

10 Capital Improvements Plan

SECTION 10

Capital Improvements Plan

This chapter summarizes the improvements discussed in the preceding chapters, and presents a capital improvements plan (CIP) update for Lebanon's water system. All exhibits are located at the end of this chapter.

The review of water rates and funding alternatives, as required by the state's Drinking Water Program master planning rules, are provided in Chapter 11.

Capital Improvements Plan

Exhibit 10-1 presents the proposed CIP update for Lebanon. The individual projects include those that have been described in the technical sections of this report, and in some cases, projects that Lebanon has previously identified as needed. **Exhibit 10-2** is a map of suggested piping improvements, corresponding to Exhibit 10-1. Labels for short pipe segments were omitted from this map.

Water use within the community is approaching the capacity of the existing WTP. Constraints at the existing WTP site inhibit future expansion at that site. Further, the current WTP facilities are old, and nearing the end of their useful life; the benefits obtained from replacing or maintaining existing equipment no longer justify the cost. Therefore, the city has decided to initiate a process to replace the existing WTP. City staff has examined a variety of alternatives described fully in Chapter 7, Water Treatment Plant and Source Water Analysis.

The highlighted path in **Exhibit 10-3** shows the basis for the CIP. This alternative relies on river bank wells, located in proximity to the South Santiam River, to provide a 6-mgd water supply for a new filtration water treatment facility. If results differ from the identified pathway, for example if river bank wells prove to be unfeasible, or if filtration treatment is not required, the city will need to adjust the CIP.

The alternatives with the potential for the greatest cost savings use river bank wells as the new source of raw water. Cost savings depend upon two criteria: the ability of river bank wells to supply sufficient flow, and the quality of the raw water produced. Additional investigation is required before either of these criteria may be fully evaluated. Because of the potential for significant cost savings, river bank wells warrant investigation. However, there are many uncertainties associated with the development of river bank wells to achieve a buildout capacity. As a result the water supply and treatment plan, shown in Exhibit 10-3, includes several decision points at which other alternatives, including a surface water intake on either the Santiam Canal or the South Santiam River, may need to be considered.

Because funding limitations may delay construction of a new WTP for 5 to 10 years, the city must continue to rely on the existing WTP in the interim. To reduce the risk of a prolonged service interruption because of a mechanical failure of the single Accelerator® unit, the CIP includes an allowance of \$61,000 for the purchase of replacement parts.

EXHIBIT10-1

Capital Improvements Plan

ENR CCI = 8626

No.	Period	Start Date	End Date	Project Title	Description	Project Allocation		January 2007 Construction Estimate	Construction Contingency (Varies from 20-30%)	Total Construction Estimate	Engineering and Administration Estimate	Total Capital Cost	Notes
						Capacity	Regulatory & Maintenance						
1	2007-2011	2007	2007	Purchase spare parts for WTP	Purchase shelf spare motor, gear reducer, gear box, variable speed drive, impeller shaft, and impeller for the Accelerator Clarifier at the WTP to provide backup for the most vulnerable component of plant	0%	100%	\$61,000	\$12,200	\$73,200	\$0	\$73,200	Without these spare parts on hand, a failure of this system could place the WTP out of service for 6 weeks
2	2007-2011	2007	2007	River bank test well No. 1	Test well design, drilling, installation, aquifer test, MPA test, water quality analysis, flow modeling, and recommendations for site design	100%	0%	\$82,000	\$20,500	\$102,500	\$92,000	\$194,500	River bank well investigation and development costs based on input from Golder and Associates; includes engineering allowance for determining overall supply plan direction following results of pump test
3	2007-2011	2007	2007	River bank well and river intake siting study	Identify suitable location for a test river bank well that can also be used for a river intake	100%	0%	\$0	\$0	\$0	\$36,000	\$36,000	Allowance for reviewing site alternatives, developing recommendation, and providing site (but not property) surveying. Fulfills first task in supply development flowchart (Exhibit 9-3).
4	2007-2011	2007	2007	South 5th Street Reservoir repainting	Repaint steel tank. Cost assumes no lead paint or that it is acceptable to encapsulate lead paint. Cost also includes an allowance for minor seismic upgrade, but this work has not been defined to date.	0%	100%	\$246,000	\$49,200	\$295,200	\$59,000	\$354,200	Estimated at \$4.50/sf interior and exterior. Includes allowance for power washing moss. Cost would go to \$7/sf if there is lead paint and it must be removed rather than be encapsulated. A \$50,000 allowance is included for seismic upgrade.
5	2007-2011	2007	2007	South 5th Street Reservoir security improvements	Improve ladder guard, improve vent and hatch covers	0%	100%	\$26,000	\$8,000	\$34,000	\$7,000	\$41,000	Allowance--not based on specific improvements

EXHIBIT 10-1

Capital Improvements Plan

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6	2007-2011	2007	2008	Existing system pipe replacement in Central Area	P-786: 30' of 12" pipe located along Elmore St. crossing Hwy. 20.	0%	100%	\$3,000	\$1,000	\$4,000	\$1,000	\$5,000	All pipe improvements estimated at \$7.50 per diameter inch per lineal foot for construction. All new is proposed as ductile iron material.
7	2007-2011	2007	2008	Existing system pipe replacement in Central Area	P-787: 890' of 20" pipe located along Hwy. 20 between Milton St. and Elmore St.	0%	100%	\$133,000	\$33,000	\$166,000	\$33,000	\$199,000	Pipes P-786, P-787, P-788, and P-789 assume that WTP will be relocated in the future. If it is expanded at the same location, these pipes should be increased in size to approximately 20".
8	2007-2011	2007	2008	Existing system pipe replacement in Central Area	P-788: 570' of 20" pipe located along Hwy. 20 between Jennings St. and Milton St.	0%	100%	\$87,000	\$22,000	\$109,000	\$22,000	\$131,000	
9	2007-2011	2007	2008	Existing system pipe replacement in Central Area	P-791: 1,390' of 20" pipe located along Hwy. 20 between Airport Rd. and Jennings St.	0%	100%	\$215,000	\$54,000	\$269,000	\$54,000	\$323,000	
10	2007-2015	2007	2015	Small diameter pipeline replacement program	On-going program to replace old and small-diameter pipes.	0%	100%	\$3,410,000	\$682,000	\$4,092,000	\$818,000	\$4,910,000	Assumes existing program continues for the next 10 years.
11	2007-2011	2008	2009	New distribution reservoir tank	3.0 MG, located near the East Grant Street Reservoir; at same overflow elevation	100%	0%	\$1,432,000	\$429,600	\$1,862,000	\$372,400	\$2,230,000	Based on tank cost provided by Morse Construction Group. Does not include cost of property acquisition.

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12	2007-2011	2008	2008	River bank production wells No. 1 and No. 2	Design, construct, and test two 1-mgd production wells	100%	0%	\$389,000	\$97,250	\$486,000	\$120,000	\$610,000	Includes \$200,000 allowance for two 1 mgd pumps + electrical in inexpensive housing.
13	2007-2011	2008	2009	Central-eastern distribution improvements	P-789: 1,100' of 12" pipe located along Main St. between Dewey St. and Russell Dr.	0%	100%	\$102,000	\$26,000	\$128,000	\$26,000	\$154,000	
14	2007-2011	2008	2009	Central-eastern distribution improvements	P-790: 1,000' of 12" pipe located along Main St. between Division Way and Dewey St.	0%	100%	\$92,000	\$23,000	\$115,000	\$23,000	\$138,000	
15	2007-2011	2009	2009	Grant Street Reservoir repainting	Repaint steel tank. Cost assumes no lead paint or that it is acceptable to encapsulate lead paint. Cost also includes an allowance for minor seismic upgrade, but this work has not been defined to date.	0%	100%	\$270,000	\$54,000	\$324,000	\$65,000	\$389,000	Estimated at \$4.50/sf interior and exterior. Includes allowance for power washing moss. Cost would go to \$7/sf if there is lead paint and it must be removed rather than be encapsulated. A \$50,000 allowance is included for seismic upgrade.
16	2007-2011	2009	2009	Grant Street Reservoir security improvements	Improve ladder guard, improve vent and hatch covers	0%	100%	\$26,000	\$8,000	\$34,000	\$7,000	\$41,000	Allowance--not based on specific improvements
17	2007-2011	2009	2009	River Bank test wells No. 2 and No. 3	Test well design, drilling, installation, aquifer test, MPA test, water quality analysis, flow modeling, and recommendations for site design	100%	0%	\$164,000	\$41,000	\$205,000	\$50,000	\$260,000	

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18	2007-2011	2010	2013	River bank wells No. 3, 4, 5, and 6	Design, construct, and test four 1-mgd production wells	100%	0%	\$1,190,000	\$297,500	\$1,487,500	\$370,000	\$1,860,000	Includes \$400,000 allowance for four 1 mgd pumps + electrical in inexpensive housing.
19	2011-2015	2013	2015	Water treatment plant to treat river bank well water	Includes land purchase, water treatment plant, new 2-MG clearwell, high service pump station, and finished water transmission pipeline	75%	25%	\$10,139,000	\$1,650,000	\$11,789,000	\$1,510,000	\$13,300,000	Assumes that river bank wells are successful in providing at least a 6 mgd supply and that filtration of this source water is needed. Costs are based on CH2M HILL's in-house cost estimating program (CPES).
20	2016-2026	2020	2021	Central-eastern distribution improvements	P-821: 360' of 16" pipe located West of River in forested and agricultural land running north-south from Mt. River Dr. toward SE Grant St.	100%	0%	\$44,000	\$11,000	\$55,000	\$11,000	\$66,000	
21	2016-2026	2020	2021	Central-eastern distribution improvements	P-824: 1,890' of 12" pipe located along the railroad tracks running north-south from Gilbert St. to Russell Dr. at Franklin St.	100%	0%	\$174,000	\$44,000	\$218,000	\$44,000	\$262,000	
22	2016-2026	2020	2021	Central-eastern distribution improvements	P-841: 1,330' of 16" pipe located along Mt. River Dr. running north from Waterloo Rd.	100%	0%	\$164,000	\$41,000	\$205,000	\$41,000	\$246,000	
23	2016-2026	2020	2021	Central-eastern distribution improvements	P-842: 2,060' of 16" pipe located in agricultural land running east-west from Gilbert St. to Waterloo Rd. at Mt. River Dr.	100%	0%	\$253,000	\$63,000	\$316,000	\$63,000	\$379,000	

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24	2016-2026	2020	2021	Central-eastern distribution improvements	P-825: 3,430' of 12" pipe running north from the intersection of Market St. and Main St to approximately 900 ft north from the end of Porter St. at Russell Dr.	100%	0%	\$320,000	\$80,000	\$400,000	\$80,000	\$480,000	
25	2016-2026	2020	2021	Central-eastern distribution improvements	P-820: 3,110' of 16" pipe located west of the River in forested and agricultural land running north-south from Mt. River Dr. toward SE Grant St.	100%	0%	\$379,000	\$95,000	\$474,000	\$95,000	\$569,000	
26	2016-2026	2020	2021	Central-eastern distribution improvements	P-823: 850' of 16" pipe located in an open field running northeast from the intersection of Main St. and Market St. to the corner of Gilbert/Railroad St.	100%	0%	\$102,000	\$26,000	\$128,000	\$26,000	\$154,000	
27	2016-2026	2020	2021	East to new area	P-779: 1,200' of 16" pipe located west of the River in agricultural land running North to SE Grant St. at River Park.	100%	0%	\$143,000	\$36,000	\$179,000	\$36,000	\$215,000	
28	2016-2026	2020	2021	Eastern distribution improvements	P-782: 920' of 12" pipe located east of the River in agricultural land northwest of the intersection of E. Grant St. and Ridgeway Dr.	100%	0%	\$82,000	\$21,000	\$103,000	\$21,000	\$124,000	

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29	2016-2026	2020	2021	Eastern distribution improvements	P-784: 5,280' of 12" pipe located east of the River running south along Ridgeway Dr. at E. Grant St. for approximately 4,000'. then Northeast in forest land for approximately 1,300'.	100%	0%	\$481,000	\$120,000	\$601,000	\$120,000	\$721,000	
30	2016-2026	2020	2021	Eastern distribution improvements	P-792: 140' of 12" pipe located east of the River along Ridgeway Dr. just south of E. Grant St.	100%	0%	\$10,000	\$3,000	\$13,000	\$3,000	\$16,000	
31	2016-2026	2020	2021	Eastern distribution improvements	P-793: 150' of 12" pipe located east of the River along Ridgeway Dr. just south of E. Grant St.	100%	0%	\$10,000	\$3,000	\$13,000	\$3,000	\$16,000	
32	2016-2026	2020	2021	Eastern distribution improvements	P-794: 230' of 12" pipe located east of the River in forested land connected to pipe P-784.	100%	0%	\$20,000	\$5,000	\$25,000	\$5,000	\$30,000	
33	2016-2026	2020	2021	Northeastern distribution improvements	P-828: 2,630' of 12" pipe running north from the intersection of E. Wheeler St. and Hiatt St. to the intersection of Williams St. and Industrial Way, then west along Industrial Way to Main St.	100%	0%	\$246,000	\$62,000	\$308,000	\$62,000	\$370,000	

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34	2016-2026	2020	2021	Northeastern distribution improvements	P-803: 820' of 16" pipe located along E. Wheeler St. between Grove St. and Hiatt St.	100%	0%	\$102,000	\$26,000	\$128,000	\$26,000	\$154,000	
35	2016-2026	2020	2021	Northeastern distribution improvements	P-804: 790' of 16" pipe located along E. Wheeler St. between S. Main St. and Grove St.	100%	0%	\$92,000	\$23,000	\$115,000	\$23,000	\$138,000	
36	2016-2026	2020	2021	Northeastern distribution improvements	P-830: 530' of 12" pipe located along Twin Oaks Dr. between Harrison St. and W. Mary St.	100%	0%	\$49,000	\$12,000	\$61,000	\$12,000	\$73,000	
37	2016-2026	2020	2021	Northeastern distribution improvements	P-831: 670' of 16" pipe located along Hiatt St. between SE Grant St. and E. Ash St.	100%	0%	\$82,000	\$21,000	\$103,000	\$21,000	\$124,000	
38	2016-2026	2020	2021	Northeastern distribution improvements	P-832: 480' of 16" pipe located along S. Williams St. between E. Dodge St. and E. Wheeler St.	100%	0%	\$59,000	\$15,000	\$74,000	\$15,000	\$89,000	
39	2016-2026	2020	2021	Northeastern distribution improvements	P-833: 750' of 16" pipe located along S. Williams St. between E. Isabella St. and E. Dodge St.	100%	0%	\$92,000	\$23,000	\$115,000	\$23,000	\$138,000	
40	2016-2026	2020	2021	Northeastern distribution improvements	P-834: 1,330' of 16" pipe running west along E. Ash St. from Hiatt St. to S. Williams St. and north along S. Williams St. from E. Ash St. to E. Isabella St.	100%	0%	\$164,000	\$41,000	\$205,000	\$41,000	\$246,000	

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41	2016-2026	2020	2021	Northeastern distribution improvements	P-829: 870' of 12" pipe located along W. Mary St. between N. 5th St. and Twin Oaks Dr.	100%	0%	\$80,000	\$20,000	\$100,000	\$20,000	\$120,000	
42	2016-2026	2020	2021	Northern distribution improvements	P-737: 1,110' of 12" pipe located in an open field running north from the intersection of Reeves Pkwy. and Hansard Ave. toward Lucky Way.	100%	0%	\$102,000	\$26,000	\$128,000	\$26,000	\$154,000	
43	2016-2026	2020	2021	Northern distribution improvements	P-738: 2,010' of 12" pipe running north from pipe P-737 to the intersection of Lucky Way and Gore Dr. SE.	100%	0%	\$184,000	\$46,000	\$230,000	\$46,000	\$276,000	
44	2016-2026	2020	2021	Northern distribution improvements	P-743: 1,680' of 16" pipe located in an open field extending west from the intersection of Reeves Pkwy and Hansard Ave. parallel to Gore Dr. SE.	100%	0%	\$205,000	\$51,000	\$256,000	\$51,000	\$307,000	
45	2016-2026	2020	2021	Northern distribution improvements	P-768: 910' of 16" pipe located in an open field west of Hansard Ave. running north-south between Reeves Pkwy and Laurel St.	100%	0%	\$113,000	\$28,000	\$141,000	\$28,000	\$169,000	
46	2016-2026	2020	2021	Northern distribution improvements	P-773: 1,650' of 16" pipe located in an open field west of Hansard Ave. running north-south between Reeves Pkwy and Harrison St.	100%	0%	\$205,000	\$51,000	\$256,000	\$51,000	\$307,000	

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47	2016-2026	2020	2021	Northern distribution improvements	P-847: 680' of 16" pipe located in an open field west of Hansard Ave. running north-south between to the intersection of Hwy 34 and 13th St.	100%	0%	\$84,000	\$21,000	\$105,000	\$21,000	\$126,000	
48	2016-2026	2020	2021	Northern distribution improvements	P-814: 4,290' of 12" pipe running east on Gore Dr. southeast from Lucky Way to Hwy 20 then south on Hwy 20 to James Pl.	100%	0%	\$399,000	\$100,000	\$499,000	\$100,000	\$599,000	
49	2016-2026	2020	2021	Southeastern distribution improvements	Pipe on Berlin Road (east of river): 6,100' of 12" pipe	100%	0%	\$563,000	\$141,000	\$704,000	\$141,000	\$845,000	
50	2016-2026	2020	2021	Southeastern distribution improvements	600' of 16" pipe on Waterloo Rd., near Riverview School, to connect to river crossing	100%	0%	\$74,000	\$19,000	\$93,000	\$19,000	\$112,000	Specific location for river undercrossing has not been determined. Actual cost may vary considerably depending on final alignment.
51	2016-2026	2020	2021	Southeastern distribution improvements	New 24" river crossing, approx. 1,200' in length. Located near Riverview School. Assume 30" (approx. 25" ID) HDPE pipe, with Dimension Ratio of 13.5.	100%	0%	\$614,000	\$154,000	\$768,000	\$154,000	\$922,000	
52	2016-2026	2020	2021	Southeastern distribution improvements	P-754: 310' of 12" pipe located along S. Main Rd. north of the intersection with Crowfoot Rd.	100%	0%	\$31,000	\$8,000	\$39,000	\$8,000	\$47,000	

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53	2016-2026	2020	2021	Southeastern distribution improvements	P-755: 1,930' of 12" pipe located along S. Main Rd. between Crowfoot Rd. and Oak Creek Way.	100%	0%	\$174,000	\$44,000	\$218,000	\$44,000	\$262,000	
54	2016-2026	2020	2021	Southeastern distribution improvements	P-756: 1,570' of 16" pipe located along Crowfoot Rd. between S. Main Rd. and E. View Ln.	100%	0%	\$194,000	\$49,000	\$243,000	\$49,000	\$292,000	
55	2016-2026	2020	2021	Southeastern distribution improvements	P-840: 1,630' of 16" pipe located in an open field west of the intersection of S. Main Rd. and Crowfoot Rd. running East-West.	100%	0%	\$201,000	\$50,000	\$251,000	\$50,000	\$301,000	
56	2016-2026	2020	2021	Southeastern distribution improvements	P-757: 2,300' of 12" pipe located along Hill View Dr. south of Crowfoot Rd.	100%	0%	\$215,000	\$54,000	\$269,000	\$54,000	\$323,000	
57	2016-2026	2020	2021	Southeastern distribution improvements	P-758: 1,810' of 12" pipe located along E. View Ln between Crowfoot Rd. and Wagon Wheel Dr.	100%	0%	\$164,000	\$41,000	\$205,000	\$41,000	\$246,000	
58	2016-2026	2020	2021	Southeastern distribution improvements	P-759: 750' of 12" pipe located along Wagon Wheel Dr. between Oak Ter. Dr. and E. View Ln.	100%	0%	\$72,000	\$18,000	\$90,000	\$18,000	\$108,000	
59	2016-2026	2020	2021	Southeastern distribution improvements	P-760: 2,030' of 12" pipe located along Hwy. 20 between Cascade Dr. and Market St.	100%	0%	\$184,000	\$46,000	\$230,000	\$46,000	\$276,000	

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60	2016-2026	2020	2021	Southeastern distribution improvements	P-761: 2,990' of 16" pipe located along Cascade Dr. between Crowfoot Rd. and S. Santiam Hwy	100%	0%	\$368,000	\$92,000	\$460,000	\$92,000	\$552,000	
61	2016-2026	2020	2021	Southeastern distribution improvements	P-762: 1,720' of 12" pipe located along Crowfoot Rd. between Central Ave. and Hwy. 20	100%	0%	\$153,000	\$38,000	\$191,000	\$38,000	\$229,000	
62	2016-2026	2020	2021	Southeastern distribution improvements	P-763: 4,000' of 12" pipe located along Hwy. 20 between Crowfoot Rd. and Cascade Dr.	100%	0%	\$368,000	\$92,000	\$460,000	\$92,000	\$552,000	
63	2016-2026	2020	2021	Southeastern distribution improvements	P-764: 3,280' of 12" pipe located along Central Ave. extending south from Crowfoot Rd.	100%	0%	\$297,000	\$74,000	\$371,000	\$74,000	\$445,000	
64	2016-2026	2020	2021	Southeastern distribution improvements	P-765: 2,990' of 12" pipe located along Cascade Dr. between Crowfoot Rd. and Washington St.	100%	0%	\$276,000	\$69,000	\$345,000	\$69,000	\$414,000	
65	2016-2026	2020	2021	Southeastern distribution improvements	P-767: 1,280' of 12" pipe located along Franklin St. between Russell Dr. and River St.	100%	0%	\$123,000	\$31,000	\$154,000	\$31,000	\$185,000	
66	2016-2026	2020	2021	Southeastern distribution improvements	P-785: 2,850' of 16" pipe located along Crowfoot Rd. between Hill View Dr. and Cascade Dr.	100%	0%	\$348,000	\$87,000	\$435,000	\$87,000	\$522,000	

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67	2016-2026	2020	2021	Southeastern distribution improvements	P-818: 1,240' of 12" pipe located in open fields and forested land north of Oak Creek Way extending west from the south end of Hill View Dr. to S. Main Rd.	100%	0%	\$113,000	\$28,000	\$141,000	\$28,000	\$169,000	
68	2016-2026	2020	2021	Southeastern distribution improvements	P-819: 2,880' of 12" pipe located in open fields and forested land extending Northeast from Central Ave. south of Oregon St. to Cascade Dr. North of Washington St.	100%	0%	\$266,000	\$67,000	\$333,000	\$67,000	\$400,000	
69	2016-2026	2020	2021	Southwestern distribution improvements	P-748: 1,630' of 12" pipe located along Stoltz Hill Rd. between Vaughan Ln. and Walker Rd.	100%	0%	\$153,000	\$38,000	\$191,000	\$38,000	\$229,000	
70	2016-2026	2020	2021	Southwestern distribution improvements	P-749: 1,390' of 12" pipe located along Stoltz Hill Rd. between Vaughan Ln. and Walker Rd.	100%	0%	\$123,000	\$31,000	\$154,000	\$31,000	\$185,000	
71	2016-2026	2020	2021	Southwestern distribution improvements	P-750: 1510' of 16" pipe located along Vaughan Ln. between Stoltz Hill Rd. and 10th St.	100%	0%	\$184,000	\$46,000	\$230,000	\$46,000	\$276,000	
72	2016-2026	2020	2021	Southwestern distribution improvements	P-751: 1,540' of 16" pipe located along Vaughan Ln. from just West of 10th St. to S. 7th Pl.	100%	0%	\$184,000	\$46,000	\$230,000	\$46,000	\$276,000	

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Capital Improvements Plan

ENR CCI = 8626

No.	Period	Start Date	End Date	Project Title	Description	Project Allocation		January 2007 Construction Estimate	Construction Contingency (Varies from 20-30%)	Total Construction Estimate	Engineering and Administration Estimate	Total Capital Cost	Notes
						Capacity	Regulatory & Maintenance						
73	2016-2026	2020	2021	Southwestern distribution improvements	P-844: 1,260' of 12" pipe running west into an open field from the intersection of Walker Rd. and Stoltz Hill Rd.	100%	0%	\$113,000	\$28,000	\$141,000	\$28,000	\$169,000	
74	2016-2026	2020	2021	Southwestern distribution improvements	P-845: 1,620' of 12" pipe located in an open field west of the intersection of Walker Rd. and Stoltz Hill Rd running west.	100%	0%	\$153,000	\$38,000	\$191,000	\$38,000	\$229,000	
75		2020	2021	Southwestern distribution improvements	1850' of 16" pipe located in an open field south of Airport Rd. at approximately 1600' west of W. Airway Rd. running north-south.	100%	0%	\$227,000	\$57,000	\$284,000	\$57,000	\$341,000	
76	2016-2026	2020	2021	Southwestern distribution improvements	P-817: 3,450' of 16" pipe located in an open field running southeast to the intersection of Stoltz Hill Rd. and Vaughan Ln.	100%	0%	\$419,000	\$105,000	\$524,000	\$105,000	\$629,000	
77	2016-2026	2020	2021	Western distribution improvements	P-739: 3,460' of 16" pipe located along Hwy. 34 extending west from 13th St.	100%	0%	\$430,000	\$108,000	\$538,000	\$108,000	\$646,000	
78	2016-2026	2020	2021	Western distribution improvements	P-740: 1,610' of 12" pipe located along Tangent St. between Hansard Ave. and 13th St.	100%	0%	\$143,000	\$36,000	\$179,000	\$36,000	\$215,000	

EXHIBIT 10-1

Capital Improvements Plan

ENR CCI = 8626

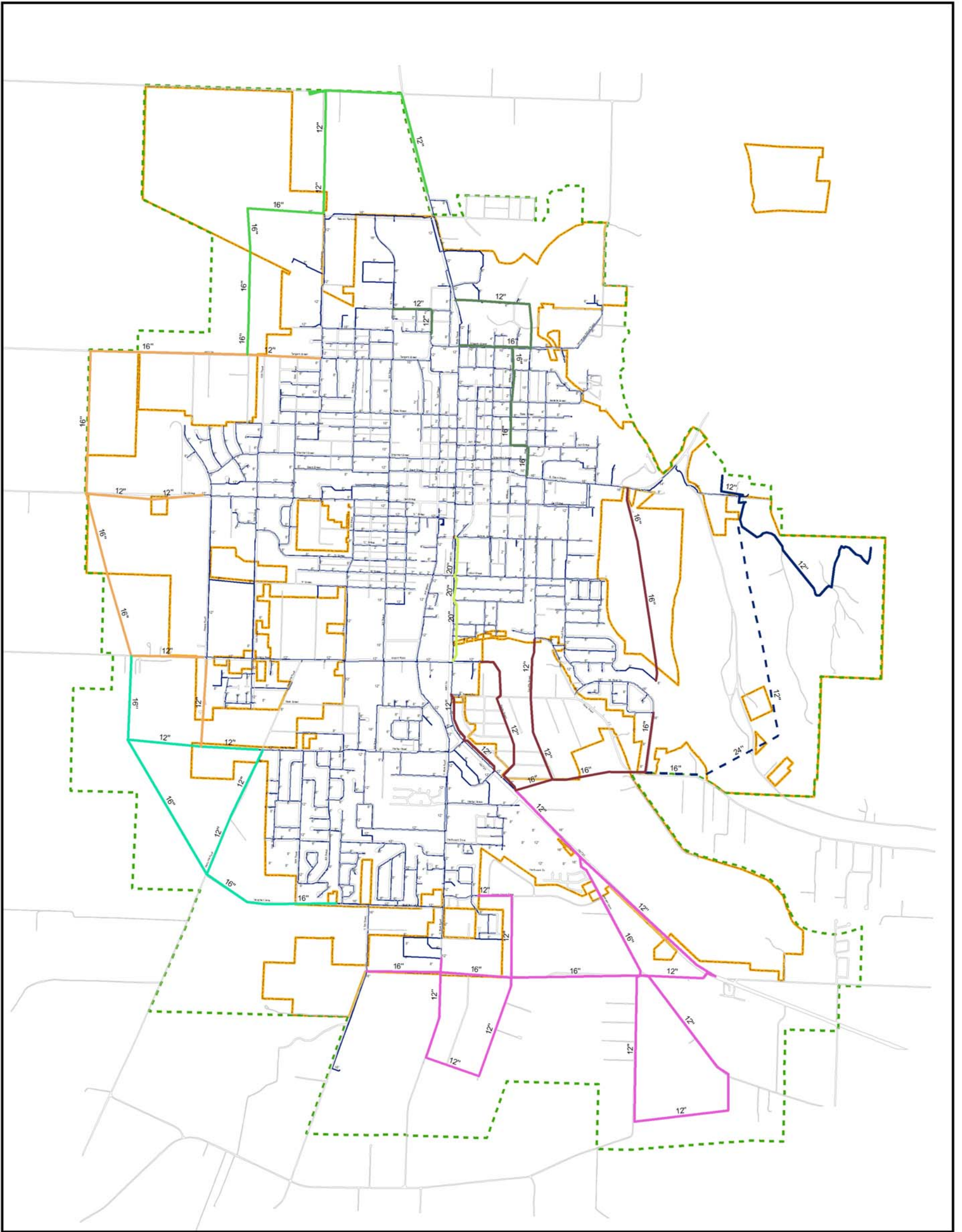
No.	Period	Start Date	End Date	Project Title	Description	Project Allocation		January 2007 Construction Estimate	Construction Contingency (Varies from 20-30%)	Total Construction Estimate	Engineering and Administration Estimate	Total Capital Cost	Notes
						Capacity	Regulatory & Maintenance						
79	2016-2026	2020	2021	Western distribution improvements	P-744: 3,160' of 16" pipe located in an open field running north-south approximately 2,300' west of Sunset Rd. from Hwy. 34 to W. Oak St.	100%	0%	\$389,000	\$97,000	\$486,000	\$97,000	\$583,000	
80	2016-2026	2020	2021	Western distribution improvements	P-745: 1,480' of 12" pipe located along W. Oak St. just west of Airway Rd.	100%	0%	\$133,000	\$33,000	\$166,000	\$33,000	\$199,000	
81	2016-2026	2020	2021	Western distribution improvements	P-746: 1,100' of 12" pipe located along W. Oak St. extending west from W. Airway Rd	100%	0%	\$102,000	\$26,000	\$128,000	\$26,000	\$154,000	
82	2016-2026	2020	2021	Western distribution improvements	P-747: 1,590' of 12" pipe located along Airport Rd. extending west from the intersection of Airway Rd.	100%	0%	\$143,000	\$36,000	\$179,000	\$36,000	\$215,000	
83	2016-2026	2020	2021	Western distribution improvements	P-846: 1,900' of 12" pipe running south along Airway Rd. from the intersection of Airport Rd. and extending into the field south of the Airway Rd. termination.	100%	0%	\$174,000	\$44,000	\$218,000	\$44,000	\$262,000	

EXHIBIT 10-1

Capital Improvements Plan

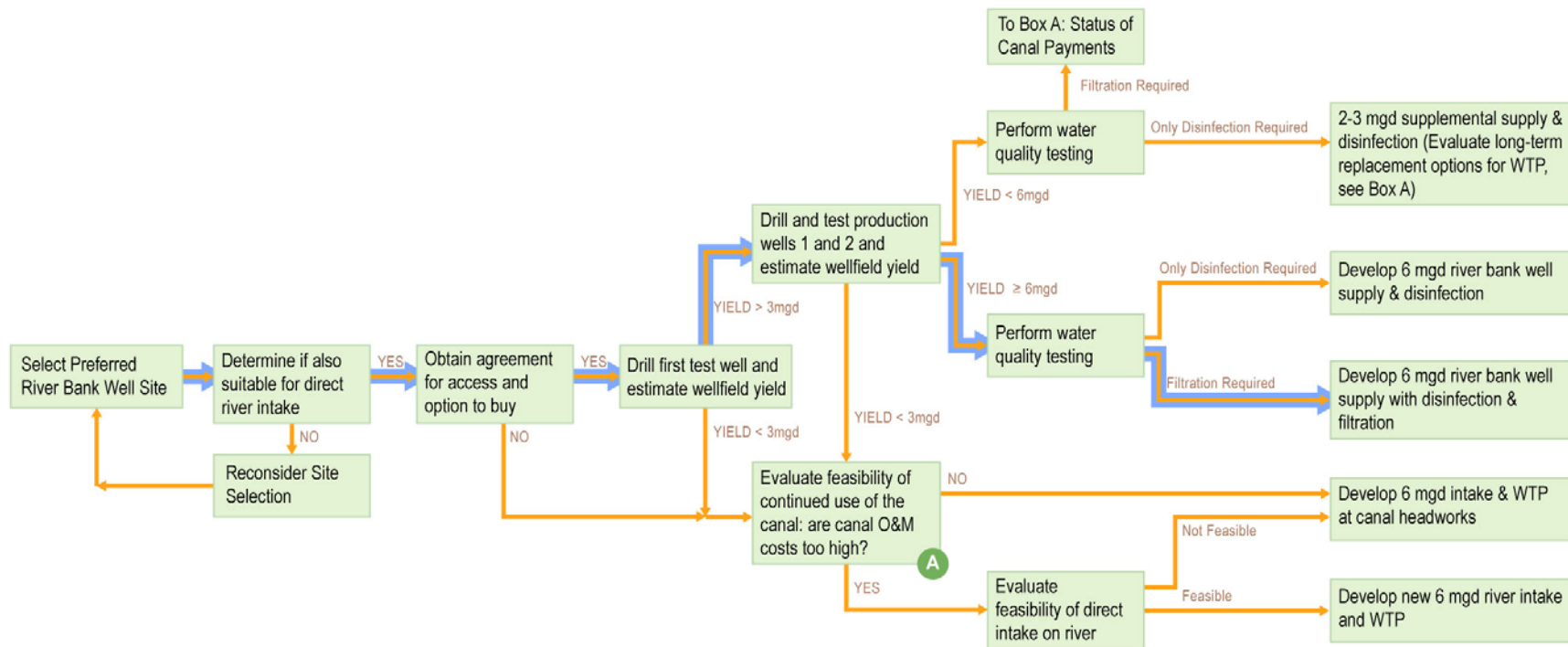
ENR CCI = 8626

No.	Period	Start Date	End Date	Project Title	Description	Project Allocation		January 2007 Construction Estimate	Construction Contingency (Varies from 20-30%)	Total Construction Estimate	Engineering and Administration Estimate	Total Capital Cost	Notes
						Capacity	Regulatory & Maintenance						
84	2016-2026	2020	2021	Western distribution improvements	P-815: 1,830' of 16" pipe located in an open field running southeast from W. Oak St. at approximately 2,800' west of W. Airway Rd. toward Airport Rd.	100%	0%	\$225,000	\$56,000	\$281,000	\$56,000	\$337,000	
85	2016-2026	2020	2021	Western distribution improvements	P-816: 1,880' of 16" pipe located in an open field extending northwest from Airport Rd. approximately 1,600' west of Airway Rd.	100%	0%	\$235,000	\$59,000	\$294,000	\$59,000	\$353,000	
					Total			\$30,840,000	\$6,710,000	\$37,550,000	\$6,870,000	\$44,420,000	



Legend		<p>0 1,500 3,000 4,500</p> <p style="text-align: center;">Feet</p> <p style="text-align: center;">1 inch equals 2,000 feet</p>	<p>Exhibit 10-2</p> <p>Recommended Piping Improvements</p> <p>Lebanon Water Master Plan</p>
<ul style="list-style-type: none"> Urban Growth Boundary Pipes Streets City Limits WTP Location 	<p>Piping Improvements</p> <ul style="list-style-type: none"> Central Central-East East Northeast 		<ul style="list-style-type: none"> North Southeast Southwest West East: Recommended but not Modeled

File Path: \\simba\proj\Lebanon\CityOf\325678\SHPI\ReportFigures\Exhibit9-16FutureSystem_11x17.mxd, Date: April 4, 2007



Note: Highlighted path is the basis for the capital improvements plan; however, the actual outcome is uncertain pending field investigations.

EXHIBIT 10-3
Supply Development Flowchart
Lebanon Master Plan

EXHIBIT 10-4
Lebanon Water System Capital Projects: Cash Flow Projections

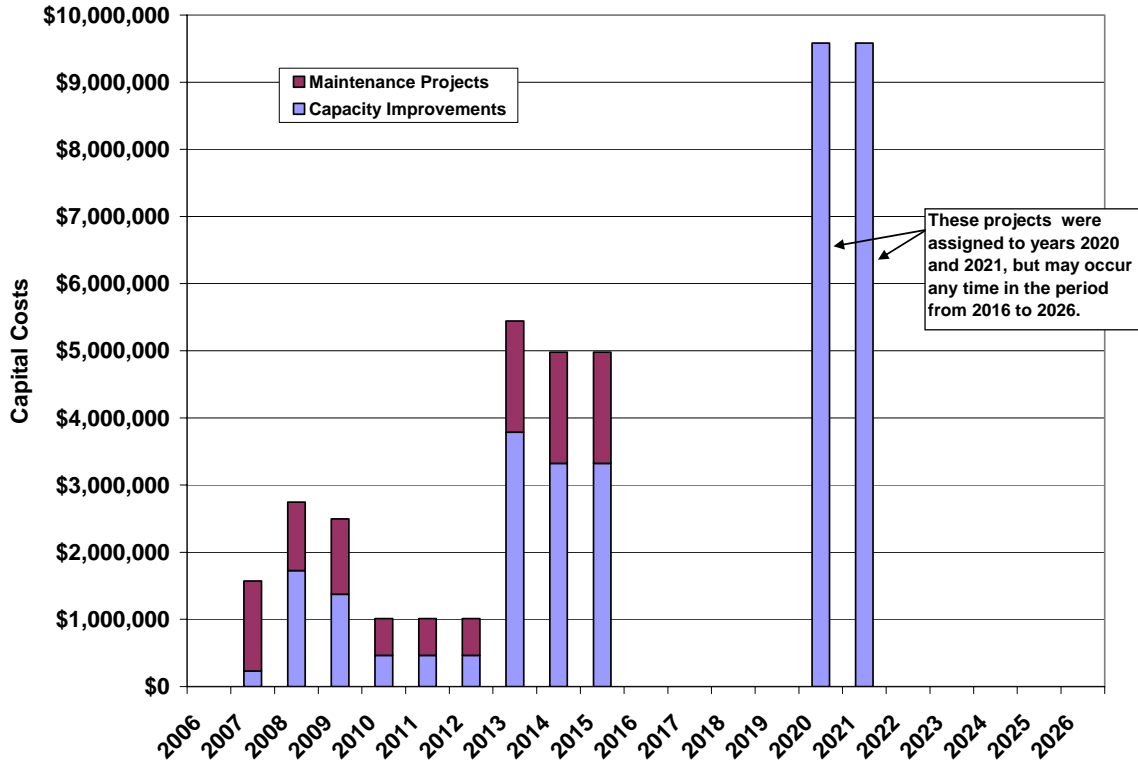


EXHIBIT 10-5
Lebanon Water System Capital Projects: Cash Flow Projections for Capacity Projects

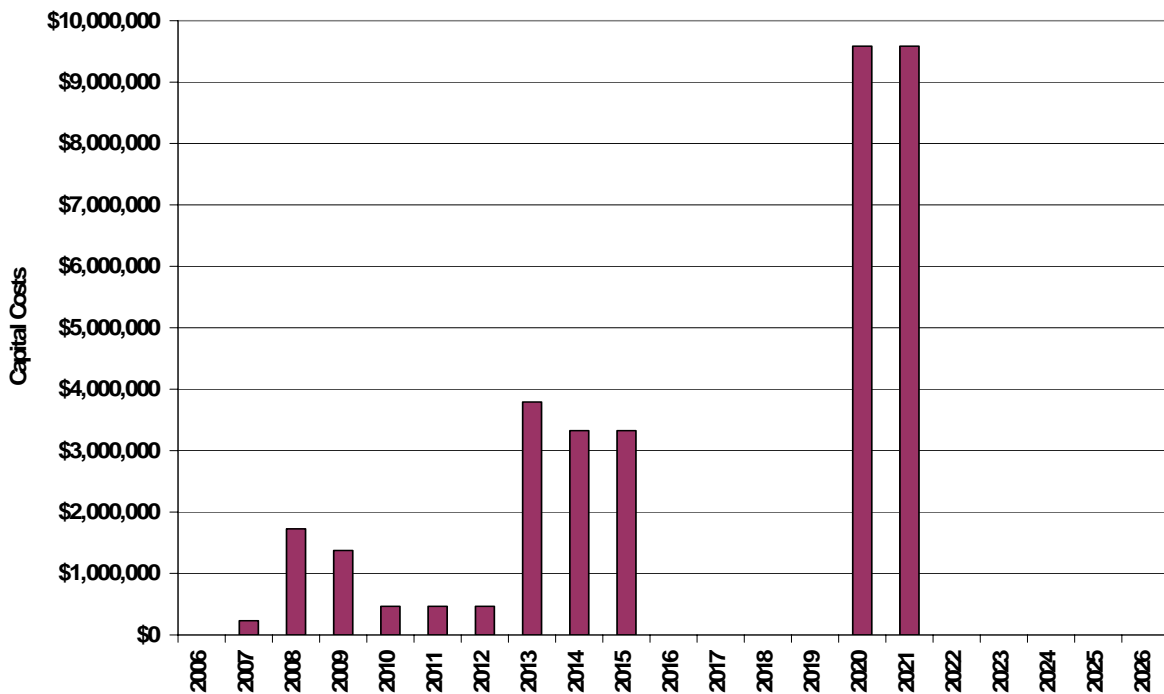


EXHIBIT 10-6
 Lebanon Water System Capital Projects: Cash Flow Projections for Maintenance Projects

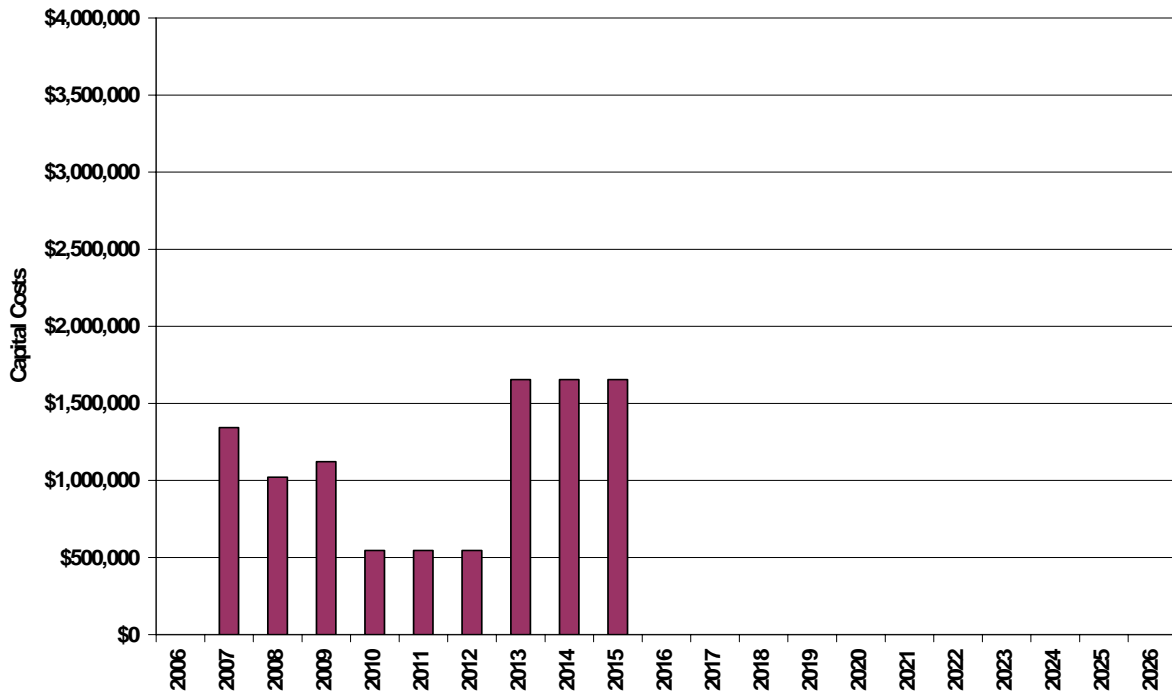


EXHIBIT 10-7
 Summary of CIP Costs by Period

Period	Construction Estimate	Construction Contingency	Total Construction Estimate	Engineering and Administration Estimate	Total Capital Cost by Period
2007-2011	\$7,930,000	\$1,860,000	\$9,790,000	\$2,160,000	\$11,950,000
2012-2016	\$10,140,000	\$1,650,000	\$11,790,000	\$1,510,000	\$13,300,000
2017-2026	\$12,770,000	\$3,200,000	\$15,970,000	\$3,200,000	\$19,170,000
Total	\$30,840,000	\$6,710,000	\$37,550,000	\$6,870,000	\$44,420,000

EXHIBIT 10-8
 Summary of CIP Costs by Facility Type

Facility Type	Construction Estimate	Construction Contingency	Total Construction Estimate	Engineering and Administration Estimate	Total Capital Cost by Facility Type
Water supply and treatment	\$10,200,000	\$1,660,000	\$11,860,000	\$1,510,000	\$13,370,000
River bank wells	\$1,830,000	\$460,000	\$2,290,000	\$670,000	\$2,960,000
Distribution system pipelines	\$16,810,000	\$4,040,000	\$20,850,000	\$4,180,000	\$25,030,000
Reservoirs	\$2,000,000	\$550,000	\$2,550,000	\$510,000	\$3,060,000
Total	\$30,840,000	\$6,710,000	\$37,550,000	\$6,870,000	\$44,420,000

The project locations and dates shown in the CIP should be considered approximate. Lebanon will evaluate the proposed projects each year and make adjustments as appropriate. This is particularly the case for projects in later years. These dates will be refined and estimated costs updated as their proposed implementation dates become nearer.

Exhibits 10-4, 10-5, and 10-6 are cash flow charts. The first provides a summary for all projects. The second and third, respectively, display cash flow for projects that address growth, and for the portion of the projects that support existing customers (maintenance projects).

Summaries of the recommended CIP by project facility type are presented in **Exhibit 10-7**, and by period in **Exhibit 10-8**.

Project Cost Background

The project cost estimates are considered rough order of magnitude estimates. Actual costs will vary by plus 50 percent to minus 30 percent, depending on the final project scope, the bidding climate, and other variable factors.

The project cost estimates are given in January 2007 dollars at an approximate *Engineering News-Record* Construction Cost Index for Seattle Area value of 8626. Prior to finalizing the funding for a project, it will be necessary to update the cost estimate to current costs and to develop a preliminary design to further define the project.

In 1989 the Water System Master Plan identified the need to replace the city's small-diameter waterlines to maintain current service levels while allowing for growth and development. This program increases water service reliability and decreases maintenance by replacing pipes within the estimated 13 miles of old, leaking, and severely undersized portions of the distribution system. Small-diameter waterlines are those 6 inches in diameter or less. During the 8 years this program has been in effect it has replaced 29,525 feet of water-mainline, increased fire protection at each project, and has installed new water services to each adjacent property.

Each year, engineering and maintenance collaborate and prioritize the list of projects to be designed and constructed that year. Engineering surveys and designs the projects and the maintenance small-diameter waterline crew constructs, inspects, and tests waterlines to ensure compliance with city standards. The Small Diameter Waterline Replacement Program budget for 2005-06 is \$480,000.