

MANHOLES

7) Washington between 2nd and 3rd

BRICK, BOTTOM FALLING APART

8) Palouse between 4th and 5th

START OF PALOUSE LINE, BOTTOM IS LOWER THAN FIRST
PIPE LEVEL. STANDING WATER

9) Palouse between 3rd and 4th

FALLING APART AND RAUGH BOTTOM

10) Palouse between Main and Broadway

BRICK FALLING APART

11) Jefferson between Railroad and Main

NOT LEAVE A MANHOLE, MARKS OF A RING w/A HOLE AND
A PIPE RUNNING THROUGH IT

12) Clarke between 1st and 2nd

BRICK, BROKEN BOTTOM

LEWIS BETWEEN 1ST & 2ND - BRICK ROUGH BOTTOM

SEWER LINES

11) Rich Grams from east side of Division to Washington between 3rd and 4th

12) Sehwisow Apt between Chelan and Palouse and 7th and 8th

Add spray tips in the lift stations for cleaning; Sewer Plant, Pete's, West 1st Napa

SEWER LINES

- 1) Oscar Olsen, between Columbia and Division and 5th and 6th

THIS IS A PROBLEM LINE THAT NEEDS REPLACED. THERE IS NOT ENOUGH DROP AT THE CLEANOUT WHICH IS WHERE THE END HOUSE CONNECTS CAUSING CONSTANT ISSUES (ON THE BI-WEEKLY WASH LIST)

- 2) Little League Park, between Columbia and Division and Cherry and Birch

THIS LINE HAS BEEN REPLACED OVER THE PAST COUPLE YEARS. WITH THE EXCEPTION OF ABOUT 75' (WASH LIST)

- 3) Harland Eastman - Gary Helnemann, Between Chelan and Cascade and 2nd and 3rd

THIS LINE HAS BECOME MORE OF AN ISSUE OVER THE LAST COUPLE YEARS AND NEEDS CONSTANT FLUSHING (NEEDS REPAIRED) (ON THE WASH LIST)

- 4) Stan Streeter, between Division and Columbia and Birch and Alder (could be snaky line, has 3 houses using private line)

THIS COULD BE CONSIDERED A SNAKY LINE! THE 3 CONNECTIONS 102, 104, AND 106 E BIRCH ALL MEET AT IN THE BACKYARD OF 106 AND THIS IS ARE ONLY ACCESS TO THIS LINE FOR THOSE 3 HOUSES. THIS IS ON OUR EXTRA LIST TO FLUSH

- 5) Adam Miller, from Olive to Palouse between Birch and Alder

THIS IS A FLAT LINE WITH NOT A LOT OF DROP TO IT. WE REPLACED ABOUT 200' BETWEEN CHELAN & PALOUSE A COUPLE YEARS AGO. VERY ROCKY GROUND. (WASH LIST)

NEW MINHOLES

- 1 WASH BETWEEN 1ST AND 2ND
- 2 COLUMBIA BETWEEN RAILROAD AND MAIN
- 3 WASH BETWEEN 3RD + 4TH
- 4 WASH BETWEEN 6TH + 7TH
- 5 WASH BETWEEN 5TH + 6TH
- 6 WASH BETWEEN 4TH + 5TH
- 7 WASH BETWEEN 2ND + 3RD
- 8 PALOUSE BETWEEN 4TH + 5TH
- 9 PALOUSE BETWEEN 3RD + 4TH
- 10 ~~PALOUSE~~ PALOUSE BETWEEN MAIN AND BROADWAY
- 11 JEFFERSON BETWEEN RAILROAD AND MAIN
- 12 CLARKE BETWEEN 1ST AND 2ND
- ⑦ 13 JEFFERSON BETWEEN 4TH AND START OF RAY
BREWER LINE 7
- 14 DAN GALBREATH (CLEAN OUT NEEDED)
- 15 GARY KUBIC (CLEAN OUT NEEDED)
- 16 COLUMBIA BETWEEN ALDER AND BROADWAY
- 17 COLUMBIA BETWEEN CHERRY AND ADWOOD
- 18 BROADWAY AND WASH.

PRIORITY LIST

SNAKY SEWER LINES

(*) ①

BUD KIRKENDALL BETWEEN CHELSEA AND PALOUSE
AND 8TH AND 9TH.

(*) ②

DUSTIN ARLT BETWEEN JACKSON AND JEFFERSON AND
6TH AND 7TH

(*) ③

RON NEWTON BETWEEN JACKSON AND LEWIS AND 2ND
AND 3RD

HYG ON SEWER LINE SHEET

Appendix B
Summary of Additional Sewer Issues

CSP-13

Manhole Installation on Columbia between Alder & Broadway

Item	Description	Qty	Unit	Cost	Total Cost
1	PVC Sewer Mains (10-in)	20	LF	\$145	\$2,900
2	Manhole	1	EA	\$8,000	\$8,000
3	HMA Removal/Placement	20	SY	\$65	\$1,300
4	Rock Excavation	20	LF	\$150	\$3,000
Total					\$15,200
Washington State Tax: 8.1%					\$1,216
Contingency @ 20%					\$3,000
Construction Subtotal					\$19,400
Engineering & Insp. fee @ 20%					\$3,900
Total Project					\$23,000

CSP-14

Reroute Waterline around Manhole on Division between Rail Road & Main

Item	Description	Qty	Unit	Cost	Total Cost
1	Water Main	30	LF	\$65	\$1,950
2	Elbows	4	EA	\$500	\$2,000
3	Romac Coupler	2	EA	\$700	\$1,400
4	HMA Removal/Placement	30	SY	\$65	\$1,950
5	Rock Excavation	30	LF	\$150	\$4,500
Total					\$11,800
Washington State Tax: 8.0%					\$944
Contingency @ 20%					\$2,400
Construction Subtotal					\$15,100
Engineering & Insp. fee @ 20%					\$3,000
Total Project					\$18,000

CSP-9

Manhole Installation @ the Intersection of Columbia & Alder Ave.

Item	Description	Qty	Unit	Cost	Total Cost
1	PVC Sewer Mains (10-in)	40	LF	\$145	\$5,800
2	PVC Sewer Mains (8-in)	20	LF	\$90	\$1,800
3	Manhole	1	EA	\$8,000	\$8,000
4	HMA Removal/Placement	20	SY	\$65	\$1,300
5	Rock Excavation	20	LF	\$150	\$3,000
Total					\$19,900
Washington State Tax: 8.0%					\$1,592
Contingency @ 20%					\$4,000
Construction Subtotal					\$25,500
Engineering & Insp. fee @ 20%					\$5,100
Total Project					\$31,000

CSP-10

Manhole Installation on Columbia between Broadway & Main Ave.

Item	Description	Qty	Unit	Cost	Total Cost
1	PVC Sewer Mains (10-in)	40	LF	\$145	\$5,800
2	PVC Sewer Mains (8-in)	20	LF	\$90	\$1,800
3	Manhole	1	EA	\$8,000	\$8,000
4	HMA Removal/Placement	60	SY	\$65	\$3,900
5	Rock Excavation	60	LF	\$150	\$9,000
Total					\$28,500
Washington State Tax: 8.0%					\$2,280
Contingency @ 20%					\$5,700
Construction Subtotal					\$36,500
Engineering & Insp. fee @ 20%					\$7,300
Total Project					\$44,000

CSP-4

Manhole Replacement on Palouse between Main & Broadway (incl. catch basin removal in alley between Railroad & Main

Item	Description	Qty	Unit	Cost	Total Cost
1	PVC Sewer Mains (8-in)	40	LF	\$90	\$3,600
2	Manhole	1	EA	\$8,000	\$8,000
3	HMA Removal/Placement	40	SY	\$65	\$2,600
4	Pipe Bedding Placement	40	LF	\$15	\$600
5	Gravel Placement	25	LF	\$25	\$625
6	Rock Excavation	40	LF	\$150	\$6,000
7	Catch Basin Removal	1	LS	\$3,000	\$3,000
Total					\$24,400
Washington State Tax: 8.0%					\$1,952
Contingency @ 20%					\$4,900
Construction Subtotal					\$31,300
Engineering & Insp. fee @ 20%					\$6,300
Total Project					\$38,000

CSP-5

Manhole Replacement on Jackson Street Between 4th & 5th Ave.

Item	Description	Qty	Unit	Cost	Total Cost
1	PVC Sewer Mains (6-in)	10	LF	\$80	\$800
2	Manhole	1	EA	\$8,000	\$8,000
3	HMA Removal/Placement	20	SY	\$65	\$1,300
4	Rock Excavation	20	LF	\$150	\$3,000
Total					\$10,100
Washington State Tax: 8.0%					\$808
Contingency @ 20%					\$2,000
Construction Subtotal					\$12,900
Engineering & Insp. fee @ 20%					\$2,600
Total Project					\$16,000

Other Funding Programs

There are other funding programs and mechanisms that may have future applicability depending on available funding, aggressiveness in pursuing funding, or other factors that may emerge as planning moves forward. The following list is not exhaustive but represents other common funding programs that could be pursued.

- Public Works Board (PWB)
- Centennial Clean Water Program (CCWP)
- Line Item – State Budgets
- Revenue Bonds / General Obligation Bonds
- City / Utility Reserve Funds

6.0 Funding Options

The following paragraphs provide an overview of potential funding sources for the projects identified herein. Each of the described funding sources are commonly used for public works projects and are available to the City.

WA Department of Ecology

The WA Department of Ecology (ECY) administers two funding programs:

- Centennial Clean Water Program (CCWP)
- Clean Water State Revolving Fund Loan Program (CWSRF)

The above programs fund planning, design, and construction costs associated with sewer facilities and the implementation of non-point activities. To be eligible, projects must be water quality projects that prevent and control pollution of ground and surface waters.

Although the two programs are listed separately and have specific criteria unique to each, they are accessible through a single application process through ECY. Following application submission, ECY reviews and determines the most applicable funding source and amount to be applied from each program, depending on eligibility and other criteria specific to the project.

Interest rates for loans are based on a percent of tax-exempt municipal bonds. For hardship communities, interest rates are lower, depending on the degree of hardship. Forgivable loan (i.e. equivalent to grant) may also be offered to applicants depending on funds available and depending on financial hardship criteria of the community.

Limited grant subsidy is available to applicants that can demonstrate financial hardship. Hardship interest rates and grant subsidy eligibility are shown in the following table.

Table 10 ECY Hardship Interest Rates and Hardship Grant Eligibility ⁽¹⁾

Sewer Rate ⁽²⁾ - MHI ⁽³⁾	< 2%	≥ 2% but < 3%	≥ 3% but < 5%	≥ 5%
Hardship Designation	Non-hardship	Moderate Hardship	Elevated Hardship	Severe Hardship
5-year Loan Rates	0.6%	0.4%	0.2%	0.0%
20-year Loan Rates	1.2%	0.8%	0.4%	0.0%
30-year Loan Rates	1.6%	1.2%	0.8%	0.4%
Grant Eligibility	Not eligible	50% (up to \$5M)	75% (up to \$5M)	100% (up to \$5M)

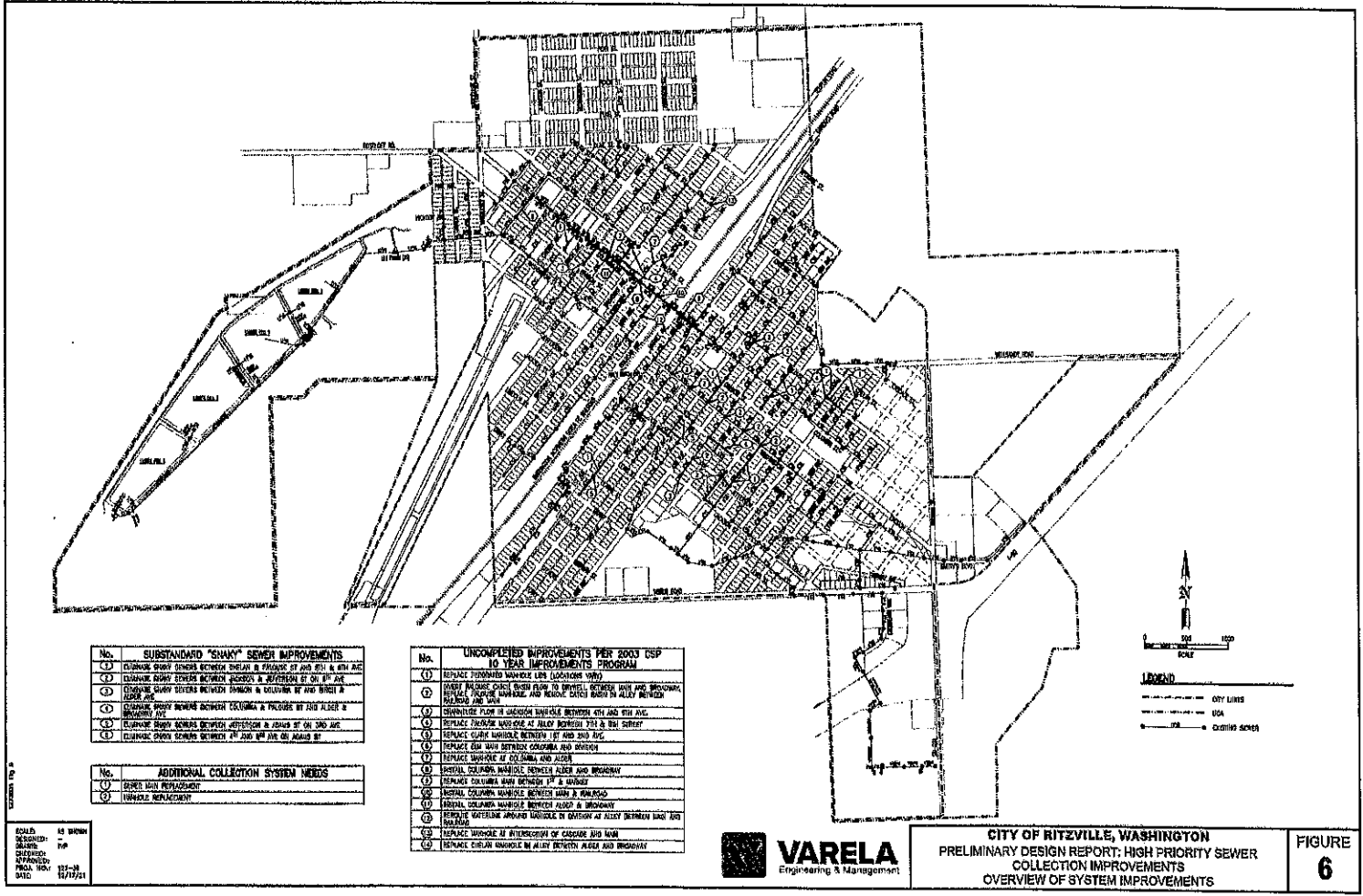
1. Based on ECY State Fiscal year 2022 Funding Guidelines

2. "Sewer Rate" for this calculation is the potential future sewer that would result if no grant funding was provided

3. MHI - Median Household Income for the community

ECY requires user rates include an annual 20% reserve to be collected during the first five years, equivalent to at least one annual debt service on the loan.

The application cycle for FY 2024 will be between August-October 2022, with an application deadline in October 2022 and a Final Offer List generally published by early summer of 2023 and funds available thereafter. Dates could change.



- No. SUBSTANDARD "SMOXY" SEWER IMPROVEMENTS**
- ① CHANGE SHAW SEWERS BETWEEN DUNBAR & BRADSHAW ST AND 2ND & 3RD AVE
 - ② CHANGE SHAW SEWERS BETWEEN BRADSHAW & BRADSHAW ST AND 2ND AVE
 - ③ CHANGE SHAW SEWERS BETWEEN BRADSHAW & COLUMBIA ST AND BRADSHAW & 2ND AVE
 - ④ CHANGE SHAW SEWERS BETWEEN COLUMBIA & BRADSHAW ST AND ALBERT & BRADSHAW AVE
 - ⑤ CHANGE SHAW SEWERS BETWEEN BRADSHAW & BRADSHAW ST AND 2ND AVE
 - ⑥ CHANGE SHAW SEWERS BETWEEN 2ND AND 3RD AVE

- No. ADDITIONAL COLLECTION SYSTEM NEEDS**
- ① SEWER MAIN REPLACEMENT
 - ② INVERTED REPLACEMENT

- No. UNCOMPLETED IMPROVEMENTS PER 2003 CSP 10 YEAR IMPROVEMENTS PROGRAM**
- ① REPLACE TOWNHOMES MANHOLE LIDS (LOCATIONS VIEW)
 - ② REPAIR POLYBUTYLENE CRESTS (SEWER FLOW TO DRAINAGE) BETWEEN 2ND AND BRADSHAW, REPLACE POLYBUTYLENE MANHOLE AND POLYBUTYLENE BODIES IN ALLEY BETWEEN BRADSHAW AND 2ND
 - ③ CONVERTSSE FLOW TO UNDESIRABLE DIRECTION BETWEEN 4TH AND 2ND AVE
 - ④ REPLACE POLYBUTYLENE MANHOLE AT ALLEY BETWEEN 2ND & 3RD STREET
 - ⑤ REPLACE CLAY MANHOLE BETWEEN 1ST AND 2ND AVE
 - ⑥ REPLACE 6IN MAIN BETWEEN COLUMBIA AND DUNBAR
 - ⑦ REPLACE MANHOLE AT COLUMBIA AND ALBERT
 - ⑧ INSTALL POLYBUTYLENE MANHOLE BETWEEN ALBERT AND BRADSHAW
 - ⑨ REPLACE COLUMBIA MAIN BETWEEN 1ST & 2ND STREET
 - ⑩ INSTALL COLUMBIA MANHOLE BETWEEN MAIN & BRADSHAW
 - ⑪ INSTALL COLUMBIA MANHOLE BETWEEN ALBERT & BRADSHAW
 - ⑫ REPLACE WATERLINE APPROX 100' SOUTH OF ALBERT BETWEEN 2ND AND 3RD STREETS
 - ⑬ REPLACE MANHOLE AT INTERSECTION OF CASCADE AND MAIN
 - ⑭ REPLACE CERAMIC MANHOLE IN ALLEY BETWEEN ALBERT AND BRADSHAW

SCALE: AS SHOWN
 SHEET: 7-6
 DATE: 12/17/21



CITY OF RITZVILLE, WASHINGTON
 PRELIMINARY DESIGN REPORT: HIGH PRIORITY SEWER
 COLLECTION IMPROVEMENTS
 OVERVIEW OF SYSTEM IMPROVEMENTS

FIGURE 6

Priority	Year	Improvement (1)(3)	Purpose	2003 CSP Est. Cost	2021 Est. Cost (4)
CSP-4	2024	Divert Palouse catch basin flow to drywell between Main & Broadway, replace Palouse manhole, remove catch basin in alley between Railroad & Main	Reduce Inflow and Infiltration (I/I)	\$15,000	\$38,000
CSP-5	2024	Channellize flow in Jackson manhole between 4th & 5th Street	Replace deteriorated manholes, reduce infiltration, and replace sewer mains laid with adverse grades	\$3,000	\$16,000
CSP-6	2023	Replace Palouse manhole at alley between 7th & 8th Street	Replace deteriorated manholes, reduce infiltration, and replace sewer mains laid with adverse grades	\$12,000	(6)
CSP-7	2024	Replace Clark manhole between 1 st & 2 nd Street	Replace deteriorated manholes, reduce infiltration, and replace sewer mains laid with adverse grades	\$9,000	\$20,000
CSP-8	2027	Replace Elm main between Columbia & Division	Replace deteriorated manholes, reduce infiltration, and replace sewer mains laid with adverse grades	\$155,000	\$242,000
CSP-9	2028	Replace manhole at Columbia & Alder	Streamline flow in Columbia Street	\$22,000	\$31,000
CSP-10	2029	Install Columbia manhole between Main & Broadway	Streamline flow in Columbia Street	\$21,000	\$44,000
CSP-11	2030	Replace Columbia main between 1 st & Market	Streamline flow in Columbia Street	\$53,000	\$96,000
CSP-12	2031	Install Columbia manhole between Main & Railroad	Streamline the flow in the Columbia Street twin sewer trunk system	\$42,000	\$93,000
CSP-13	2031	Install Columbia manhole between Alder & Broadway	Streamline the flow in the Columbia Street twin sewer trunk system	\$13,000	\$23,000
CSP-14	2032	Reroute waterline around manhole in Division at alley between Main & Railroad	Improve system safety and operating characteristics	\$12,000	\$18,000
CSP-15	2032	Replace manhole at Intersection Cascade & Main	Improve system safety and operating characteristics	\$12,000	\$31,000

4.0 Updated 2003 CSP Improvement Program

4.1 2003 CSP – 10-yr Improvements Program

The City's 2003 Comprehensive Sewer Plan (CSP) provides a comprehensive plan for Ritzville's sanitary sewer collection system in conformance with WAC 173-240-050. The plan provides a general description of the existing sewer system; details known system problems; forecasts the need for future improvements; and provides preliminary estimates for the cost of future facility work. The 2003 CSP outlines future improvements in a 10-yr & 20-yr Improvements Programs. Several projects listed in the 2003 10-yr Improvements Program have been completed since 2003 while others remain uncompleted. Following is a list of projects completed by the City which were identified in the 2003 CSP:

- Pete's Lift Station Rehabilitation
- Replace force main from Pete's Lift Station to Washington Street Manhole
- Replace main in alley between Market and 1st Street from Washington to Columbia

4.2 Updated 10-yr Improvements Program

This Preliminary Design Report updates the 2003 CSP 10-yr Improvements Program to include the improvements and priorities herein, preparation of a new General Sewer Plan, and remaining improvements previously identified in the 2003 CSP 10-yr Improvements Program with costs updated to 2021 cost levels.

The City applied for ECY funding for development of a GSP in Fall 2021. If funded, the City's updated GSP will likely be prepared during 2023 and 2024. It is assumed the following updated 10-yr Improvements Program will be updated during the preparation of the forthcoming GSP.

City Priority	Description (1)	City Comments/Observations (2)
#AM-13	Manhole Replacement – Located on Lewis St between 1 st and 2 nd Ave	<ul style="list-style-type: none"> • Manhole needs replaced • Manhole is brick • Bottom of manhole is rough
#AM-14	Manhole Replacement – Located on Jefferson St between 4 th and 5 th Ave	<ul style="list-style-type: none"> • Location needs manhole • Location only has single cleanout
#AM-15	Manhole Replacement – Located on Columbia St between Alder and Broadway Ave	<ul style="list-style-type: none"> • Manhole needs replaced • Manhole is brick
#AM-16	Manhole Replacement – Located on Palouse St between Cherry and Dogwood Ave	<ul style="list-style-type: none"> • Manhole needs replaced • Manhole is brick and in fair shape
#AM-17	Manhole Replacement – Located at Broadway Ave and Washington St	<ul style="list-style-type: none"> • Manhole needs replaced • Manhole is brick and falling apart

1. Refer to **Figure 5** for map of additional improvements
2. Per meetings with City staff between 2019 and 2021. See City notes in **Appendix B**
3. City staff indicated various locations around town in need of additional cleanouts. Locations unknown.
4. City staff indicated that other miscellaneous improvements to the collection system are needed including adding spray tips to the lift stations and sewer plant. Cost of spray tips was not included in additional improvements cost estimates.

City Priority	Description (1)	City Comments/Observations (2)
#AS-7	Sewer Line Replacement – Located between Jackson and Washington St and 6 th and 7 th Ave	<ul style="list-style-type: none"> Sewer main needs replaced
#AS-8	Sewer Line Replacement – Located from Evergreen Grant Equipment to Jackson St between 1 st and 2 nd Ave	<ul style="list-style-type: none"> Sewer main needs replaced Main is shallow and slow flowing On wash list
#AS-9	Sewer Line Replacement – Located from east side of Division to Washington St between 3 rd and 4 th Ave	<ul style="list-style-type: none"> Sewer main needs replaced
#AS-10	Sewer Line Replacement – Located between Chelan and Palouse St and 7 th and 8 th Ave	<ul style="list-style-type: none"> Sewer main needs replaced
#AM-1	Manhole Replacement – Located on Washington St between 1 st and 2 nd Ave	<ul style="list-style-type: none"> Line could be split to divide flow into two main lines
#AM-2	Manhole Replacement – Located on Columbia St between Railroad and Main Ave	<ul style="list-style-type: none"> Manhole needs replaced Bottom of manhole is gone Diverter needs repaired
#AM-3	Manhole Replacement – Located on Washington St between 3 rd and 4 th Ave	<ul style="list-style-type: none"> Manhole needs replaced Manhole is brick and mortar
#AM-4	Manhole Replacement – Located on Washington St between 6 th and 7 th Ave	<ul style="list-style-type: none"> Manhole needs replaced Manhole is brick and mortar Bottom of manhole is gone
#AM-5	Manhole Replacement – Located on Washington St between 5 th and 6 th Ave	<ul style="list-style-type: none"> Manhole needs replaced Manhole is brick

3.0 Additional Collection System Needs

Some additional collection system deficiencies/needs have been identified by the City that are also not included in the 2003 CSP. These additional collection system needs can generally be categorized as either: 1) needed sewer main replacement, or; 2) existing manhole that needs replacement. Refer to **Figures 5 & 6** for locations of the additional collection system deficiencies/issues. **Appendix B** includes notes from the City identifying the snaky sewer mains (discussed in previous chapters) as well as these additional collection system issues.

The needed sewer main replacements identified by the City (see **Appendix B**) consist of mains which are either undersized, do not meet ECV criteria for pipe grade, and/or are chronic maintenance issues (and included on the City's wash list). Sewer mains on the City's wash list include mains which must be washed out on a bi-weekly basis to avoid clogging. The City would like to replace these undersized and flat mains to reduce ongoing maintenance costs and prevent sewer backups. The following tables denotes sewer main replacements with a "AS" prefix.

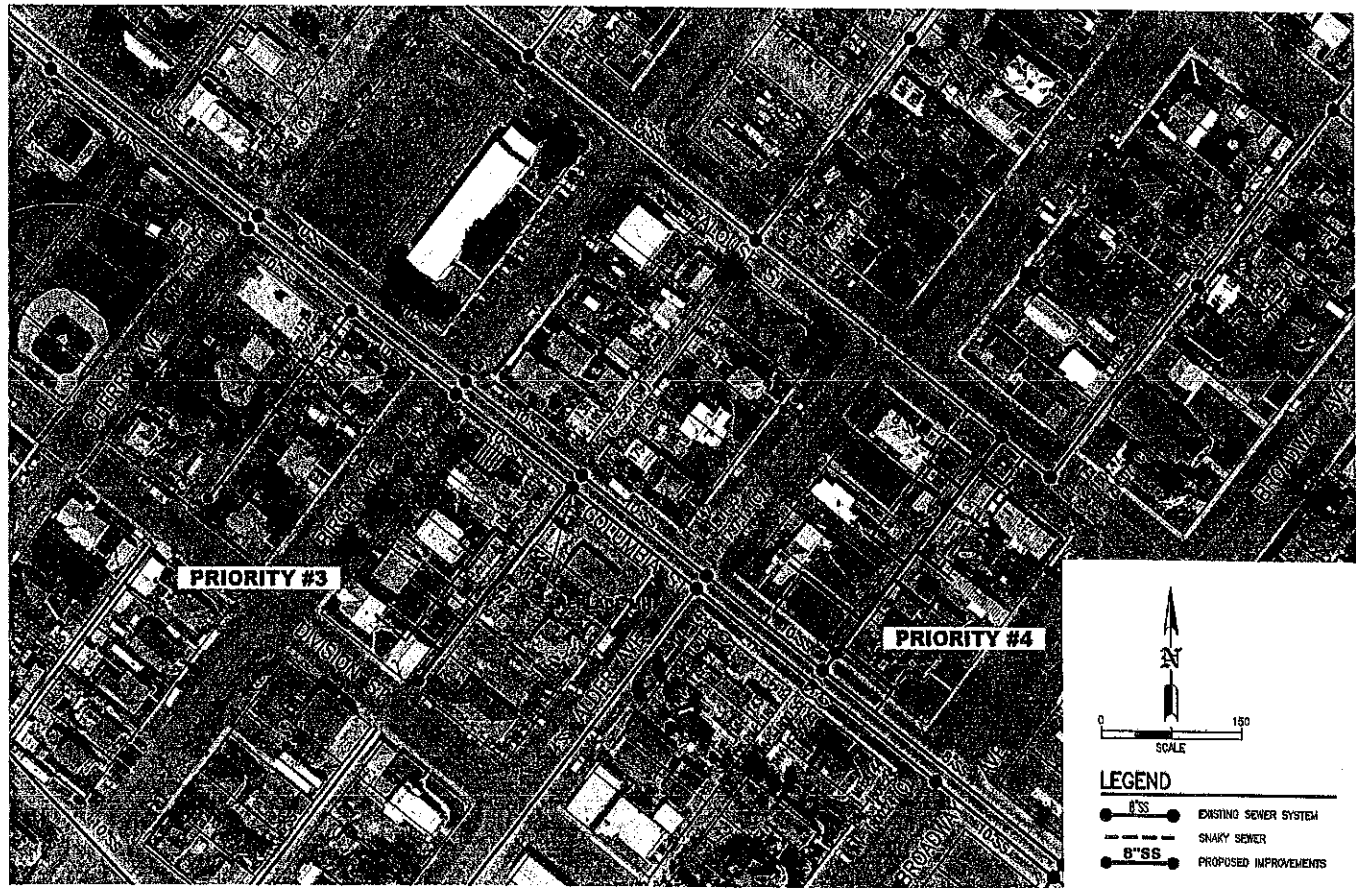
Needed manhole replacements were identified by the City (see **Appendix B**). There are 17 manholes that need replacement throughout town. These manholes are generally categorized as having been made of brick and mortar and are nearly 70 years old. These manholes allow groundwater infiltration into the sewer system and are either missing their bottoms or are so badly damaged as to not allow for the channelized flow of sewage through the manhole. The following tables denotes sewer main replacements with a "AM" prefix.

3.1 Estimated Cost and Prioritization

The total cost to complete all the City's additional sewer main replacements is estimated to be \$1.5M - \$2.0M. The total cost to complete the City's additional manhole replacements is estimated to be \$300K.

Additional collection system needs were not prioritized in the 2003 CIP and are therefore not prioritized in the updated CIP. Additional collection system needs are included herein as a placeholder only and may be included in future CIP's upon review by the City.

1273801 Fig 1 - Fig 4



0 150
SCALE

LEGEND

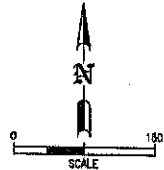
- EXISTING SEWER SYSTEM
- SNAKY SEWER
- PROPOSED IMPROVEMENTS

SCALE: AS SHOWN
 DESIGNED: NVH
 DRAWN: TWP
 CHECKED:
 APPROVED:
 PROJ. NO.: 127-35-01
 DATE: 12/15/21



CITY OF RITZVILLE, WASHINGTON
 PRELIMINARY DESIGN REPORT: HIGH PRIORITY SEWER
 COLLECTION IMPROVEMENTS
 SUBSTANDARD "SNAKY" SEWER LINES - PRIORITIES #3 & #4

FIGURE
3



LEGEND

	8"SS	EXISTING SEWER SYSTEM
	8"SS	SNAKY SEWER
	8"SS	PROPOSED IMPROVEMENTS
	8"SS	ADDITIONAL IMPROVEMENTS IDENTIFIED BY CITY (SEE CHAPTER 3)

1272601 Fig 1 - Pg 4

SCALE: AS SHOWN
 DESIGNED: NVH
 DRAWN: TYP
 CHECKED:
 APPROVED:
 PROJ. NO.: 127-38-01
 DATE: 12/15/21



CITY OF RITZVILLE, WASHINGTON
 PRELIMINARY DESIGN REPORT: HIGH PRIORITY SEWER
 COLLECTION IMPROVEMENTS
 SUBSTANDARD "SNAKY" SEWER LINES - PRIORITY #1

FIGURE
1

2.3.6 Priority #6 – Adams & 5th Ave.

Recommended Improvements for eliminating substandard "snaky" sewers between 4th and 6th Ave on Adams St on **Figure 2**.

Recommended Improvements include:

- Install new 8" diam. sewer mains in:
 - Adams St. between 4th Ave. and 6th Ave.
 - 5th Ave. between Adams St. and Jefferson St.
- Connect existing services (1 total) to new sewer main. Assumed 1 temporary construction easements will be required.
- Install new manholes at ends of all new sewer mains (3 total)
- Replace existing manhole at intersection of alley between 4th Ave and 5th Ave on Adams St.
- Surface replacement:
 - Sewer trench depths ranging from 8' and 15' deep with estimated minimum HMA removal of 15' width.
 - Road reconstruction assumptions:
 - Adams St. between 4th Ave. and 5th Ave (TIB PCR = 59) assume half road width reconstruction (18 feet wide)
 - Adams St. between 5th Ave. and 6th Ave (TIB PCR = 59) assume half road width reconstruction (18 feet wide)
 - 5th Ave. between Jefferson St. and Adams St. (TIB PCR = 77) assume half road width reconstruction (18 feet wide)
 - Curb/gutter repair at 1 location
 - Concrete flatwork repair at 1 location
 - Assumes no rock excavation needed because site is east of 4th Ave.

2.3.5 *Priority #5 – Jefferson & 3rd Ave.*

Recommended improvements for eliminating substandard "snaky" sewers between Jefferson and Adams St on 3rd Ave are shown on **Figure 4**.

Recommended improvements include:

- Install new 8" diam. sewer mains in:
 - 3rd Ave. between Adams St. and Jefferson St.
 - Jefferson St. between 2nd Ave. and 3rd Ave
- Connect existing services (10 total) to new sewer main. Appears no temporary construction easements needed.
- Install new manholes at ends of all new sewer mains (3 total)
- Replace existing manhole at intersection of alley between 2nd Ave and 3rd Ave on Jefferson St.
- Install new cleanout along Jefferson St to provide access to 4" service along Jefferson St.
- Surface replacement:
 - Sewer trench depths ranging from 8' and 13' deep with estimated minimum HMA removal of 15' width.
 - Road reconstruction assumptions:
 - 3rd Ave. between Adams St. and Jefferson St. (TIB PCR = 54) assume full road width reconstruction (36 feet wide) due to service locations
 - Jefferson St. between 2nd Ave. and 3rd Ave (TIB PCR = 54) assume half road width reconstruction (36 feet wide)
 - Assumes rock excavation needed because site is west of 4th Ave. Rock depth assumed 2'.

2.3.4 *Priority #4 – Palouse & Alley*

Recommended improvements for eliminating substandard "snaky" sewers between Columbia and Palouse St and Alder and Broadway Ave are shown on **Figure 3**.

Recommended improvements include:

- Install new 8" diam. sewer mains in:
 - Alley between Alder Ave. and Broadway Ave. from Columbia St. to Palouse Ave.
- Connect existing services (7 total) to new sewer main. Assumed 7 temporary construction easements will be required.
- Install new manholes at ends of all new sewer mains (2 total)
- Surface replacement:
 - Sewer trench depths ranging from 5' and 10' deep with estimated minimum HMA removal of 15' width.
 - Road reconstruction assumptions:
 - Palouse St. at alleyway between Alder Ave and Broadway Ave (TIB PCR = 59) assume alley width reconstruction (18 feet wide)
 - Gravel surfacing (alleyways):
 - Alley between Alder Ave. and Broadway Ave. from Columbia St. to Palouse Ave.
 - Assumes rock excavation needed because site is west of 4th Ave. Rock depth assumed 2'.

2.3.3 *Priority #3 – Columbia & Alley*

Recommended improvements for eliminating substandard "snaky" sewers between Division and Columbia St and Birch and Alder Ave are shown on **Figure 3**.

Recommended improvements include:

- Install new 8" diam. sewer mains in:
 - Alley between Birch Ave. and Alder Ave. from Division St. to Columbia Ave.
- Connect existing services (3 total) to new sewer main. Assumed 3 temporary construction easements will be required.
- Install new manholes at ends of all new sewer mains (2 total)
- Replace existing manhole at intersection of alley between Birch Ave and Alder Ave on Columbia St.
- Surface replacement:
 - Sewer trench depths ranging from 5' and 7' deep with estimated minimum HMA removal of 15' width.
 - Road reconstruction assumptions:
 - Columbia St. at alleyway between Birch Ave. and Alder Ave (TIB PCR = 50) assume alley width reconstruction (18 feet wide)
 - Gravel surfacing (alleyways):
 - Alley between Birch Ave. and Alder Ave. from Division St. to Columbia Ave.
 - Assumes rock excavation needed because site is west of 4th Ave. Rock depth assumed 2'.

2.3.2 Priority #2 – Jackson & 6th Ave

Recommended improvements for eliminating substandard “snaky” sewers between Jackson and Adams St on 6th Ave are shown on **Figure 2**.

Recommended Improvements include:

- Install new 8” diam. sewer mains in:
 - 6th Ave. between Adams St. and Jackson St.
 - Jackson St between 6th Ave. and 7th Ave.
- Connect existing services (6 total) to new sewer main. Appears no temporary construction easements needed.
- Install new manholes at ends of all new sewer mains (4 total)
- Replace existing manhole at Intersection of alley between 6th Ave and 7th Ave on Jackson St.
- Surface replacement:
 - Sewer trench depths ranging from 12’ and 13’ deep with estimated minimum HMA removal of 15’ width.
 - Road reconstruction assumptions:
 - 6th Ave. between Adams St. and Jefferson St. (TIB PCR = 72) assume half road width reconstruction (18 feet wide)
 - 6th Ave. between Jefferson St. and Jackson St. (TIB PCR = 63) assume half road width reconstruction (18 feet wide)
 - Jackson St. between 6th Ave. and 7th Ave. (TIB PCR = 68) assume half road width reconstruction (18 feet wide)
 - Gravel surfacing (park):
 - Jackson St. between 6th Ave. and 7th Ave.
 - Curb/gutter repair at 1 location
 - Assumes no rock excavation needed because site is east of 4th Ave.

2.3 Recommended Improvements

This section provides recommended improvements and planning level cost estimates for each of the six (6) identified substandard "snaky" sewer system areas.

2.3.1 Priority #1 – Palouse & 8th Ave.

Recommended improvements for eliminating substandard "snaky" sewers on Palouse St and 8th Ave between Chelan St and Palouse St are shown on **Figure 1**.

Recommended improvements include:

- Install new 8" diam. sewer mains in:
 - Palouse St. between 7th Ave. and 9th Ave.
 - 8th Ave. between Chelan St. and Palouse St.
 - Alley between 7th Ave. and 8th Ave. from Chelan St and Palouse St.
 - Alley between 8th Ave. and 9th Ave. from Chelan St and Palouse St.
- Connect existing services (7 total) to new sewer main. Assumed 3 temporary construction easements will be required.
- Install new manholes at ends of all new sewer mains (5 total)
- Replace existing manhole at intersection of alley between 7th Ave and 8th Ave on Palouse St.
- Connect existing 6" sewer main to new manhole at the intersection of the alley between 8th Ave and 9th Ave and Palouse St.
- Surface replacement:
 - Sewer trench depths ranging from 8' and 9' deep with estimated minimum HMA removal of 15' width.
 - Road reconstruction assumptions:
 - Palouse St. between 7th Ave. and 8th Ave (TIB PCR = 59) assume half road width reconstruction (18 feet wide)
 - Palouse St. between 8th Ave. and 9th Ave (TIB PCR = 68) assume half road width reconstruction (18 feet wide)
 - 8th Ave. between Chelan St. and Palouse St. (TIB PCR = 54) assume half road width reconstruction (18 feet wide)
 - Gravel surfacing (alleyways):
 - Alley between 8th Ave. and 9th Ave. from Chelan St and Palouse St.
 - Alley between 7th Ave. and 8th Ave. Included in additional improvements cost below.
 - Curb/gutter repair at 2 locations
 - Concrete flatwork repair at 2 locations
 - Assumes no rock excavation needed because site is east of 4th Ave.
- Additional improvements identified by the City (see **Chapter 3**) which occur within the vicinity of these improvements and would be cost effective to combine with this project. The improvements include:

Table 1 Summary of Identified Substandard "Snaky" Sewer Areas and City Priority

City Priority	Description	No. of Existing Connections	City Comments/Observations ⁽¹⁾
#1	Palouse & 8th Ave. See Figure 1 – Located between Chelan and Palouse St and 8 th and 9 th Ave	7 connections	<ul style="list-style-type: none"> No City access to existing sewer line Exact location of mains/services unknown Sewer line frequently plugs and backs up sewage in basements Requires frequent jetting Includes various 90° bends which makes cleaning difficult Sewer main passes through residential basement
#2	Jackson & 6th Ave. See Figure 2 – Located between Jackson and Adams St on 6 th Ave	6 connections	<ul style="list-style-type: none"> No City access to existing sewer line Exact location of mains/services unknown
#3	Columbia & Alley See Figure 3 – Located between Division and Columbia St and Birch and Alder Ave	3 Connections	<ul style="list-style-type: none"> 3 connections (102, 104, and 106 E Birch Ave) meet in the backyard of 106 E Birch. Limited access; only at 106 E Birch Ave.
#4	Palouse & Alley See Figure 3 – Located between Columbia and Palouse St and Alder and Broadway Ave	7 connections	<ul style="list-style-type: none"> No City access to existing sewer line Exact location of mains/services unknown
#5	Jefferson & 3rd Ave. See Figure 4 – Located between Jefferson and Adams St on 3 rd Ave	10 Connections	<ul style="list-style-type: none"> Service line goes toward Adams St, turns, and comes back to Jefferson St.
#6	Adams & 5th Ave. See Figure 2 – Located between 4 th and 6 th St on Adams St	3 Connections	<ul style="list-style-type: none"> No City access to existing sewer line Exact location of mains/services unknown

1. Per meetings with City staff between 2019 and 2021. See City notes in **Appendix B**

In addition to the substandard "snaky" sewer main areas, City staff also identified some additional collection system upgrades needed. See **Section 3** for a summary of the additional improvements identified.

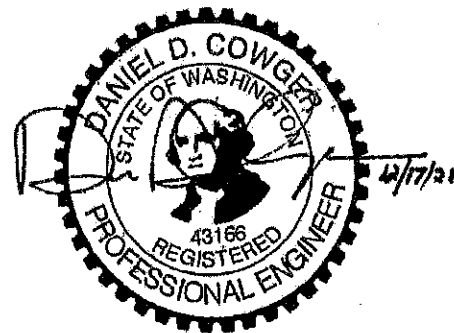
whole sanitary sewer collection system. In 2021, the City submitted a funding application to the Department of Ecology Water Quality Program to complete an updated comprehensive General Sewer Plan (GSP). If funded, it is assumed the improvements herein will be integrated into the future GSP's collection system improvements program.

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Appendices

Appendix A	Update of 2003 Comprehensive Sewer Plan 10-yr Improvement Program Costs
Appendix B	Summary of Additional Sewer Issues

