reduce the risk of fires.

MANDATED FEATURES

NA

CONTACT

kaaren.hofmann@newbergoregon.gov

WASTEWATER PROJECT

Inflow and Infiltration Projects

The goal of the project is to rehabilitate or replace the aging pipe infrastructure to reduce the maintenance costs and the stormwater Inflow & Infiltration into the City's wastewater collections system.

This year's projects are rehabilitation of pipes and laterals in in the area of S Charles Street.

The work that has been completed over the last six years has reduced the amount of stormwater and ground water reaching the treatment plant by 37%.

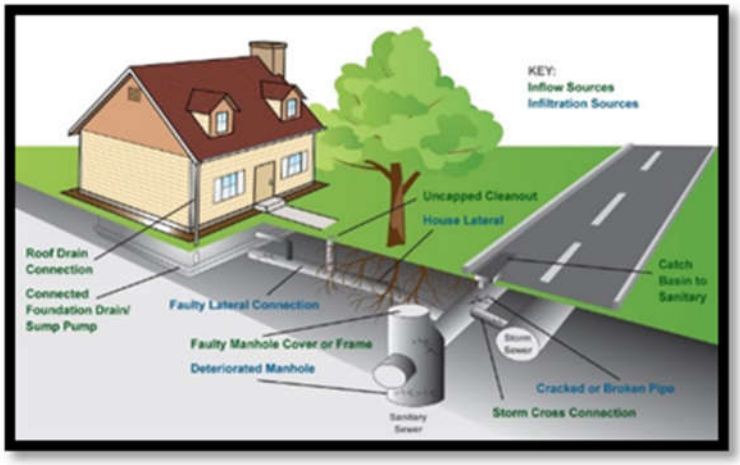


FIGURE 8 INFLOW & INFILTRATION PROGRAM

PROPOSED FUNDING

This will be paid for out of wastewater rate and system development charge funds.

HIGH PRIORITY PROJECT

The Council has identified increased sustainability as a priority for Newberg. Along with responding to Council goals the project will reduce costs.

HISTORY OF THE PROJECT

The 2015 Inflow and Infiltration (I/I) Report identified the need for significant replacements/rehabilitation of the older sections of the wastewater collections system throughout the City. This report was validated by the Wastewater Master Plan that was adopted in 2018.

MANDATED FEATURES

NA

CONTACT

brian.kershaw@newbergoregon.gov

WASTEWATER PROJECT
Existing Oxidation Ditches

Rehabilitation work is needed to the existing oxidation ditches to remain in service. These structural improvements will allow the delay the construction of new oxidation ditches.

FIGURE 9 OXIDATION DITCH

PROPOSED FUNDING
This will be paid for out of wastewater rate and system development charge funds.

HIGH PRIORITY PROJECT
The Council has identified increased sustainability as a priority for Newberg. The project will may allow for the delay of construction of additional clarifiers.

HISTORY OF THE PROJECT
The two existing oxidation ditches were constructed in 1987. Rehabilitation to oxidation ditch #2 was completed summer of 2017.

MANDATED FEATURES
NA

CONTACT
paul.chiu@newbergoregon.gov

WASTEWATER PROJECT

Roofing Replacement at the Wastewater Treatment Plant

The building roof and gutter replacements completed to date include: compost mixing building, operations building, effluent building and compost tunnels. The final roof/gutter replacement that will be needed in the immediate future is the secondary building. The screw press room has the only remaining original 1987 roof, but shows no signs of issues so will be a low priority for now and continue to be rolled into the future.

PROPOSED FUNDING

This will be paid for out of wastewater rate funds.

PRIORITY PROJECT

The Council has identified increased sustainability as a priority for Newberg. Maintaining our existing facilities will reduce the need to replace them in the future.

HISTORY OF THE PROJECT

The maintenance of roofs and gutters on the existing buildings at the 1980's treatment plant buildings was deferred by prior administrations.

MANDATED FEATURES

NA

CONTACT

operations@newbergoregon.gov

FIGURE 10 ROOF MAINTENANCE AT WASTEWATER TREATMENT PLANT

WASTEWATER PROJECT

Secondary Clarifier Re-rating Study

This project would allow us to increase the allowable loading on the clarifiers and delay the need for additional clarifiers at the treatment plant.

PROPOSED FUNDING

This project will be paid by the wastewater rate revenues and 22% SDC funds.

HIGH PRIORITY PROJECT

The Council has identified increased sustainability as a priority for Newberg. The project may allow for the delay of construction of additional clarifiers.

HISTORY OF THE PROJECT

The recommendation for this study was made in the 2018 Wastewater Master Plan Update. Currently the clarifiers are working well, and are able to handle the peak flow events seen a few times a year. The clarifiers are rated for 1,200 gallons per day per square foot, which is an old industry standard, and based on the loading on these clarifiers during these occasional peak flow events we would need to add additional clarifier capacity soon.

MANDATED FEATURES

The results of the project will need to be approved by the Oregon DEQ.

CONTACT

paul.chiu@newbergoregon.gov

FIGURE 11 EXISTING CLARIFIER

WASTEWATER PROJECT
Compost Sale Pile Cover

This project is to install a cover over the compost that accumulates over the winter months on our sale pile.

PROPOSED FUNDING
This project will be paid by the wastewater rate revenue funds.

LOW PRIORITY PROJECT
This project will reduce operational costs.

HISTORY OF THE PROJECT
There are several benefits to covering this compost. The first is to prevent the rain from washing solids out of the compost pile and back into the plant, which then requires us to send those solids back through the treatment process. The second is that it would provide a higher quality product for our customers that come in during the spring, which is our busiest time of year for compost sales. A third potential benefit is that some of this dry compost could be used for dry recycle during the wet months and allowing us to increase our composting efficiency in the winter months when dry recycle is hard to come by.

MANDATED FEATURES
NA

CONTACT
operations@newbergoregon.gov

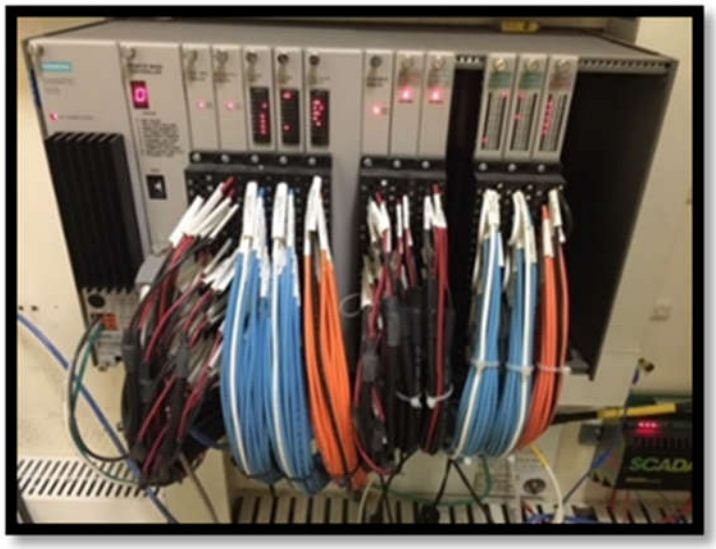
Figure 12 COMPOST PILE

Figure 13 EXAMPLE OF COVER

WASTEWATER PROJECT

Programmable Logic Controller Study and Replacement

The Programmable Logic Controller (PLC) is the system which provides the ability to run the treatment plant in an automatic mode. Currently we are relying on a 3rd party to support parts for the PLC but they could stop production at any time, making our system obsolete. We will first look at all of the options and then come back to purchase the new system.



PROPOSED FUNDING

This project will be funded using the wastewater rate funds.

HIGH PRIORITY PROJECT

The Council has identified increased sustainability as a priority for Newberg.

FIGURE 14 PLC

HISTORY OF THE PROJECT

The Siemens PLC was installed in the late 1990's and is nearing its life expectancy. The PLC we currently use is no longer being made by Siemens.

MANDATED FEATURES

NA

CONTACT

operations@newbergoregon.gov

WASTEWATER PROJECT

Inflow and Infiltration Report

Compiled data will be used to complete a full report of the pipe performance in several basins and will evaluate the effectiveness of the work that the City has completed over the last several years.

PROPOSED FUNDING

This project will be funded by the wastewater rate and SDC funds.

HIGH PRIORITY PROJECT

The Council has identified increased sustainability as a priority for Newberg. Along with responding to Council goals the project will reduce costs.

HISTORY OF THE PROJECT

An Inflow and Infiltration (I & I) study was completed for the Dayton and Wynooski Basins in 2015. Data has been recently gathered in the Springbrook and Hess Creek Basins.

STATE MANDATED FEATURES

NA

CONTACT

engineering@newbergoregon.gov

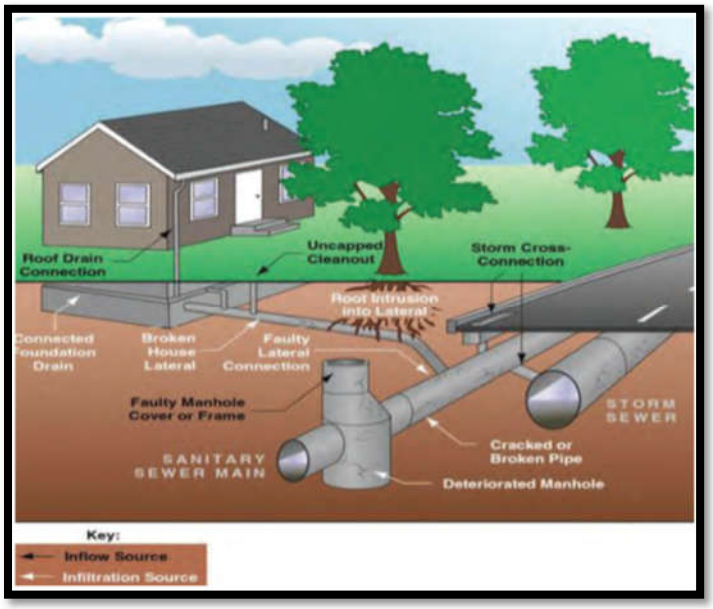


FIGURE 15 I&I ENTERING THE BASINS

WASTEWATER PROJECT

Lift Station

Short Term Improvements

This project includes minor improvements to Charles, Chehalem, Creekside, Fernwood, Highway 240, and Sheridan lift stations. Examples of the improvements include; adding safety grating to valve vaults, installing bollards for traffic protection, installing additional fencing to stations that don't have it, repainting of building doors, and replacing heaters and heat taping for freeze protection.

PROPOSED FUNDING

Wastewater rate revenue funds and 1% SDC funds.

LOW PRIORITY PROJECT

The project will increase health and safety and reduce maintenance costs.

HISTORY OF THE PROJECT

These identified improvements, and various others, were identified in the 2018 Wastewater Master Plan update.

MANDATED FEATURES

NA

CONTACT

engineering@newbergoregon.gov

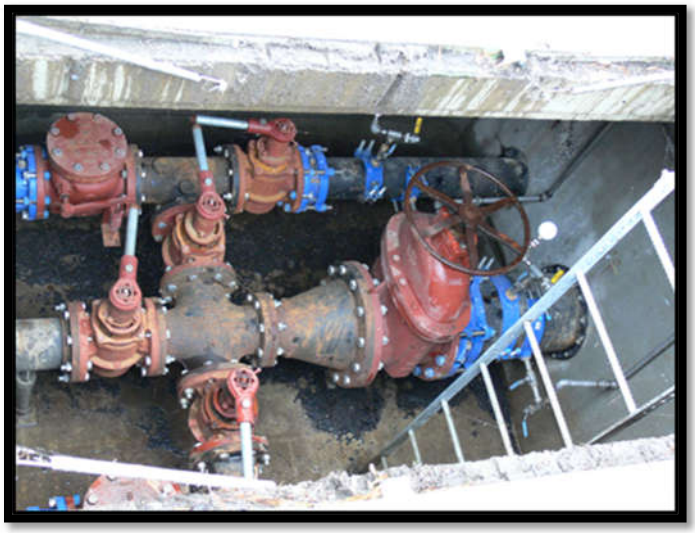


FIGURE 16 FERNWOOD VALVE VAULT

FIGURE 17 CHARLES LS WITHOUT BOLLARDS

WASTEWATER PROJECT

WWTP Hydraulic Improvements

Wastewater Treatment Plant (WWTP) Hydraulic Improvements are a group of projects to improve the hydraulic flow through the WWTP. They include modifications to the clarifier distribution box, the effluent weirs, and installation of a second (parallel) pipe from the clarifier effluent to the chlorine contact basin.

FIGURE 18 INSTALLATION OF A SECOND (PARALLEL) PIPE FROM THE CLARIFIER EFFLUENT TO THE CHLORINE CONTACT BASIN

PROPOSED FUNDING

Wastewater rate revenue along with 14% SDC funds.

HIGH PRIORITY PROJECT

The Council has identified increased sustainability as a priority for Newberg. The projects will increase the efficiency of the treatment plant, reducing operational costs.

HISTORY OF THE PROJECT

These improvements were identified in the 2018 Wastewater Master Plan update.

MANDATED FEATURES

NA

CONTACT

engineering@newbergoregon.gov

WASTEWATER PROJECT
Upper Portion of
Hess Creek Trunk Line

Currently the access to Hess Creek is limited and undersized in some locations. This project will line the upper portion of the Hess Creek trunk line to reduce I/I influence and extend the life of the pipe. Flow monitoring will also be implemented after the lining to inform the design phase of Hess Creek Phase 2 project downstream.

PROPOSED FUNDING
This project will be funded by the wastewater rate revenues and 2% SDC funds.

HIGH PRIORITY PROJECT
The Council has identified increased sustainability as a priority for Newberg. Lining the existing pipe will reduce the need for new pipe and disposing of the existing pipe. This project may also decrease the size of pipe needed downstream.

HISTORY OF THE PROJECT
This project is C1.A in the 2018 Wastewater Master Plan update and is a priority project as it will reduce Inflow and Infiltration and may reduce the size of pipe needed downstream.

MANDATED FEATURES
The work within Hess Creek may require state and local permits.

CONTACT
engineering@newbergoregon.gov

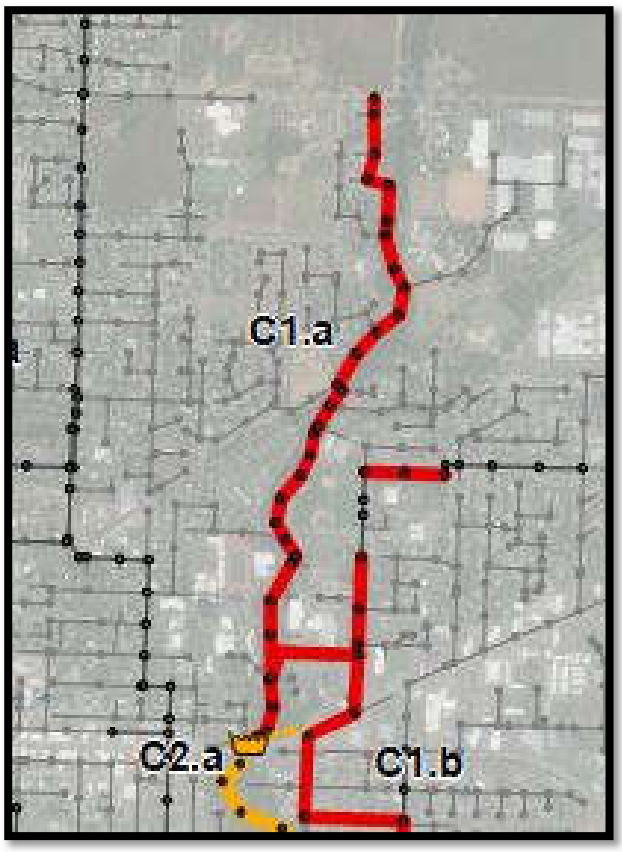


FIGURE 19 HESS CREEK TRUNK LINE

WASTEWATER PROJECT

Parallel Line to Lower Portion of Hess Creek Trunk Line

The limits of this project are from E Fulton to the Wastewater Treatment Plant. This project will construct a gravity main line parallel to Hess Creek Canyon and reduce the flow going into the trunk line. The new lift station in the Phase 3 project will discharge to this new pipe.

PROPOSED FUNDING

This project will be paid for by the wastewater rate revenues and 2% SDC funds.

HIGH PRIORITY PROJECT

The Council has identified increased sustainability as a priority for Newberg. To relocate the pipe from Hess Creek will reduce Inflow & infiltration, reduce maintenance costs and impacts to Hess Creek.

HISTORY OF THE PROJECT

This project is C1.b in the 2018 Wastewater Master Plan Update and is a priority project.

MANDATED FEATURES

The work within Hess Creek may require state and local permits.

CONTACT

engineering@newbergoregon.gov

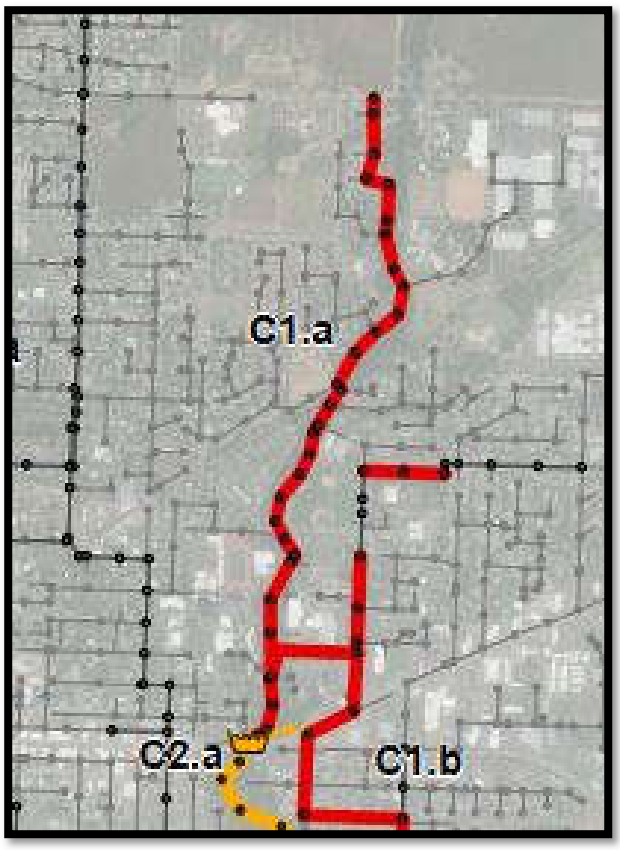


FIGURE 20 AREA OF E FULTON TO THE WASTEWATER TREATMENT PLANT

WASTEWATER PROJECT

W Pinehurst Court Wastewater

This project (C1.d) will re-direct wastewater flow from W Pinehurst Court south to existing lines on W Creekside Court.

FIGURE 21 AREA OF W PINEHURST CT TO W CREEKSIDE CT

PROPOSED FUNDING

This project will be funded by the wastewater rate revenues.

LOW PRIORITY PROJECT

The project will increase health and safety, reduce maintenance costs and reduce the possibility of an overflow.

HISTORY OF THE PROJECT

The 2018 Wastewater Master Plan identified this location as a possible overflow site due to the grade of W Pinehurst Court and the shallow wastewater line.

MANDATED FEATURES

NA

CONTACT

engineering@newbergoregon.gov

WASTEWATER PROJECT

WWTP Solar Farm

This project will install a 400kw solar farm on City property on S Sandoz Road. This facility will provide energy for use by the treatment plant that is one of the highest operational costs.

PROPOSED FUNDING

This project will be funded by the wastewater rate revenues. The City applied for and received two grants totaling $400,000 to help fund this project.

HIGH PRIORITY PROJECT

The Council has identified increased sustainability as a priority for Newberg. The project will increase provide additional energy for the treatment plant reducing operational costs.

HISTORY OF THE PROJECT

The average annual electric bill for the Wastewater Treatment Plan is $250,000. Options were evaluated to lower this cost and solar was the recommended alternative. The energy savings are approximated at 14.1% per year with a 7-10 year pay back on the capital costs.

MANDATED FEATURES

There are requirements that have been mandated by the grants that the City received from the Oregon Department of Energy and Portland General Electric.

CONTACT

kaaren.hofmann@newbergoregon.gov

WASTEWATER PROJECT

N Springbrook Trunk Line

This project will increase the capacity of the Springbrook Road line. This includes a parallel line and may be eliminated with other wastewater improvements.

FIGURE 22 VICINITY MAP

PROPOSED FUNDING

This project will be funded by the wastewater rate revenues and system development charges.

MEDIUM PRIORITY PROJECT

The project will increase health and safety, reduce maintenance costs and reduce the possibility of an overflow.

HISTORY OF THE PROJECT

The 2018 Wastewater Master Plan identified this location as a possible overflow site.

MANDATED FEATURES

When the work occurs, the City will need to obtain a permit from the Oregon Department of Transportation.

CONTACT

engineering@newbergoregon.gov

WASTEWATER PROJECT

Riverfront Lift Station

This project will install a new lift station in the Riverfront area. This will serve the new development proposed and will allow for two smaller lift stations to be decommissioned.

PROPOSED FUNDING

This project will be funded by the wastewater rate revenues and system development charges.

HIGH PRIORITY PROJECT

The Council has identified increased sustainability as a priority for Newberg. The projects will reduce operational costs.

HISTORY OF THE PROJECT

Future infrastructure in the Riverfront area will be necessary to service developments predicted in the next 20 years. In addition to serving future development, this infrastructure could allow for the displacement of Andrew and Charles Lift Stations. Additional gravity pipelines with approximate alignments shown in Figure 19 could transport Andrew and Charles Lift Station flows to the new, regional Riverfront Lift Station.

MANDATED FEATURES

NA

CONTACT

engineering@newbergoregon.gov

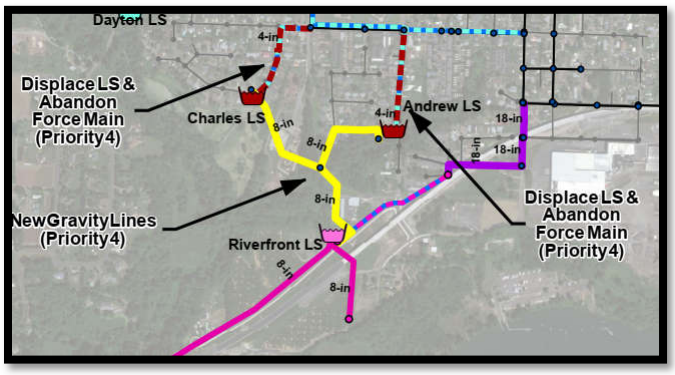


FIGURE 23 VICINITY MAP

Exhibit "C" to Planning Commission Resolution 2021-366
Comprehensive Plan Amendment – File CPTA20-0004

Note: Existing text is shown in regular font.
Added text is shown in double underline
Deleted text is shown in ~~strikethrough~~.

The Newberg Comprehensive Plan shall be amended as follows:

X. 2018 WASTEWATER MASTER PLAN AND ADDDENDUM - RIVERFRONT MASTER PLAN 2021

Under separate cover.

RESOLUTION NO. 2020-3686

A RESOLUTION INITIATING AN AMENDMENT TO THE NEWBERG COMPREHENSIVE PLAN TO UPDATE THE TRANSPORTATION SYSTEM PLAN, WATER MASTER PLAN, WASTEWATER MASTER PLAN AND STORMWATER MASTER PLAN

RECITALS:

1. On September 16, 2019 the City Council adopted Resolution No. 2019-3596 accepting the Riverfront Master Plan.

2. The Riverfront Master Plan is a long range plan that provides guidance on future actions, which are needed to carry out the plan vision. An implementation strategy was created that outlines short and long term actions for the Plan (Appendix E). The actions include additional planning, regulatory updates, infrastructure projects, and program/funding development.

3. The request is to consider initiating an amendment to the Newberg Comprehensive Plan to update the Transportation System Plan, Water Master Plan, Wastewater Master Plan and Stormwater Master Plan.

THE CITY OF NEWBERG RESOLVES AS FOLLOWS:

1. The City Council initiates an amendment to the Newberg Comprehensive Plan - Transportation System Plan, Water Master Plan, Wastewater Master Plan and Stormwater Master Plan to implement the Riverfront Master Plan. The Wastewater Master Plan will additionally be evaluating the feasibility to redistribute flows to the Fernwood basin and to define the term "surcharge". The Stormwater Master Plan will be a citywide update for the plan. This starts the public process to study the proposed amendments.

2. By initiating this amendments, the City Council does not commit to taking any specific action on the proposal. It only wishes to give the amendments full consideration by the Planning Commission and City Council in public hearings.

///

➢ **EFFECTIVE DATE** of this resolution is the day after the adoption date, which is: July 7, 2020.

ADOPTED by the City Council of the City of Newberg, Oregon, this 6th day of July, 2020.

Sue Ryan, City Recorder

ATTEST by the Mayor this 9th day of July, 2020.

Rick Rogers, Mayor

VII.A Vertical Housing Development Zone
20210408 - G2019-0006 - Vertical Housing - Staff Report - FINAL.pdf

VIII. ITEMS FROM STAFF

VIII.A Anticipated Schedule of Planning Commission Activities
Memo Planning Commission Activities 2021.doc

IX. ITEMS FROM COMMISSIONERS

X. ADJOURNMENT

ACCOMMODATION OF PHYSICAL IMPAIRMENTS:

In order to accommodate persons with physical impairments, please notify the Community Development Department Office Assistant II of any special physical or language accommodations you may need as far in advance of the meeting as possible as and no later than 48 business hours prior to the meeting. To request these arrangements, please contact the Office Assistant at (503) 537-1240. For TTY services please dial 711.