

City of Bend Drake Lift Station Alternatives

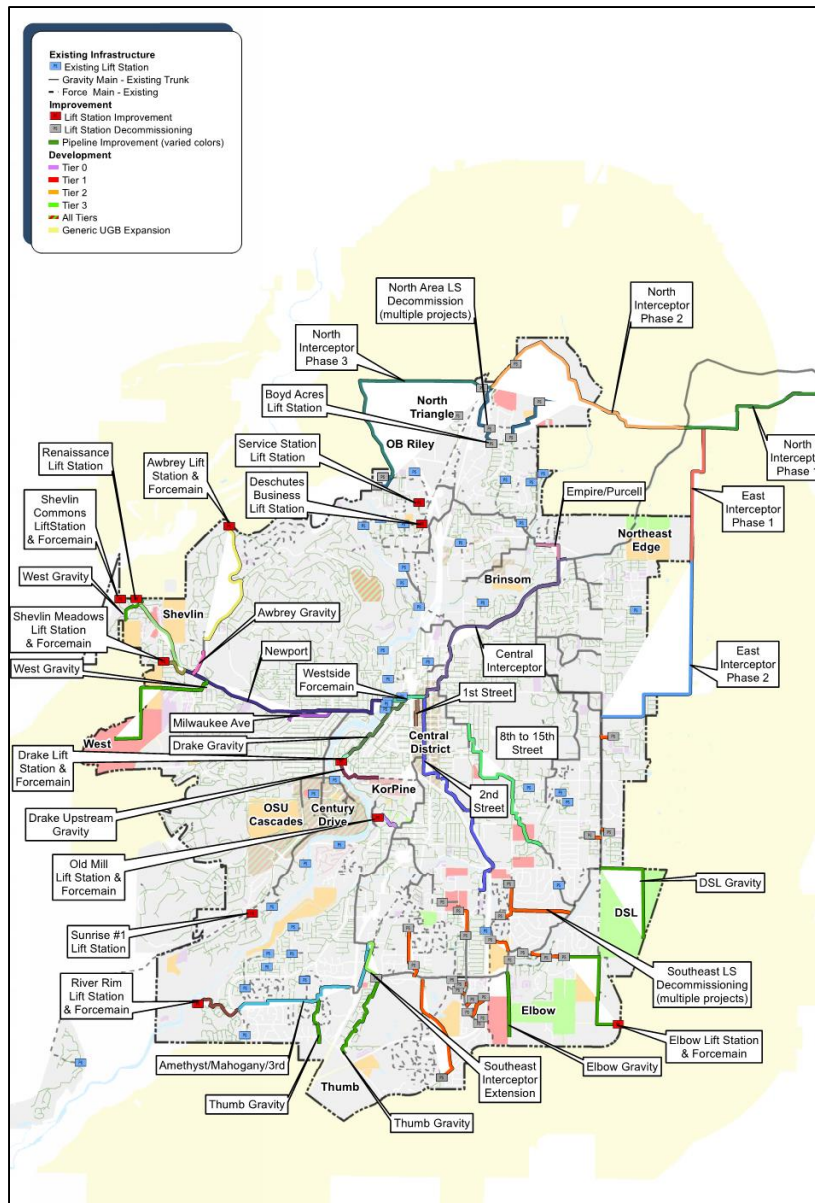
June 2018



OVERVIEW

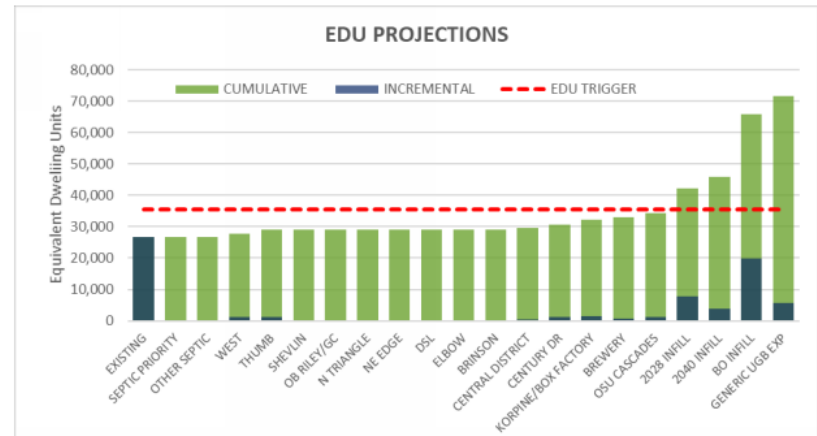
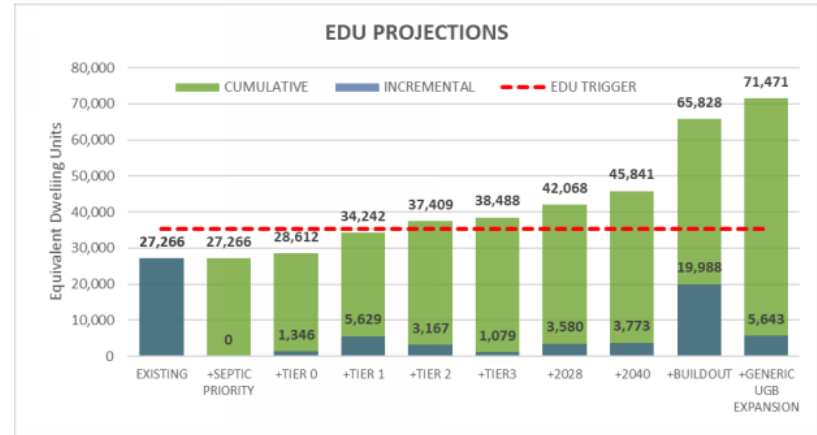
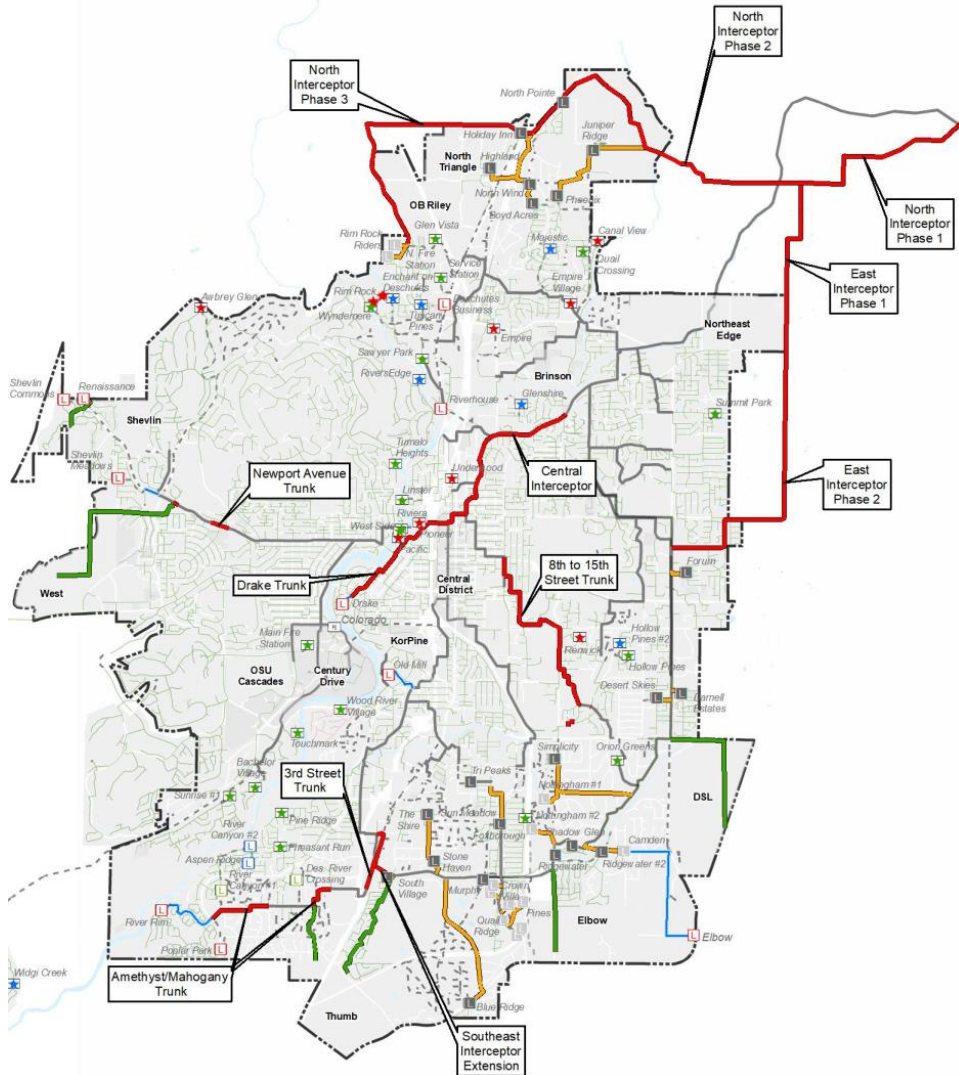
- Highlight Capacity Limitations (Flows, Timing)
- Review (4) Alternatives
- Preliminary Life Cycle Costs Estimates for each Alternative
- Discuss non-cost factors
- Next Steps

DEVELOPMENT CATEGORIES



- Tier 0 – Existing and Permitted
- Tier 1 – 0 to 1 Year Development
- Tier 2 - 2 to 3 Year Development
- Tier 3 - 4 to 5 Year Development
- 2028 – Lowest Density
- 2040 – Moderate Density
- Buildout Max – High Density

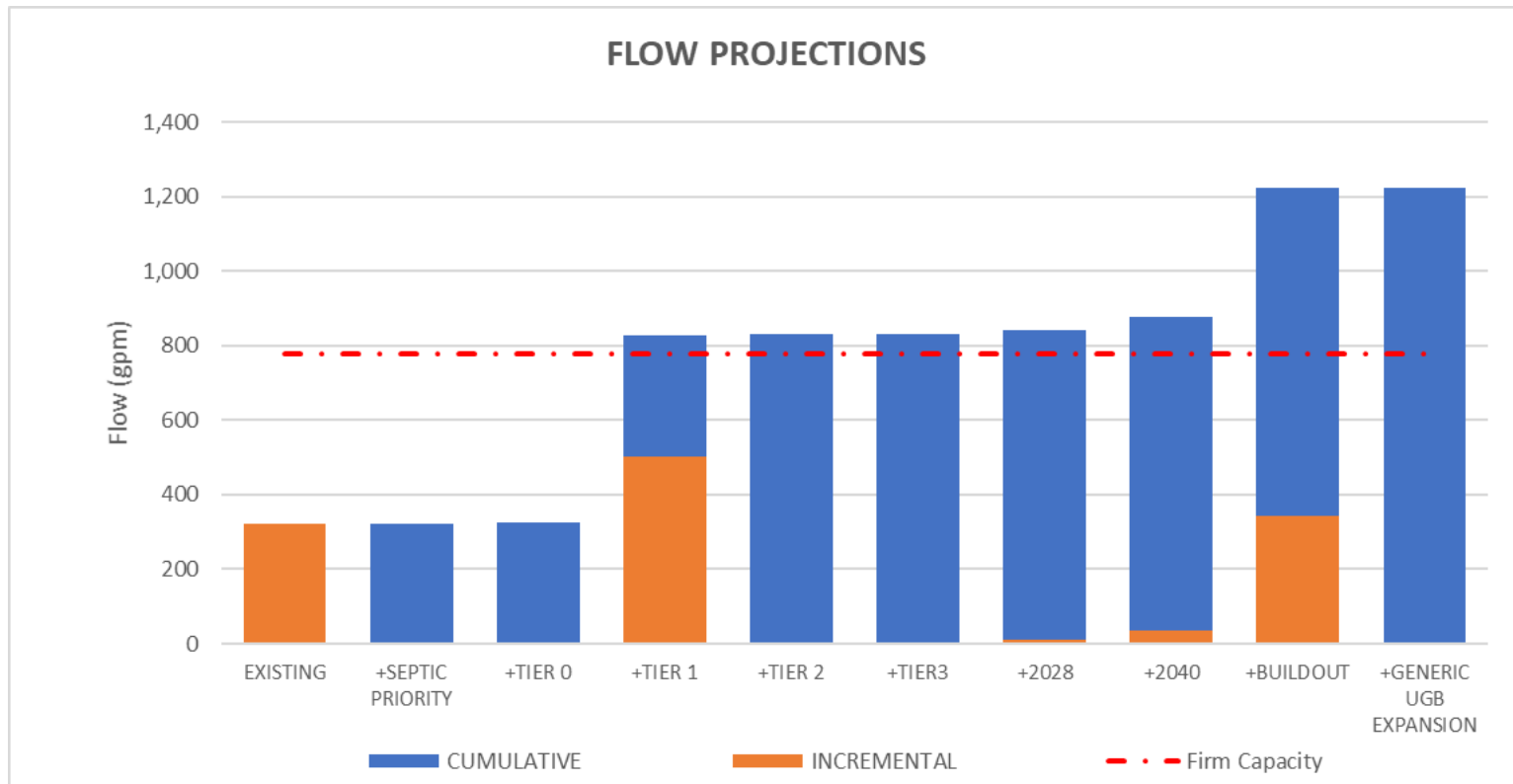
CAPITAL IMPROVEMENTS



- Central Interceptor
- SEINT Diversion

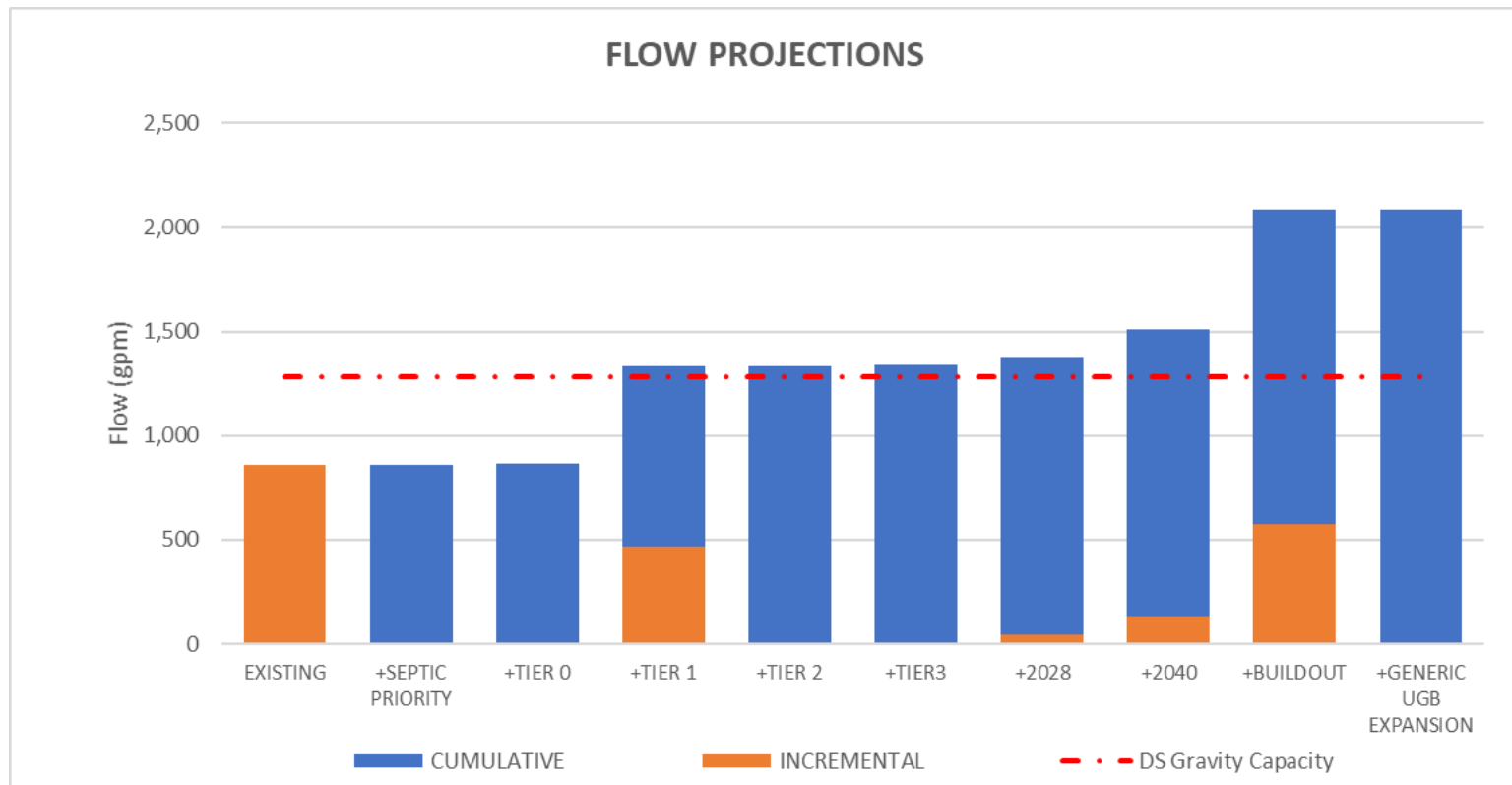
CAPACITY REVIEW

Drake Lift Station & Force main



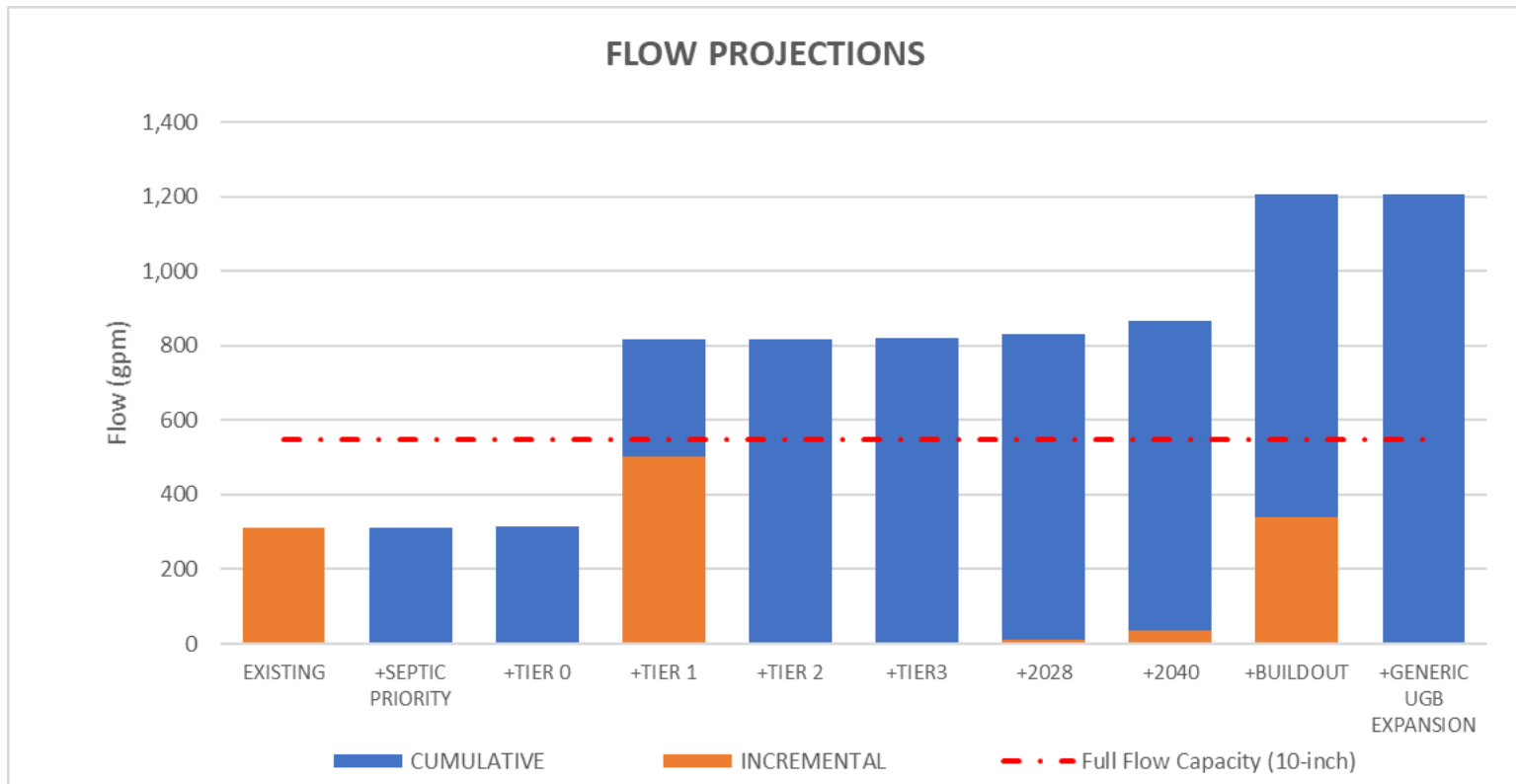
CAPACITY REVIEW

Drake D/S Gravity



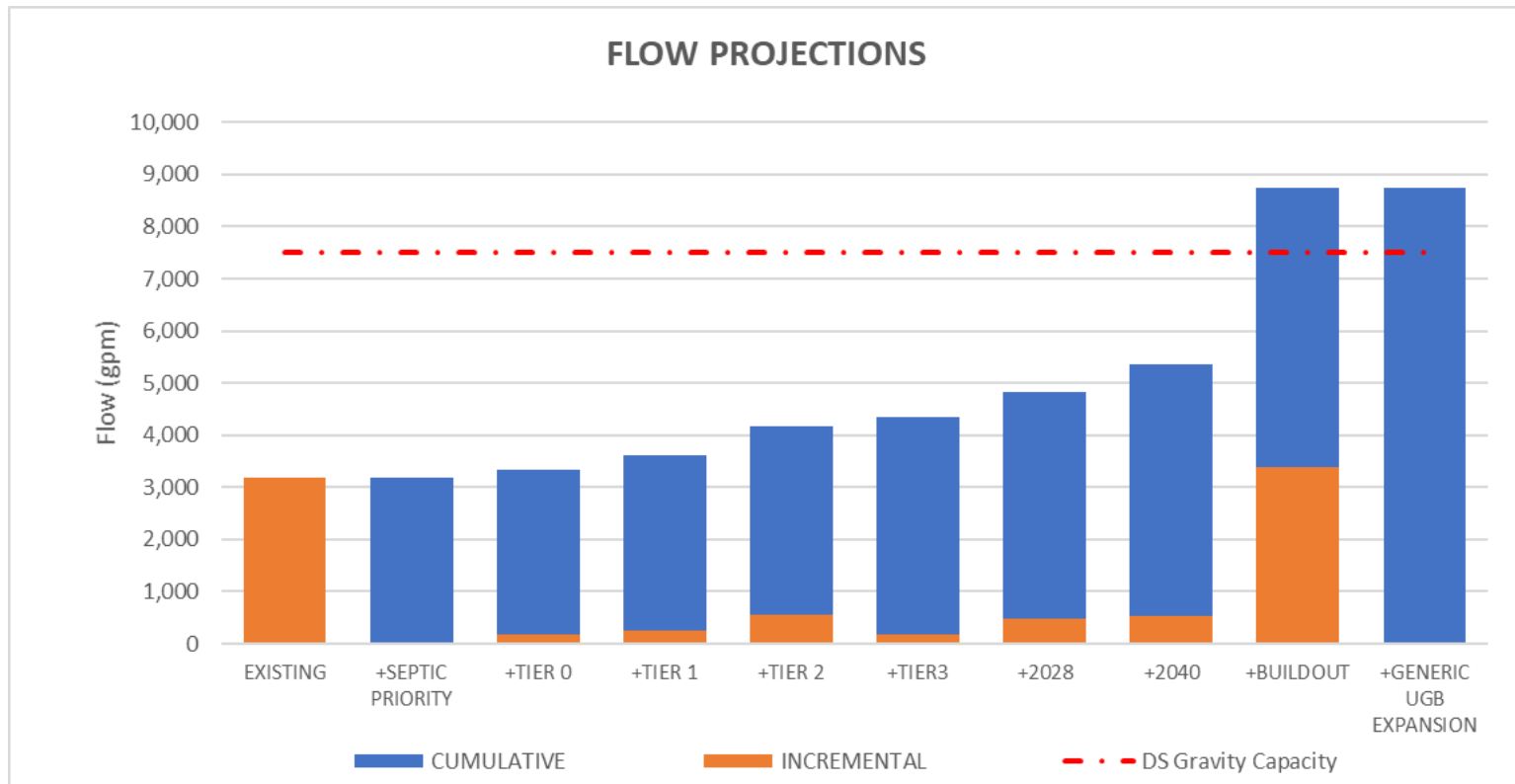
CAPACITY REVIEW

Drake U/S Gravity



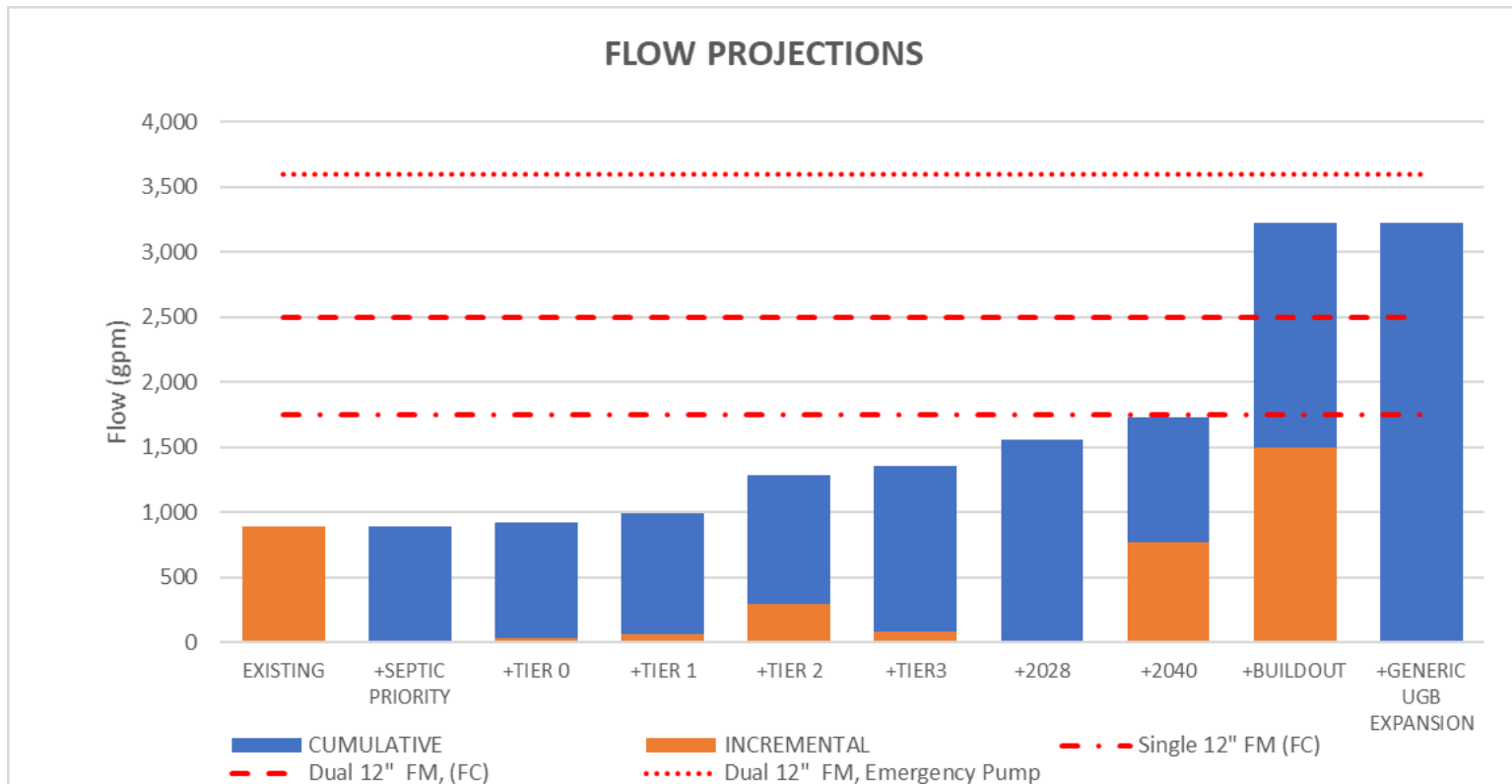
CAPACITY REVIEW

2nd Street Gravity



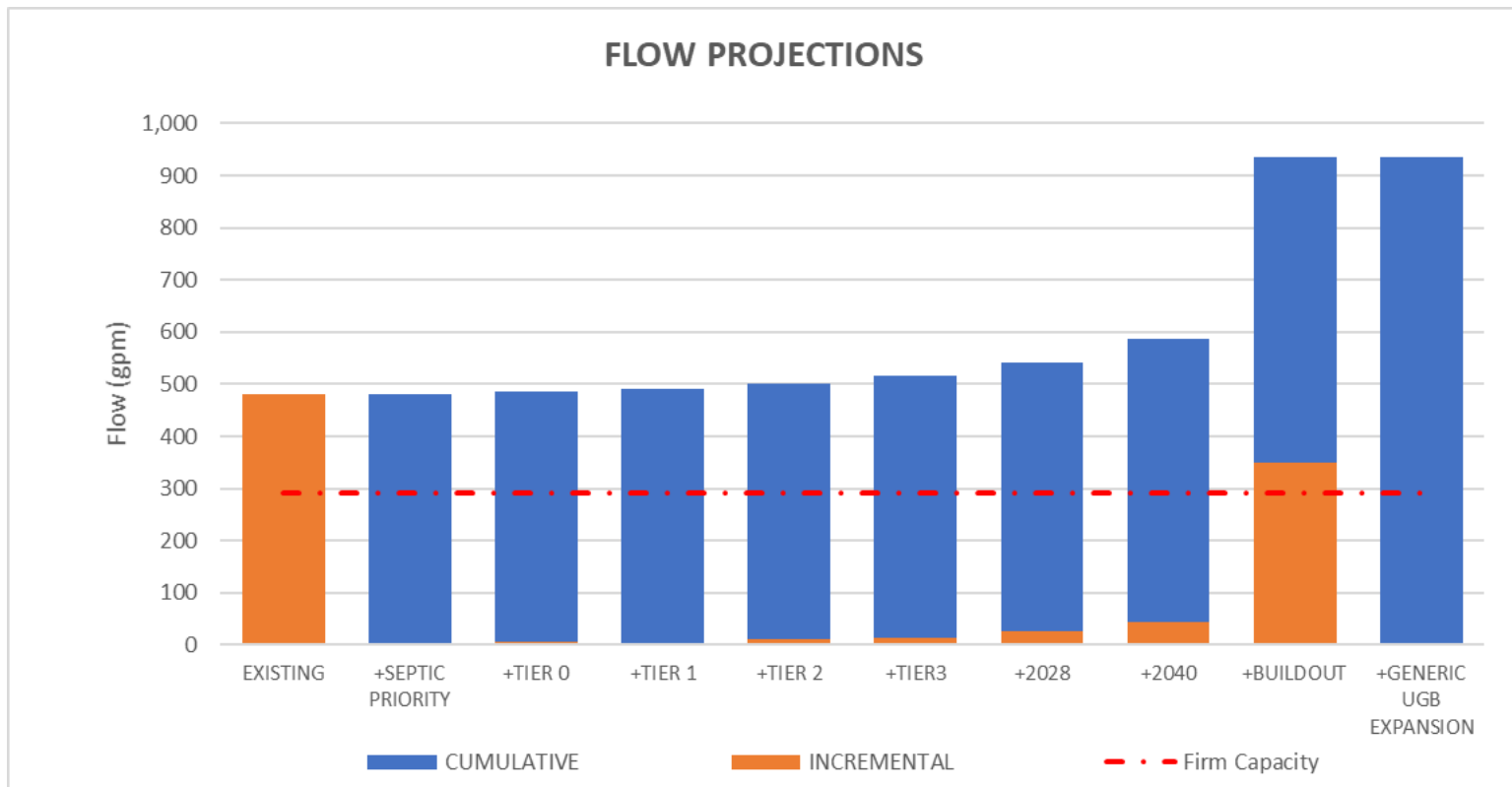
CAPACITY REVIEW

Colorado Lift Station and Force mains



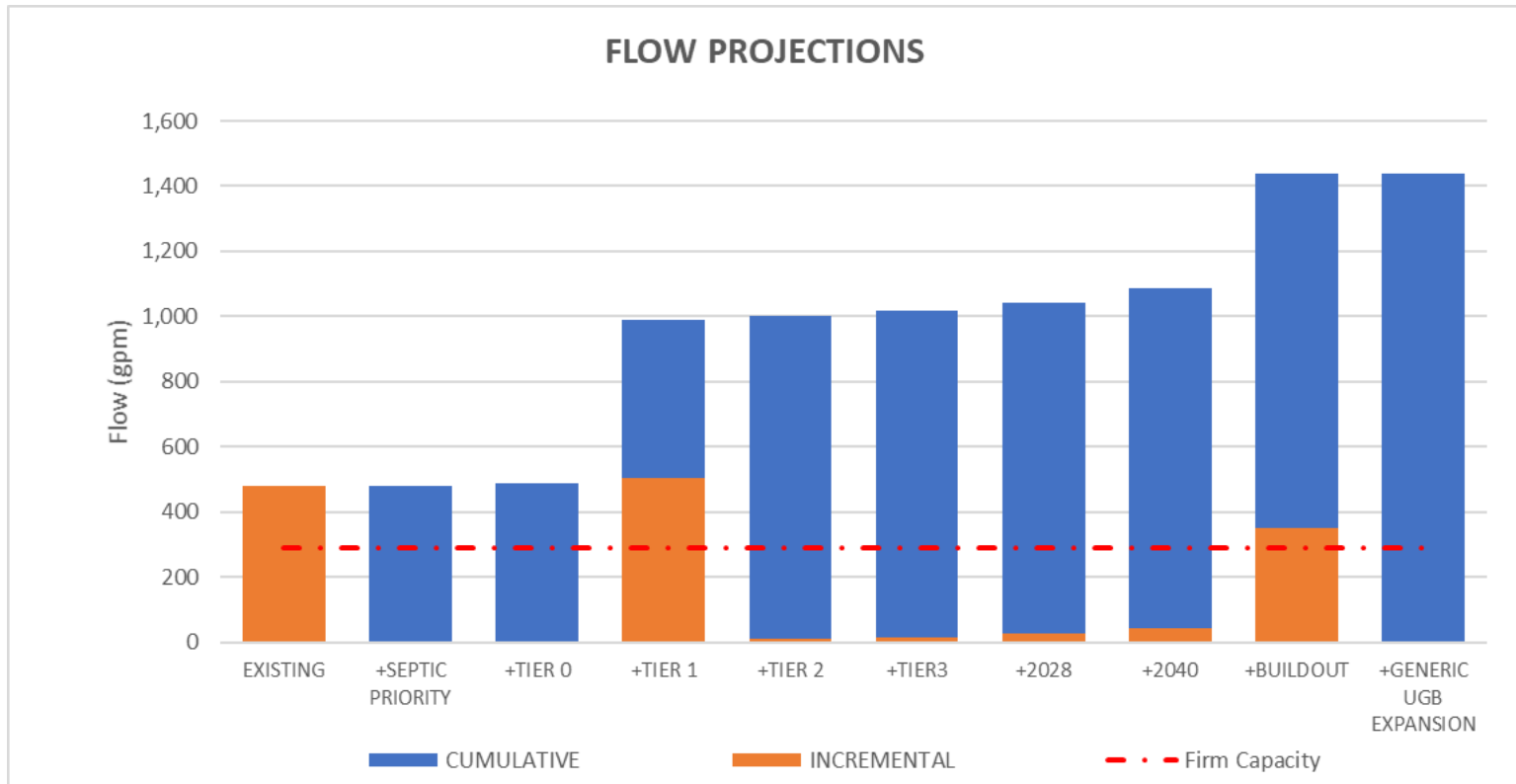
CAPACITY REVIEW

Old Mill Lift Station and Force mains

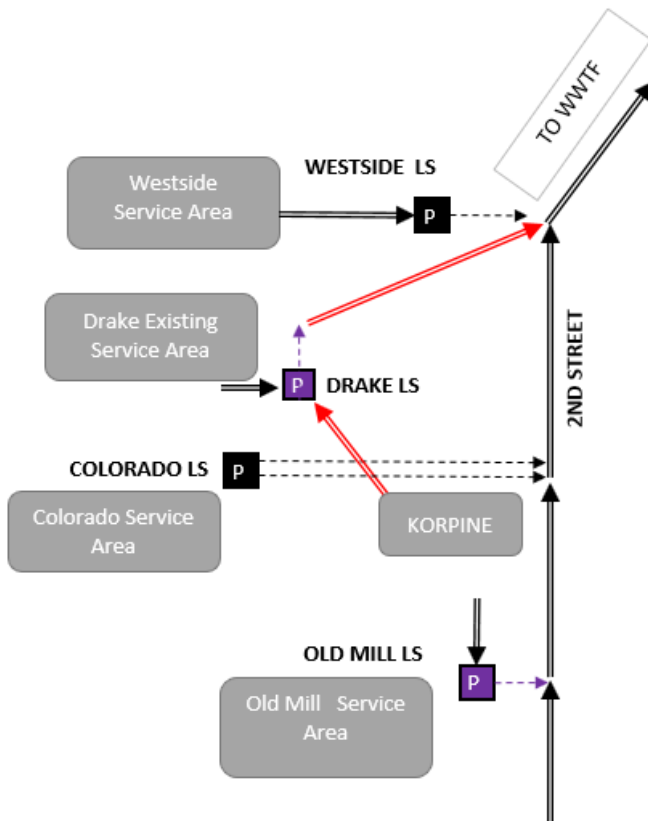


CAPACITY REVIEW

Old Mill Lift Station and Force mains with Korpine



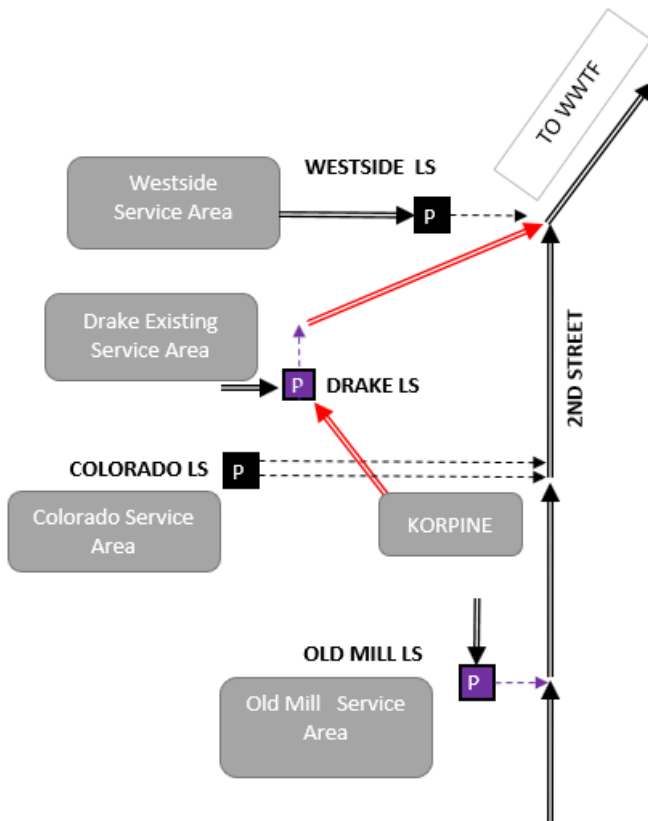
ALTERNATIVE 1



INFRASTRUCTURE COMPONENTS

- Drake Lift Station - 880 gpm, 70 ft TDH
 - Drake Force main - 8-inch, 600 lft
 - Drake D/S Gravity - 18 to 36-inch, 6400 lft
 - Drake U/S Gravity - 12-inch, 3000 lft
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- Old Mill Lift Station - 590 gpm, 100 ft TDH
 - Old Mill Force main - 8-inch, 1600 lft

ALTERNATIVE 1



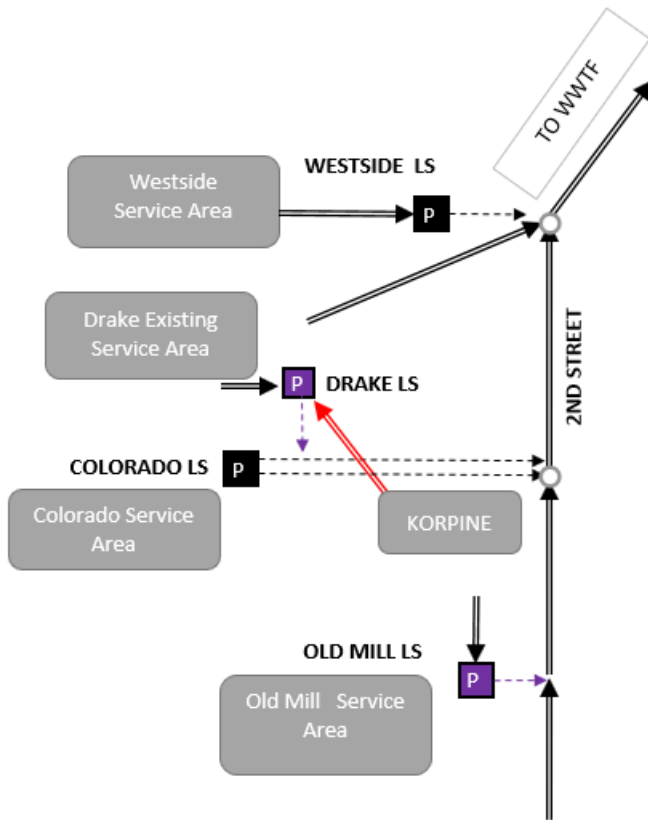
Alternative 1

Improvement	Cap. Cost M\$	O&M Cost M\$
Drake Upstream Gravity	1.5	0.0
Drake Downstream Gravity	3.2	0.0
Drake Pump Station	3.2	1.2
Drake Forcemain	0.4	0.0
Old Mill Pump Station	3.1	1.1
Old Mill Forcemain	1.0	0.0
Old Mill Upstream Gravity	0.0	0.0
KorPine Pumpstation	0.0	0.0
KorPine Pumpstation Forcemain	0.0	0.0
Total	12.3	2.3
Total Capital + O&M		14.7

COMMENTS

- Drake D/S gravity interrupts downtown corridor
- Potential utility conflicts
- Drake LS requires condition improvements including modification to submersible

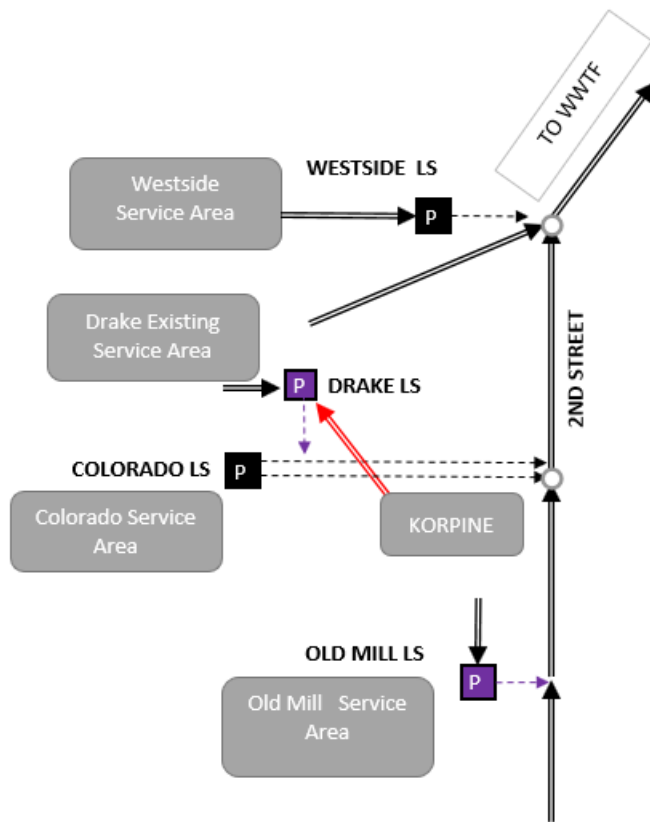
ALTERNATIVE 2



INFRASTRUCTURE COMPONENTS

- Drake Lift Station - 880 gpm, 90 ft TDH
 - Drake Force main to Colorado - 12-inch, 1900 lft
 - Drake U/S Gravity - 12-inch, 3000 lft
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- Old Mill Lift Station - 590 gpm, 100 ft TDH
 - Old Mill Force main - 8-inch, 1600 lft

ALTERNATIVE 2



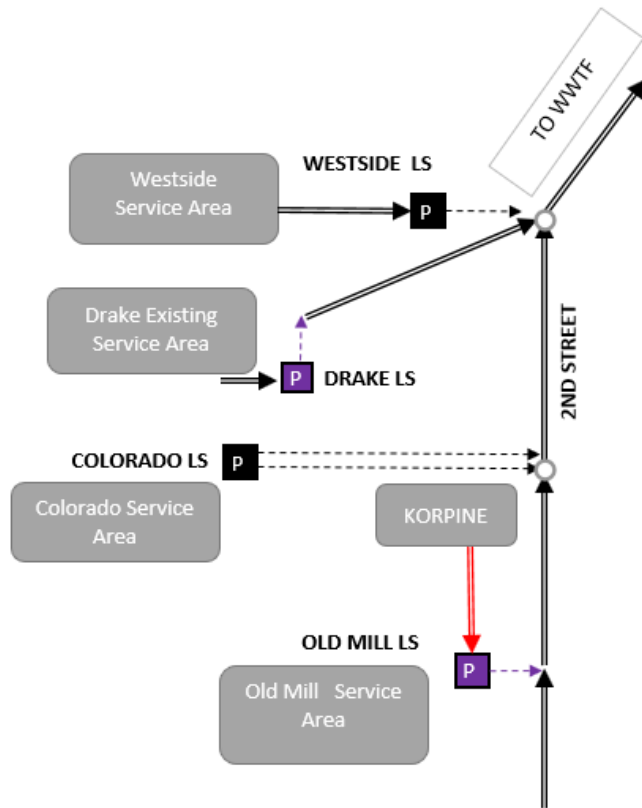
Alternative 2

Improvement	Cap. Cost M\$	O&M Cost M\$
Drake Upstream Gravity	1.5	0.0
Drake Downstream Gravity	0.0	0.0
Drake Pump Station-Colorado	4.2	1.5
Drake Forcemain-Colorado	1.5	0.0
Old Mill Pump Station	3.1	1.1
Old Mill Forcemain	1.0	0.0
Old Mill Upstream Gravity	0.0	0.0
KorPine Pumpstation	0.0	0.0
KorPine Pumpstation Forcemain	0.0	0.0
Total	11.3	2.7
Total Capital + O&M		14.0

COMMENTS

- Avoids downtown corridor and gravity D/S of Drake Lift Station
- Removes redundancy from Colorado LS
- Confirming risk to Colorado and/or Westside LS

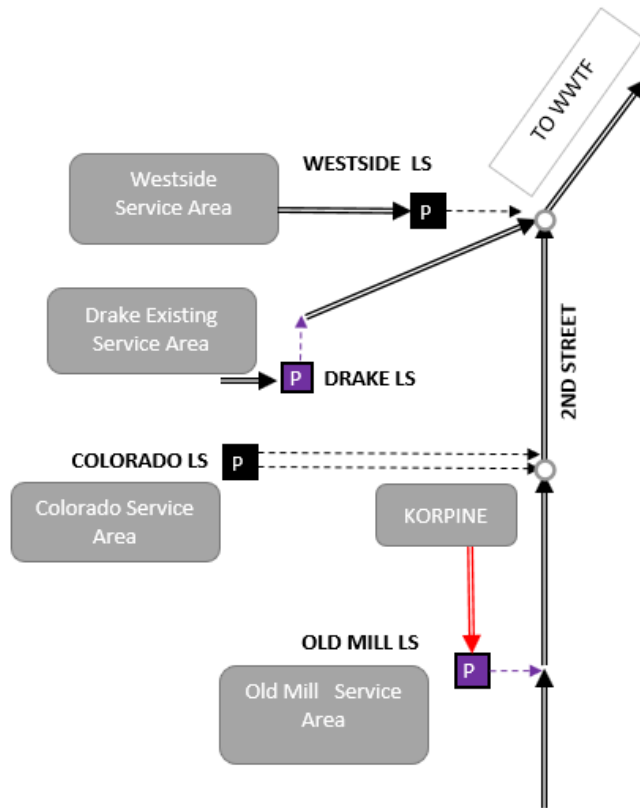
ALTERNATIVE 3



INFRASTRUCTURE COMPONENTS

- Drake Lift Station Condition Replacement
500 gpm, 50 ft TDH
- Old Mill U/S Gravity from Korpine - 12-inch, 2300 lft
- Old Mill Lift Station with Korpine - 1100 gpm, 105 ft TDH
- Old Mill Force main with Korpine - 10-inch, 1600 lft

ALTERNATIVE 3



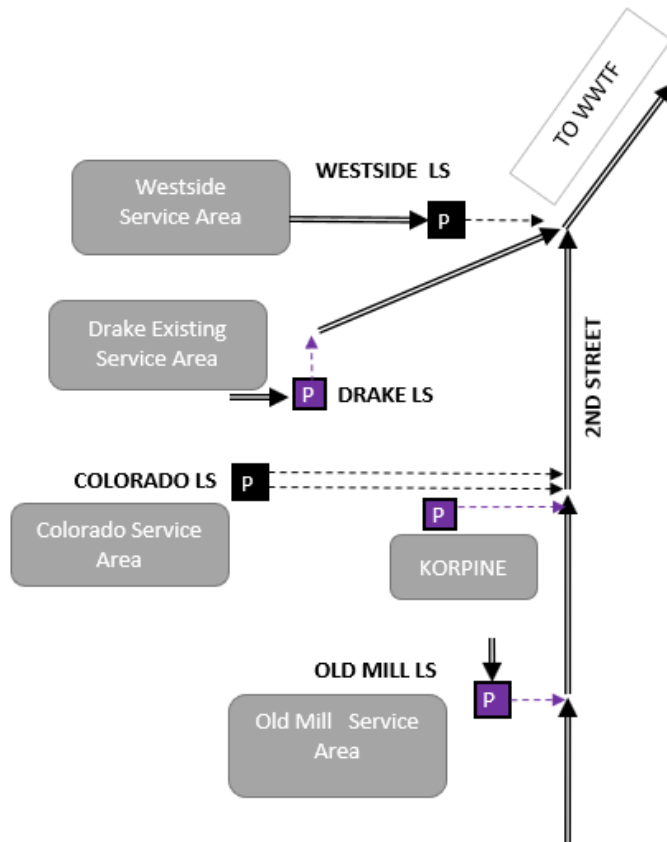
Alternative 3

Improvement	Cap. Cost M\$	O&M Cost M\$
Drake Upstream Gravity	0.0	0.0
Drake Downstream Gravity	0.0	0.0
Drake Pump Station-Condition	1.3	0.5
Drake Forcemain	0.0	0.0
Old Mill Pump Station- Additional Flow	6.0	2.3
Old Mill Forcemain - Additional Flow	1.1	0.0
Old Mill Upstream Gravity	1.6	0.0
KorPine Pumpstation	0.0	0.0
KorPine Pumpstation Forcemain	0.0	0.0
Total	10.0	2.7
Total Capital + O&M		12.8

COMMENTS

- Avoids downtown corridor and gravity D/S of Drake Lift Station
- Reduces sizing of Drake Lift Station to existing service area
- Capitalizes on elevation to Old Mill
- Potential disruption in roadways upstream of Old Mill

ALTERNATIVE 4



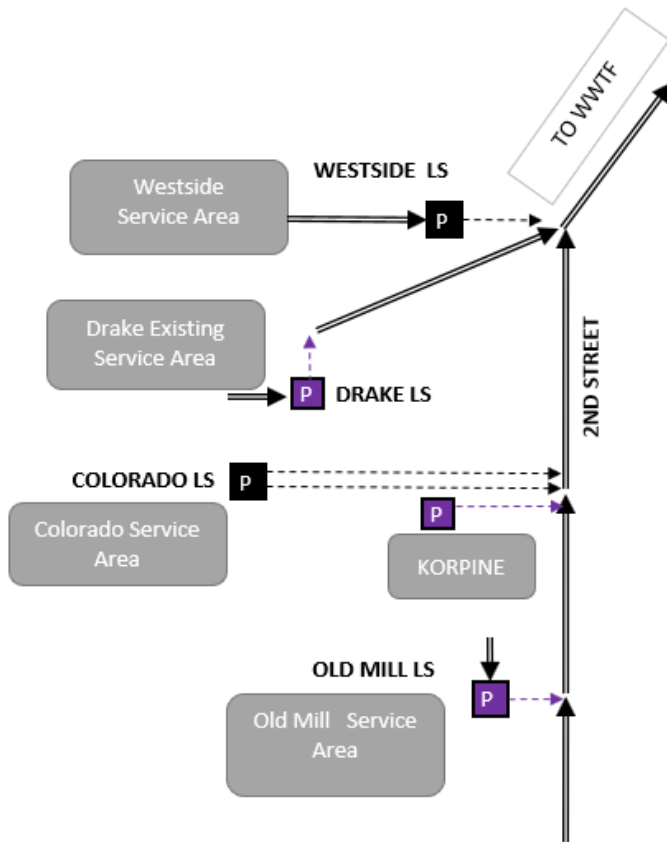
INFRASTRUCTURE COMPONENTS

- Drake Lift Station Condition Replacement
500 gpm, 50 ft TDH

- Korpine Lift Station – 500 gpm, 75 ft TDH
- Korpine FM – 6-inch, 4000 lft

- Old Mill Lift Station - 590 gpm, 100 ft TDH
- Old Mill Force main - 8-inch, 1600 lft

ALTERNATIVE 4



Alternative 4

Improvement	Cap. Cost M\$	O&M Cost M\$
Drake Upstream Gravity	0.0	0.0
Drake Downstream Gravity	0.0	0.0
Drake Pump Station-Condition	1.3	0.5
Drake Forcemain	0.0	0.0
Old Mill Pump Station	3.1	1.1
Old Mill Forcemain	1.0	0.0
Old Mill Upstream Gravity	0.0	0.0
KorPine Pumpstation	2.0	0.7
KorPine Pumpstation Forcemain	2.0	0.0
Total	9.4	2.4
Total Capital + O&M		11.7

COMMENTS

- Isolates Korpine improvements to new infrastructure
- Additional pipe crossing to 2nd Street
- Additional lift station to maintain and operate
- Potential to utilize Colorado redundant Force main in place of new force main

COST REVIEW & DISCUSSION

Summary

Alternative	Cap. Cost M\$	O&M Cost M\$	Total Cost M\$
Alternative 1	12.3	2.3	14.7
Alternative 2	11.3	2.7	14.0
Alternative 3	10.0	2.7	12.8
Alternative 4	9.4	2.4	11.7

NEXT STEPS

- Double check impacts to Colorado LS & Old Mill LS
- Small Refinements to costs
- Document Recommendations