CHAPTER 8 - IMPROVEMENT PROGRAM

8.1 IMPROVEMENT PROGRAM OBJECTIVE

The development of a water system improvement program is a primary goal of this Water System Plan. Through the analysis of existing system demands, capabilities and deficiencies, and by projecting future system growth, improvements have been identified throughout the Plan.

In previous sections of this Plan, deficiencies in the existing City of Selah water system have been identified and specific improvements have been recommended. The costs of such improvements often prohibit their completion within a short time period without seriously impacting budgets and user rates. It is prudent, therefore, to group improvements so they might be reasonably accomplished over a number of years.

Recommended system improvements have been categorized into three main categories: 1) Operational and Maintenance (O&M) Improvements, 2) Major Capital Improvements, and 3) Future Capital Improvements (Planning). The O&M improvements are system operation and maintenance of existing facilities, including meter calibration and replacement, hydrant and valve replacements, well and reservoir rehabilitation, water use efficiency (WUE) measure implementation and other miscellaneous improvements. Major capital improvements are those necessary to improve a system deficiency such as fire flow, source and/or storage capacity, water quality, or replacement of aging and/or undersized system components. The future planning improvements category is improvements that would be necessary to accommodate system expansion to serve the future service area as a result of new development.

In each improvement category section, with the exception of the future planning improvements section, a prioritized listing of the recommended system improvements, together with a brief description of the need, anticipated construction elements, and estimated project costs (based on 2014 construction costs). Actual costs will vary from those shown in the following estimates because of changes in the construction industry, the competitive bid process, the availability of materials and equipment, and the timing of the improvements. The estimated improvement costs should be increased by the rate of inflation for each subsequent year after 2014.

8.2 OPERATIONAL AND MAINTENANCE (O&M) IMPROVEMENTS

The following is a prioritized listing of the required and/or recommended O&M improvements, including a brief description of the need for each improvement and projected year the improvement will take place. A six-year schedule for completion of the recommended O&M improvements is provided at the end of this Section, in Table 8-1. The estimated improvement costs are also provided in Table 8-1, as well as the total projected yearly cost. The estimated costs in Table 8-1 have been inflated for each year after 2014 to reflect the possible future costs, based upon the projected year the improvement will be completed. Improvements that are projected to take place after year 2020 have been inflated to reflect year 2021 costs, although some of these improvements may take place after the year 2021.

8.2.1 Year 2015 Through Year 2020 Prioritized Improvements

1. SOURCE METER CALIBRATION

To ensure the accuracy of well production data and potentially reduce the percentage of DSL, as described in CHAPTER 4 of this Plan, the City will begin routine calibration of source meters. Calibration of the City's source and large service meters will be completed approximately every two (2) years as recommended by DOH in the *Water System Design Manual*. The cost of calibrating the City's source meters and service meters four-inches in diameter and greater, if half of the meters are calibrated each year, will be approximately $3,000 annually.

2. FIRE HYDRANT REPLACEMENTS/INSTALLATIONS

As part of the City's routine maintenance program, fire hydrants that are found to be leaking, damaged and/or of an older style that is less operator-friendly and in need of replacement are repaired and/or replaced. Installation of new hydrants, where hydrant spacing is found to be inadequate, is also necessary to improve fire protection service. The City plans to budget approximately $5,000 annually for in-house repair/replacement of existing fire hydrants and/or installation of new hydrants to improve hydrant spacing.

3. WELLHEAD PROTECTION PLAN UPDATE

The City is a participant in the *Upper Yakima Valley Regional Wellhead Protection Plan*, as discussed in CHAPTER 5 of this Plan. Semi-annual updates of the City's potential contaminant source and notification list within the wellhead protection areas are required. The next update is scheduled for 2014, and the approximate cost is $500 every two (2) years.

4. PALM PARK RESERVOIR CLEANING AND INSPECTION

The Palm Park Reservoir was last cleaned and inspected in 1992. It is recommended the City routinely have its reservoirs cleaned and inspected approximately every five (5) years. The approximate cost of this required improvement is $10,000.

5. LOOKOUT POINT RESERVOIR CLEANING AND INSPECTION

The Lookout Point Reservoir was constructed in 2009. It is recommended the City routinely have its reservoirs cleaned and inspected approximately every five (5) years. The overflow piping leaks when water levels reach the top joint of the overflow cone. The overflow leak should be repaired during the cleaning and inspection. The approximate cost of this required improvement is $20,000.

6. TELEMETRY SYSTEM IMPROVEMENTS

As part of the City's efforts to increase pumping efficiency, a pumping plan will be developed and incorporated into the telemetry system. Telemetry system improvements also include installation of a second computer screen at City Public Works Shop. The City's goal is to increase automated operation of wells and booster pumps, enabling improved management of production by well. The approximate cost of this improvement is $115,000.

7. BRADER HILL RESERVOIR CLEANING AND INSPECTION

The Brader Hill Reservoir was last cleaned and inspected in 2009. It is recommended the City routinely have its reservoirs cleaned and inspected approximately every five (5) years. The approximate cost of this required improvement is $10,000.

8. VALHALLA RESERVOIRS CLEANING AND INSPECTION

The Valhalla Reservoirs were constructed in 2009. It is recommended the City routinely have its reservoirs cleaned and inspected approximately every five (5) years. The approximate cost of this required improvement is $10,000.

9. GOODLANDER RESERVOIR CLEANING AND INSPECTION

The Goodlander Reservoir was last cleaned and inspected in 2014. It is recommended the City routinely have its reservoirs cleaned and inspected approximately every five (5) years. The approximate cost of this required improvement is $10,000.

10. NORTH RESERVOIRS CLEANING AND REPAIR

The North Reservoirs were constructed in 1938 and have some minor cracking and signs of age. The smaller North Reservoir has been offline for some time because of a leak. This improvement will include cleaning and repairing both North Reservoirs and repairing the smaller one. The approximate cost of this improvement is $33,100.

Item	Unit	Qty.	Unit Cost	Total Cost
Mobilization	LS	–	–	$5,000
Clean and Inspect Reservoirs	LS	–	–	$10,000
Concrete Joint Sealing	LF	600	$10.00	$6,000
			Construction Cost Subtotal	$21,000
			Sales Tax (8.2%)	$1,700
			Subtotal	$22,700
			Contingency (15%)	$3,400
			Subtotal	$26,100
			Engineering & Administration (12%)	$3,100
			Construction Engineering (15%)	$3,900
			TOTAL ESTIMATED COST	$33,100

11. NORTH RESERVOIRS CLEANING AND INSPECTION

The larger of the two North Hill Reservoirs was last cleaned and inspected in 2012. It is recommended the City routinely have its reservoirs cleaned and inspected approximately every five (5) years. The approximate cost of this required improvement is $10,000.

12. WELL NOS. 3 AND 4 REHABILITATION

Well Nos. 3 and 4 have not been serviced since 1993 when the well pumps were replaced as discussed in CHAPTER 3. The wells are currently in need of inspections including potential repairs to prevent failure and to maintain the current capacity of the source of supply. This improvement will initially include removal of the well pumps and video inspection of the wells to determine final costs of well and/or pump rehabilitation. It is anticipated that replacement of bearings and other wear parts of the pumps and motors will be necessary. This improvement also includes reinstallation of the pumps and motors, and well pump testing. The approximate cost of this improvement is $115,400.

Item	Unit	Qty.	Unit Cost	Total Cost
Mobilization	LS	–	–	$10,000
Remove and Inspect Well Pumps/Motors	LS	–	–	$15,000
Video Inspection	LS	–	–	$4,000
Minor Pump/Motor Repairs	LS	–	–	$10,000
Furnish and Install Level Transducers	LS	–	–	$30,000
Reinstall Well Pumps/Motors and Pump Testing	LS	–	–	$4,000
			Construction Cost Subtotal	$73,000
			Sales Tax (8.2%)	$6,000
			Subtotal	$79,000
			Contingency (15%)	$11,900
			Subtotal	$90,900
			Engineering & Administration (12%)	$10,900
			Construction Engineering (15%)	$13,600
			TOTAL ESTIMATED COST	$115,400

13. DOH SANITARY SURVEY

The DOH conducts sanitary surveys for community water systems approximately every five (5) years. The anticipated date of the next sanitary survey for Selah is 2016. The approximate cost of this required improvement is $5,000, including any minor repairs.

14. WATER SYSTEM PLAN UPDATE

The Department of Health requires Water System Plans to be reviewed and updated every six years. The next Water System Plan update is planned for 2020. The approximate cost of this improvement project is $95,000.

15. WELL NO. 6 PROTECTIVE COVENANTS

The City of Selah owns all of its well sites, and all but Well No. 6 appear to have a recorded protective covenant establishing a 100-foot radius of sanitary protection, in accordance with Department of Health requirements, for source wells. The City plans to execute and file a "Declaration of Covenant" for Well No. 6 with the Yakima County Auditor's Office. Provided below are the estimated project costs:

Item	Unit	Qty.	Unit Cost	Total Cost
Survey of Well Locations	LS	–	–	$5,000
Legal Description Preparation	LS	–	–	$10,000
Covenant Preparation and Filing	LS	–	–	$2,500
			TOTAL ESTIMATED COST	**$17,500**

16. DISTRIBUTION SYSTEM FLOW TESTING AND HYDRAULIC MODEL CALIBRATION

Hydraulic model calibration was discussed in CHAPTER 3 of this Plan. Flow test data provided by the City has not been updated since 2010. Hydraulic model calibration will involve conducting pressure and fire flow tests at approximately 20 locations throughout the distribution system by the City Fire Department. Reservoir levels and well pump flow rates will be recorded at the time of testing to provide accurate calibration of the system model. Also, multiple hydrants should be flowed at once to more realistically simulate a fire flow condition. Following completion of updated flow testing, the hydraulic model will be calibrated as necessary to accurately represent fire flows throughout the distribution system. The approximate cost to complete this improvement is $12,000, which includes approximately $5,000 for hydraulic model updates and calibration.

TABLE 8-1 SCHEDULE OF RECOMMENDED O&M IMPROVEMENTS

Priority No.	Improvement Description	Estimated Cost in 2014 Dollars	Completion Year							Funding Source
			2015	2016	2017	2018	2019	2020	2021 to 2035	
1	Source Meter Calibration	3,000	3,090	3,180	3,280	3,380	3,480	3,580	3,690	City
2	Fire Hydrant Replacements/Installations	5,000	5,150	5,300	5,460	5,630	5,800	5,970	6,150	City
3	Wellhead Protection Plan Update	500		530		560		600	610	City
4	Palm Park Reservoir Cleaning and Inspection	10,000	10,300					11,940	12,300	City
5	Lookout Point Reservoir Cleaning and Inspection	20,000	20,600					23,880	24,600	City
6	Telemetry System Improvements	115,000	115,000							City
7	Brader Hill Reservoir Cleaning and Inspection	10,000		10,610					12,300	City
8	Valhalla Reservoirs Cleaning and Inspection	10,000		10,610					12,300	City
9	Goodlander Reservoir Cleaning and Inspection	10,000					11,590		12,300	City
10	North Reservoirs Cleaning and Repair	33,100				37,250			40,710	City
11	North Reservoirs Cleaning and Inspection	10,000							12,300	City
12	Well Nos. 3 and 4 Rehabilitation	115,400				129,880			141,930	City
13	DOH Sanitary Survey	5,000		5,300					6,150	City
14	Water System Plan Update	95,000						113,430	116,840	City
15	Well No. 6 Protective Covenants	17,500			19,120				21,520	City
16	Distribution System Flow Testing and Hydraulic Model Calibration	12,000			13,110				14,760	City
	TOTAL COSTS	471,500	154,140	35,530	40,970	176,700	20,870	159,400	438,460	

Note: Improvement costs for years following 2014 include 3% inflation per year.

8.3 MAJOR CAPITAL IMPROVEMENTS

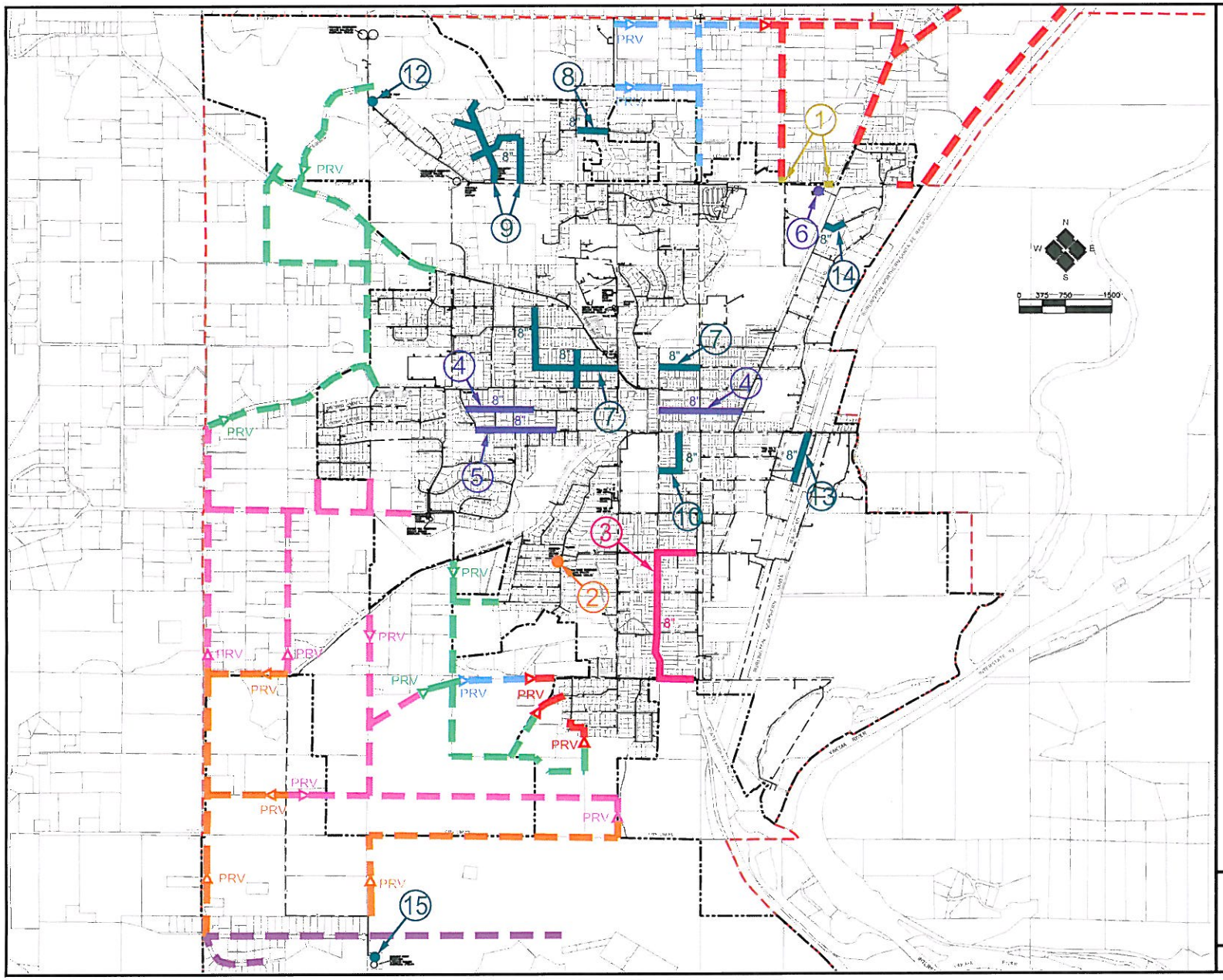
The following listing of recommended major capital improvements has been sub-divided into two categories: 1) year 2015 through year 2020 prioritized improvements and 2) year 2021 through year 2035 prioritized improvements, since not all of the recommended improvements can be completed within the next six years. The recommended improvements from both categories are identified in Figure 8-1 Recommended Water System Improvements.

8.3.1 Year 2015 through Year 2020 Prioritized Improvements

1. EAST GOODLANDER ROAD WATER MAIN IMPROVEMENTS

This improvement project will be constructed as part of the East Goodlander Road Pavement Preservation Project. Improvements include extending the existing 12-inch water main pipe to Wenas Road and along Lancaster Road just beyond the roadway construction limits. Improvements will allow future water main extension without detrimental impacts to the newly constructed roadway. New water services will also be installed as part of the project. Provided below are the estimated project costs:

Item	Unit	Qty.	Unit Cost	Total Cost
Shoring or Extra Excavation	LF	310	$1	$310
Select Backfill	CY	100	$30	$3,000
12-Inch D.I. Water Main	LF	270	$60	$16,200
6-Inch D.I. Water Main	LF	40	$50	$2,000
12-Inch Tapping Sleeve and Valve	EA	1	$3,500	$3,500
Hydrant Assembly	EA	1	$4,500	$4,500
Water Service Connection	EA	13	$1,000	$13,000
HMA Surface Repair	TON	60	$120	$7,200
20" Casing Pipe (sleeve)	LF	20	$75	$1,500
Minor Change	FA	–	–	$5,000
			Construction Cost Subtotal	$56,210
			Sales Tax (8.2%)	$4,610
			Subtotal	$60,820
			Contingency (15%)	$9,100
			Subtotal	$69,920
			Engineering & Administration	$3,500
			Construction Engineering	$9,100
			TOTAL ESTIMATED COST	**$82,520**



CITY OF SELAH

Water System Plan Update

RECOMMENDED WATER SYSTEM IMPROVEMENTS

LEGEND

- RETAIL SERVICE AREA BOUNDARY (CITY LIMITS)
- FUTURE SERVICE AREA BOUNDARY (URBAN GROWTH AREA)
- POSSIBLE FUTURE ZONE 1 IMPROVEMENTS
- POSSIBLE FUTURE ZONE 2 IMPROVEMENTS
- POSSIBLE FUTURE ZONE 3 IMPROVEMENTS
- POSSIBLE FUTURE ZONE 4 IMPROVEMENTS
- POSSIBLE FUTURE ZONE 5 IMPROVEMENTS
- POSSIBLE FUTURE ZONE 6 IMPROVEMENTS

RECOMMENDED SYSTEM IMPROVEMENTS

Year 2015 Improvements

1. East Goodlander Road Water Main Improvements

Year 2016 Improvements

2. Palm Park Booster Pump Station Replacement

Year 2017 Improvements

3. Third St. Water Main Upsizing (DWSRF Loan Secured)

Year 2019 Improvements

4. Orchard Ave. Water Main Replacement and Upsizing
5. W. Naches Ave. Water Main Replacement and Upsizing
6. Well No. 7 Improvements

Year 2021-2035 Improvements

7. W. Bartlett Ave. and N. 7th St. Water Main Replacement and Upsizing
8. Lyle Loop Water Main and PRV Station
9. Goodlander Heights Water Main Replacement and Upsizing
10. S. Second St. and Yakima Ave. Water Main Replacement and Upsizing
11. Service Meter Replacement (Not Shown)
12. Zone 6 Booster Pump Station (Private)
13. Tree Top Ross Plant Water Main Upsizing (Private)
14. North Park Center Loop to N. Wenas Rd. (Private)
15. Zone 7 Booster Pump Station (Private)

HLA Engineering and Land Surveying, Inc.

FIGURE 8-1

2. PALM PARK BOOSTER PUMP STATION REPLACEMENT

To be more reliable and increase pumping capacity to Zone 3, the Palm Park Booster Pump Station should be reconstructed. Currently, the Palm Park booster pump originally constructed in 1967, is only used continuously at peak times of the year (summer months) when demand is high. This improvement will include replacement of the pump station in full.

Item	Unit	Qty.	Unit Cost	Total Cost
Mobilization	LS	–	–	$60,000
Clearing and Grubbing	LS	–	–	$5,000
Demolition of Existing Pump Station	LS	–	–	$20,000
Pump Building (1,000 sq. ft.)	LS	–	–	$200,000
Piping, Fittings, and Valves	LS	–	–	$40,000
(2) 50 HP Booster Pump	LS	–	–	$60,000
Electrical and Control System	LS	–	–	$120,000
HVAC System	LS	–	–	$30,000
Site Grading and Drainage	LS	–	–	$10,000
Site Piping, Fittings, and Valves	LS	–	–	$40,000
HMA Surfacing	LS	–	–	$5,000
Minor Change	FA	–	–	$10,000
			Construction Cost Subtotal	$600,000
			Sales Tax (8.2%)	$49,200
			Subtotal	$649,200
			Contingency (15%)	$97,400
			Subtotal	$746,600
			Engineering & Administration (12%)	$89,600
			Construction Engineering (15%)	$112,000
			TOTAL ESTIMATED COST	**$948,200**

Note: This estimate does not include any improvements to reservoir supply or overflow piping, chlorination system, generator, or relocation of park features.

3. THIRD STREET WATER MAIN UPSIZING

This improvement project will replace the existing 6-inch water main pipes with 8-inch ductile iron pipes throughout the Third Street area. The improvement will improve both fire flow capacity and system reliability in this residential area. Provided below are the estimated project costs:

Item	Unit	Qty.	Unit Cost	Total Cost
Mobilization	LS	–	–	$40,000
Temporary Traffic Control	LS	–	–	$40,000
Shoring or Extra Excavation	LF	2,250	$1	$2,250
Select Backfill	CY	450	$35	$15,750
8-Inch D.I. Water Main	LF	2,250	$55	$123,750
8-Inch Gate Valve	EA	13	$1,400	$18,200
Water Service Connection	EA	75	$1,500	$112,500
HMA Surface Repair	SY	2,100	$40	$84,000
Pavement Markings	LS	–	–	$1,500
Minor Change	FA	–	–	$10,000
			Construction Cost Subtotal	$447,950
			Sales Tax (8.2%)	$36,740
			Subtotal	$484,690
			Contingency (15%)	$72,560
			Subtotal	$557,250
			Engineering & Administration (12%)	$66,900
			Construction Engineering (15%)	$83,600
			DWSRF Loan Fee (1%)	$7,078
			TOTAL ESTIMATED COST	**$714,828**

A DWSRF loan was received in 2014 to construct this improvement project. It is anticipated this project will be constructed in conjunction with the Third Street Reconstruction project. Should funding be unavailable for the street reconstruction project, this water improvements project is anticipated to be constructed in 2017.

4. ORCHARD AVENUE WATER MAIN REPLACEMENT AND UPSIZING

This improvement project will replace the existing 4-inch and 6-inch water main pipes with 8-inch ductile iron pipes along Orchard Avenue from North 8th Street to 12th Street and North 3rd Street to North Wenas Ave. The improvement will improve both fire flow capacity and system reliability in this residential area. Provided below are the estimated project costs:

Item	Unit	Qty.	Unit Cost	Total Cost
Mobilization	LS	–	–	$26,500
Temporary Traffic Control	LS	–	–	$20,000
Shoring or Extra Excavation	LF	2,470	$1	$2,470
Select Backfill	CY	270	$35	$9,450
8-Inch D.I. Water Main	LF	2,470	$55	$135,850
8-Inch Gate Valve	EA	12	$1,400	$16,800
Water Service Connection	EA	62	$1,500	$93,000
HMA Surface Repair	SY	1,650	$40	$66,000
Minor Change	FA	–	–	$10,000
			Construction Cost Subtotal	$380,070
			Sales Tax (8.2%)	$31,170
			Subtotal	$411,240
			Contingency (15%)	$61,700
			Subtotal	$472,940
			Engineering & Administration (12%)	$56,800
			Construction Engineering (15%)	$70,900
			TOTAL ESTIMATED COST	**$600,640**

5. WEST NACHES AVENUE WATER MAIN REPLACEMENT AND UPSIZING

This improvement project will replace the existing 6-inch water main pipes with 8-inch ductile iron pipes along West Naches Avenue. The improvement will improve both fire flow capacity and system reliability in this residential area. Provided below are the estimated project costs:

Item	Unit	Qty.	Unit Cost	Total Cost
Mobilization	LS	–	–	$21,000
Temporary Traffic Control	LS	–	–	$20,000
Shoring or Extra Excavation	LF	1,300	$1	$1,300
Select Backfill	CY	440	$35	$15,400
8-Inch D.I. Water Main	LF	1,300	$55	$71,500
8-Inch Gate Valve	EA	14	$1,400	$19,600
Water Service Connection	EA	40	$1,500	$60,000
HMA Surface Repair	SY	1,900	$40	$76,000
Pavement Markings	LS	–	–	$1,500
Minor Change	FA	–	–	$10,000
			Construction Cost Subtotal	$296,300
			Sales Tax (8.2%)	$24,300
			Subtotal	$320,600
			Contingency (15%)	$48,100
			Subtotal	$368,700
			Engineering & Administration (12%)	$44,200
			Construction Engineering (15%)	$55,300
			TOTAL ESTIMATED COST	**$468,200**

6. WELL NO. 7 IMPROVEMENTS

Due to seasonal water demands, overall water system production varies significantly throughout the year. Of all City wells, Well No. 7 obtains the largest existing water rights, and produces a large percentage of the City's potable water. To accommodate the varying demands, improvements to Well No. 7 include a new variable frequency drive (VFD) and pump motor, pressure transmitter assembly, chlorine control panel, split-system air conditioning unit, and revisions to the telemetry control panel. The approximate cost of this improvement is $228,100.

Item	Unit	Qty.	Unit Cost	Total Cost
Mobilization	LS	–	–	$10,000
Existing Electrical Demolition	LS	–	–	$6,000
150 HP VFD and Appurtenances	LS	–	–	$40,000
150 HP Pump Motor	LS	–	–	$30,000
Pressure Transmitter Assembly	LS	–	–	$3,000
Chlorine Control Panel	LS	–	–	$12,000
Split-Sytem A/C Unit	LS	–	–	$12,000
Telemetry Control Panel Revisions	LS	–	–	$15,000
Minor Change	FA	–	–	$10,000
			Construction Cost Subtotal	$138,000
			Sales Tax (8.2%)	$11,300
			Subtotal	$149,300
			Contingency (15%)	$22,400
			Subtotal	$171,700
			Engineering & Administration (12%)	$20,600
			Programming	$10,000
			Construction Engineering (15%)	$25,800
			TOTAL ESTIMATED COST	**$228,100**

8.3.2 Year 2021 through Year 2035 Prioritized Improvements

7. WEST BARTLETT AVENUE AND NORTH SEVENTH STREET WATER MAIN REPLACEMENT AND UPSIZING

This improvement project will replace the existing 4-inch and 6-inch water main pipes with 8-inch ductile iron pipes along Bartlett Avenue from Ninth Street to Fifth Street and Third Street to North First Street, North Seventh Street from Home Avenue to Fremont Avenue, and North Ninth Street from Bartlett Avenue to Cherry Avenue. The improvement will improve both fire flow capacity and system reliability in this residential area. Provided below are the estimated project costs:

Item	Unit	Qty.	Unit Cost	Total Cost
Mobilization	LS	–	–	$25,000
Temporary Traffic Control	LS	–	–	$20,000
Shoring or Extra Excavation	LF	3,640	$1	$3,640
Select Backfill	CY	210	$35	$7,350
8-Inch D.I. Water Main	LF	3,640	$55	$200,200
8-Inch Gate Valve	EA	16	$1,400	$22,400
Water Service Connection	EA	70	$1,500	$105,000
HMA Surface Repair	SY	2,000	$40	$80,000
Gravel Surface Repair	SY	300	$15	$4,500
Minor Change	FA	–	–	$10,000
			Construction Cost Subtotal	$478,090
			Sales Tax (8.2%)	$39,210
			Subtotal	$517,300
			Contingency (15%)	$77,600
			Subtotal	$594,900
			Engineering & Administration (12%)	$71,400
			Construction Engineering (15%)	$89,200
			TOTAL ESTIMATED COST	**$755,500**

8. LYLE LOOP WATER MAIN EXTENSION AND PRV STATION

This improvement project will include the construction of a new 8-inch water main, continuing west on Lyle Loop to Terry Lane. Construction will also include a new pressure reducing valve (PRV) station for connecting Zone 3 and Zone 2. Looping this water main will provide redundancy and improve fire flow capacity in this part of the City. Provided below are the estimated project costs:

Item	Unit	Qty.	Unit Cost	Total Cost
Mobilization	LS	–	–	$30,000
Temporary Traffic Control	LS	–	–	$20,000
Shoring or Extra Excavation	LF	500	$1	$500
Select Backfill	CY	60	$35	$2,100
8-Inch D.I. Water Main	LF	500	$55	$27,500
8-Inch Tapping Sleeve and Valve Assembly	EA	1	$4,000	$4,000
Water Service Connection	EA	6	$1,500	$9,000
PRV Station, Complete	LS	1	$40,000	$40,000
Gravel Surface Repair	SY	670	$15	$10,050
Minor Change	FA	–	–	$10,000
			Construction Cost Subtotal	$153,150
			Sales Tax (8.2%)	$12,560
			Subtotal	$165,710
			Contingency (15%)	$24,900
			Subtotal	$190,610
			Engineering & Administration (12%)	$22,900
			Construction Engineering (15%)	$28,600
			TOTAL ESTIMATED COST	**$242,110**

9. GOODLANDER HEIGHTS WATER MAIN REPLACEMENT AND UPSIZING

This improvement project will replace the existing 4-inch water main pipes with 8-inch ductile iron pipes throughout the Goodlander Heights area. The improvement will improve both fire flow capacity and system reliability in this residential area. Provided below are the estimated project costs:

Item	Unit	Qty.	Unit Cost	Total Cost
Mobilization	LS	–	–	$30,000
Temporary Traffic Control	LS	–	–	$20,000
Shoring or Extra Excavation	LF	3,400	$1	$3,400
Select Backfill	CY	230	$35	$8,050
8-Inch D.I. Water Main	LF	3,400	$55	$187,000
8-Inch Gate Valve	EA	7	$1,400	$9,800
Water Service Connection	EA	50	$1,500	$75,000
HMA Surface Repair	SY	2,010	$40	$80,400
Minor Change	FA	–	–	$10,000
			Construction Cost Subtotal	$423,650
			Sales Tax (8.2%)	$34,740
			Subtotal	$458,390
			Contingency (15%)	$68,800
			Subtotal	$527,190
			Engineering & Administration (12%)	$63,300
			Construction Engineering (15%)	$79,100
			TOTAL ESTIMATED COST	**$669,590**

10. SOUTH SECOND STREET AND YAKIMA AVENUE WATER MAIN REPLACEMENT AND UPSIZING

This improvement project will replace the existing 4-inch and 6-inch water main pipes with 8-inch ductile iron water main pipes along South 2nd Street, and continuing west along West Yakima Avenue. The improvement will improve both fire flow capacity and system reliability in this residential area. Provided below are the estimated project costs:

Item	Unit	Qty.	Unit Cost	Total Cost
Mobilization	LS	–	–	$0
Temporary Traffic Control	LS	–	–	$15,000
Shoring or Extra Excavation	LF	1,100	$1	$1,100
Select Backfill	CY	70	$35	$2,450
8-Inch D.I. Water Main	LF	1,100	$55	$60,500
8-Inch Gate Valve	EA	2	$1,400	$2,800
Water Service Connection	EA	23	$1,500	$34,500
HMA Surface Repair	SY	730	$40	$29,200
Pavement Markings	LS	–	–	$1,500
Minor Change	FA	–	–	$10,000
			Construction Cost Subtotal	$157,050
			Sales Tax (8.2%)	$12,880
			Subtotal	$169,930
			Contingency (15%)	$25,500
			Subtotal	$195,430
			Engineering & Administration (12%)	$23,500
			Construction Engineering (15%)	$29,300
			TOTAL ESTIMATED COST	**$248,230**

11. SERVICE METER REPLACEMENT

The City currently has approximately 1,900 service meters and most of these meters are more than 10 years old and are a mix of touch-read and hand-read meters. The City currently budgets to the Auto Meter Read fund approximately $18,000 a year for service meter replacements. Replacement of older service meters will improve accuracy and potentially reduce the percentage of DSL. Annual replacement meters are still necessary until the City converts all meters to radio-read.

12. ZONE 6 BOOSTER PUMP STATION (PRIVATE)

This improvement project will include construction of a 500 GPM booster pump, pump building, and 12-inch transmission main. The improvement will provide water to the north Zone 6, future Valhalla Heights development.

13. TREE TOP ROSS PLANT WATER MAIN UPSIZING (PRIVATE)

This improvement project will replace the existing 4-inch water main pipes with 8-inch ductile iron pipes along within the Tree Top Ross Plant. The improvement will improve both fire flow capacity and system reliability in this industrial area.

14. NORTH PARK CENTER LOOP TO NORTH WENAS ROAD (PRIVATE)

This improvement project will include the construction of a new 8-inch water main loop connecting North Park Drive to North Wenas Road. The improvement will improve both fire flow capacity and system reliability in this area.

15. ZONE 7 BOOSTER PUMP STATION (PRIVATE)

This improvement project will include construction of a 500 GPM booster pump, pump building, and 12-inch transmission main. The improvement will provide water to the Zone 7, future Lookout Point development.

8.3.3 Major Capital Improvement Schedule

Table 8-2 provides a six-year schedule for completion of some of the recommended major capital improvements. Scheduling of the remaining improvements beyond this six-year period should be reviewed yearly as priorities and City growth patterns change and progress. The estimated improvement costs are provided in Table 8-2, as well as the total projected yearly cost. The estimated costs in Table 8-2 have been inflated for each year after 2014 to reflect the possible future costs based upon the projected year the improvement will be completed. Improvements that are projected to take place after year 2020 have been inflated to reflect year 2021 costs although many of these improvements will take place after the year 2021.

TABLE 8-2 SCHEDULE OF RECOMMENDED MAJOR CAPITAL IMPROVEMENTS

Priority No.	Improvement Description	Estimated Cost in 2014 Dollars	Completion Year							Funding Source
			2015	2016	2017	2018	2019	2020	2021 to 2035	
1	East Goodlander Road Water Main Improvements	82,520	85,000							City
2	Palm Park Booster Pump Station Replacement	948,200		1,005,950						SRF Loan/City
3	Third Street Water Main Upsizing	714,828			714,828					SRF Loan/City
4	Orchard Avenue Water Main Replacement and Upsizing	600,640					696,310			SRF Loan/City
5	W. Naches Ave. Water Main Replacement and Upsizing	468,200					542,770			SRF Loan/City
6	Well No. 7 Improvements	228,100					264,430			SRF Loan/City
7	W. Bartlett Ave. and N. 7th St. Water Main Replacement and Upsizing	755,500							929,170	SRF Loan/City
8	Lyle Loop Water Main Extension and PRV Station	242,110							297,760	SRF Loan/City
9	Goodlander Heights Water Main Replacement and Upsizing	669,590							823,510	SRF Loan/City
10	S. Second St. and Yakima Ave. Water Main Replacement and Upsizing	248,230							305,290	SRF Loan/City
11	Service Meter Replacement (to Auto Meter Read fund)	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	Delinquent Fees
12	Zone 6 Booster Pump Station	N/A								Private
13	Tree Top Ross Plant Water Main Upsizing	N/A								Private
14	North Park Center Loop to N. Wenas Rd.	N/A								Private
15	Zone 7 Booster Pump Station	N/A								Private
	TOTAL COSTS	3,945,198	103,000	1,023,950	732,828	18,000	1,521,510	18,000	2,373,730	

Note: Improvement costs for years following 2014 include 3% inflation per year.

8.4 FUTURE MAJOR CAPITAL IMPROVEMENTS (PLANNING)

A general plan for future major capital improvements that would be a result of system expansion is shown in Figure 8-1. Recommended major capital improvements discussed in Section 8.3 are also shown in Figure 8-1 for reference. This plan represents the projected water mains/structures, including estimated sizes, required as development expands beyond what the existing system serves within the City's current and future service area boundaries. Although conditions and circumstances in the City's water system may change the exact location and/or configuration of needed improvements, the general plan shown in Figure 8-1 allows the City to review proposed development with respect to system expansion. Also, as new development is proposed and/or occurs, the City will need to further evaluate the improvement required and review the effects that the system expansion plans will have on the existing distribution system.