Appendix A

Douglas County Planning Department Population Letter

PLANNING DEPARTMENT

Room 106 • Justice Building • Douglas County Courthouse
Roseburg, Oregon 97470

Agency Coordination • Administrative • Long Range • Support Services
(541) 440-4289 • (541) 440-6266 Fax

On-Site Services (541) 440-6183
Community Services (541) 464-6443
(541) 464-6429 Fax

June 24, 2009

Cheryl Masotto, City Recorder;
City of Canyonville
P.O. Box 765
Canyonville, OR 97417

RE: Completion of Population Forecast Coordination

Dear Cheryl:

The County has received the letter from Milo Mecham, Lane Council of Governments, dated June 17, 2009 which details the City Council vote to accept the compromise for a consolidated population forecast growth rate of 1.75 percent for the City of Canyonville. We understand the City is moving forward with facilities planning and will use this consolidated population forecast as its coordinated population forecast.

The purpose of this letter is to acknowledge the reasons Council chose to modify the population forecast and to accept the population forecast rate of 1.75 percent for the City. The County has completed its goal to achieve the concurrence of all its' cities.

The City of Canyonville has proposed to use the 1.75% population forecast as part of its present capital facilities planning process. The County has no objections to the City using that rate of growth. We will incorporate the coordinated growth rates for cities into the Douglas County Comprehensive Plan Population Element as part of the fall legislative plan amendment process.

Thank you for helping to make this population coordination process a success.

Sincerely,

John J. Boyd AICP
Senior Planner

c Milo Mecham, LCOG

RECEIVED
JUN 25 2009
BY:_____

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----A Program With GREAT SPIRIT!----

LCOG

LANE COUNCIL OF GOVERNMENTS

June 17, 2009

John Boyd
Douglas County Planning
Douglas County Courthouse - Justice Building - Room 106
Roseburg, OR 97470

RE: Canyonville Population Forecast

Dear Mr. Boyd:

The Canyonville City Council, after deliberation on June 15, 2009, voted to accept the compromise consolidated population forecast growth rate of 1.75 percent proposed by Douglas County.

In reaching this decision, the Council considered its historic growth rate, the growth of employment opportunities near the City, and the need for a single number to be used for all planning purposes. The Council considered but was unable to accept the earlier County proposal to have two forecasts; one for facilities planning purposes and another for other purposes. The compromise single number seemed more straightforward and easier to deal with.

Canyonville is moving forward with its facilities planning, especially with its water and wastewater planning. I understand that the County's schedule is such that it will be some time before the County's process is finalized through adoption by the County Board. It would be helpful for Canyonville's purposes if you could send a letter to the City confirming that the coordination portion of the County coordinated population forecast process has ended. Could you also confirm that, barring the eruption of any unexpected problems, the Canyonville projected rate of growth of 1.75 percent per year will be the rate of growth assigned to Canyonville, and that it is appropriate for Canyonville to use that rate until further notice.

Thank you for your assistance on this matter.

Sincerely,

Milo Mecham
Canyonville Planner

Cc: City of Canyonville

859 WILLAMETTE STREET, SUITE 500, EUGENE, OREGON 97401-2910
www.lcog.org 541.682.4283

Table 4. Population Estimates for Oregon and Its Counties and Incorporated Cities: April 1, 1990 - July 1, 2008
Prepared by Population Research Center, PSU, March 2009.

County and Cities	July 1 Population Estimates									Census Population, April 1	
	2008	2007	2006	2005	2004	2003	2002	2001	2000	2000	1990
COLUMBIA	48,095	47,565	46,965	46,220	45,650	45,000	44,600	44,300	43,700	43,560	37,557
Clatskanie	1,740	1,710	1,675	1,660	1,650	1,650	1,610	1,530	1,530	1,528	1,629
Columbia City	1,975	1,955	1,890	1,785	1,760	1,720	1,650	1,620	1,595	1,571	1,003
Prescott	60	60	60	60	60	60	60	70	70	72	63
Rainier	1,810	1,775	1,705	1,760	1,750	1,750	1,690	1,690	1,690	1,687	1,674
St. Helens	12,325	12,075	11,940	11,795	11,370	11,250	10,780	10,380	10,100	10,019	7,535
Scappoose	6,580	6,090	5,840	5,700	5,590	5,480	5,260	5,160	5,025	4,976	3,529
Vernonia	2,365	2,365	2,340	2,275	2,260	2,260	2,260	2,220	2,240	2,228	1,808
Unincorporated	21,240	21,535	21,515	21,185	21,210	20,830	21,290	21,630	21,450	21,479	20,316
COOS	63,210	63,050	62,905	62,695	62,700	63,000	62,650	62,950	62,800	62,788	60,273
Bandon	3,300	3,235	3,115	3,065	2,990	2,960	2,870	2,880	2,860	2,833	2,224
Coos Bay	16,670	16,210	16,005	15,850	15,700	15,650	15,620	15,470	15,380	15,372	15,076
Coquille	4,165	4,215	4,210	4,205	4,180	4,180	4,200	4,190	4,185	4,184	4,121
Lakeside	1,560	1,545	1,440	1,420	1,420	1,420	1,420	1,370	1,370	1,421	1,437
Myrtle Point	2,550	2,540	2,535	2,510	2,490	2,480	2,460	2,460	2,445	2,451	2,712
North Bend	9,855	9,830	9,720	9,640	9,640	9,620	9,580	9,370	9,540	9,544	9,614
Powers	730	730	730	730	730	730	730	730	735	734	682
Unincorporated	24,380	24,745	25,150	25,275	25,550	25,960	25,770	26,480	26,285	26,249	24,407
CROOK	26,845	25,885	24,525	22,775	20,650	20,300	20,200	19,850	19,300	19,184	14,111
Prineville	10,370	10,190	9,990	9,080	8,640	8,500	8,150	7,750	7,410	7,358	5,355
Unincorporated	16,475	15,695	14,535	13,695	12,010	11,800	12,050	12,100	11,890	11,826	8,756
CURRY	21,510	21,475	21,365	21,190	21,150	21,100	21,250	21,550	21,200	21,137	19,327
Brookings	6,465	6,455	6,315	6,185	6,050	5,950	5,760	5,680	5,475	5,447	4,400
Gold Beach	2,155	2,445	2,445	1,930	1,930	1,930	1,930	1,920	1,900	1,897	1,546
Port Orford	1,275	1,240	1,225	1,225	1,190	1,190	1,200	1,180	1,155	1,153	1,025
Unincorporated	11,615	11,335	11,380	11,850	11,980	12,030	12,360	12,770	12,670	12,640	12,356
DESCHUTES	167,015	160,810	152,615	143,490	135,450	130,500	126,500	122,050	116,600	115,367	74,958
Bend	80,995	77,780	75,290	70,330	65,210	62,900	57,750	55,080	52,800	52,029	20,447
La Pine	1,610	1,590									
Redmond	25,445	24,805	23,500	20,010	18,100	17,450	16,110	14,960	13,770	13,481	7,165
Sisters	1,875	1,825	1,745	1,660	1,490	1,430	1,080	960	975	959	708
Unincorporated	57,090	54,810	52,080	51,490	50,650	48,720	51,560	51,050	49,055	48,898	46,638
DOUGLAS	105,240	104,675	103,815	102,905	102,350	101,800	101,300	101,200	100,500	100,399	94,649
Canyonville	1,730	1,640	1,605	1,530	1,450	1,410	1,360	1,430	1,295	1,293	1,219
Drain	1,080	1,075	1,065	1,045	1,040	1,060	1,050	1,030	1,020	1,021	1,086
Elkton	250	245	205	197	150	150	150	180	145	147	172
Glendale	955	955	940	915	870	860	840	860	860	855	707
Myrtle Creek	3,665	3,630	3,590	3,535	3,490	3,480	3,460	3,410	3,430	3,419	3,063
Oakland	945	940	940	940	940	940	930	950	955	954	844
Reedsport	4,305	4,305	4,250	4,240	4,230	4,230	4,230	4,370	4,370	4,378	4,796
Riddle	1,045	1,040	1,045	1,025	1,020	1,020	1,010	1,020	1,015	1,014	1,143
Roseburg	21,235	21,255	21,050	20,790	20,530	20,480	20,170	20,200	20,125	20,017	17,069
Sutherlin	7,795	7,660	7,610	7,500	7,360	7,300	7,180	6,990	6,720	6,669	5,020
Winston	5,890	5,780	5,490	5,265	4,940	4,940	4,880	4,790	4,640	4,613	3,773
Yoncalla	1,115	1,110	1,100	1,090	1,080	1,080	1,080	1,060	1,055	1,052	919
Unincorporated	55,230	55,040	54,925	54,833	55,250	54,850	54,960	54,910	54,870	54,967	54,838

Please use caution when comparing the population estimates of the unincorporated county areas over time, and note that population estimates for the unincorporated areas represent revised estimates rather than estimates resulting from direct change during the year.

Appendix B

Urban Growth Area Management Agreement

95 JUN 29 AM 11: 10
GAY FIELDS
DOUGLAS COUNTY CLERK

CITY OF CANYONVILLE/DOUGLAS COUNTY URBAN GROWTH MANAGEMENT AGREEMENT

RECEIVED
MAR 26 2010

AGREEMENT BETWEEN THE CITY OF CANYONVILLE, AND DOUGLAS COUNTY, FOR THE JOINT MANAGEMENT OF THE CANYONVILLE URBAN GROWTH AREA.

RECITALS:

A. The City of Canyonville (City), and Douglas County (County), are authorized under the provisions of ORS 190.003 to 190.030 to enter into intergovernmental agreements for the performance of any or all functions that a party to the agreement has authority to perform; and

B. ORS 197.175, 197.190, and 197.250, require counties and cities to prepare and adopt comprehensive plans consistent with statewide planning goals, and to enact ordinances or regulations to implement the comprehensive plans; and

C. Statewide Planning Goal 14 requires that the establishment and change of urban growth boundaries shall be through a cooperative process between the City and the County; and

D. The City and the County share a common concern regarding development and use of lands within the Urban Growth Area (UGA); and

E. The City and the County are required to have coordinated and consistent comprehensive plans which establish an Urban Growth Boundary (UGB) and a plan for the UGA; and

F. Statewide Planning Goal 2 requires the City and County to maintain a consistent and coordinated plan for the UGA and UGB when amending their respective comprehensive plans; and

G. The City and the County recognize that it is necessary to cooperate with each other to implement the City Plan for the UGA.

NOW THEREFORE, THE PARTIES DO MUTUALLY AGREE AS FOLLOWS:

1. Intent of Agreement

1.1. The City and the County hereby establish a procedure to implement the City plan for the Canyonville Urban Growth Area. The "plan for the UGA" shall consist of the Canyonville Comprehensive Plan. For purposes of this agreement, the Canyonville Urban Growth Area (UGA) shall be defined as the unincorporated area within the Canyonville Urban Growth Boundary (UGB). The City's and County's Comprehensive Plans for the area within the UGA are incorporated in this agreement by reference.

1.2. The Canyonville Comprehensive Plan (City Plan) and implementing ordinances, in conjunction with this agreement, shall establish the standards and procedures for review and action on comprehensive plan amendments, implementing ordinance changes, proposed land use actions, provision of services, public improvement projects, and other related matters which pertain to implementing the City Plan within the UGA.

1.3. The City shall have jurisdiction, within the UGA, to implement the City Plan using City implementing ordinances.

1.4. The County adopts, and incorporates by reference, the current (current as of the date of this agreement) City Comprehensive Plan, as it applies to the UGA, and the current City implementing ordinances (or codes) and authorizes the City to administer those ordinances or codes within the UGA as provided for in this agreement.

1.4.1 It is recognized that within the UGB a variety of urban services are provided including: sanitary sewer, water, storm drainage, fire protection, parks and recreation, and transportation. Providers of such services contribute both to existing services and future development within UGBs and serve essential functions. It is intended that this agreement serve to strengthen coordination between urban service providers, the County, and the City in order to maximize efficiency of urban service delivery within the UGB.

1.5. All actions as specified by this agreement shall be taken to assure that the City and County comprehensive plans remain consistent and coordinated with each other.

1.6. All land within the UGB may be subject to future annexation, however, establishment of a UGB does not imply that all land within the boundary will be annexed.

1.7. This Urban Growth Management Agreement (UGMA) replaces all prior UGMA's between the City and the County.

2. Definitions

For the purpose of this agreement, the following words, terms and phrases have the following meaning:

2.1. Building Permit: Written authorization to proceed with the construction of improvements subject to state building codes and local development regulations.

2.2. Comprehensive Plan: A generalized, coordinated land use map and policy statement of the governing body of a local government that interrelates all functional and natural systems and activities relating to the use of lands, including but not limited to sewer and water systems, transportation systems, recreational facilities, and natural resources including air and water quality management programs.

2.3. De Novo Hearing: A new hearing held without the benefit of the record of a previous hearing.

2.4. Final Decision: The last scheduled decision making action of the approving authority.

2.5. Implementing Ordinances: The City's standards, criteria, conditions, or other requirements adopted by the governing body under the authority of state law.

2.6. Major Public Works Project: A project which either serves an area-wide need or has significant land use or public facility impacts.

2.7. Public Facility Plan: A document or documents adopted by the City or the County as part of the Comprehensive Plan and meeting the minimum requirements of the Public Facilities Planning Rule as described in OAR Chapter 660, Division 11.

2.8. Quasi-Judicial Proceeding: Any proceeding which requires a discretionary review by public hearing, which may be a contested case, and which places the burden of proof on the applicant. Quasi-judicial actions are initiated by an applicant and applied to a particular property ownership or plan provision.

2.9. Street: The entire right-of-way of any public or private way that provides ingress or egress by vehicle or other means or that provides travel between places by means of vehicles. "Street" includes, but is not limited to: 1) ways described as streets, highways, throughways or alleys; 2) road related structures that are in the right-of-way such as tunnels, culverts or similar structures; and 3) structures that provide for continuity of the right-of-way such as bridges. The term "Road" is synonymous with "Street".

2.10. Transportation Improvements: Any physical facilities that are designed and intended to accommodate the movement of people and goods, and includes a network of streets and roads, bicycle and pedestrian paths, public transit, traffic control devices, channelization, and access management.

2.11. Ultimate Decision Making Authority: The local decision making authority having final jurisdiction.

2.12. Urban Growth Boundary (UGB): A legal boundary line jointly adopted by the City and County to separate urban and urbanizable land from rural land.

2.13. Urban Growth Management Agreement (UGMA): A written agreement between the City and the County pursuant to OAR 660-03-010(2)(c) setting forth the means by which a plan for management of the unincorporated area within the urban growth boundary will be implemented and by which the Comprehensive Plan for the Urban Growth Area may be amended.

3. Amendments to the City Plan and City Implementing Ordinances or Codes.

3.1. All City Plan text or map amendments and all City implementing ordinance (or code) amendments, not including Zone Map amendments, affecting the UGA shall be enacted in accordance with the procedures established in this Section.

3.1.1. All amendments referenced in Subsection 3.1 shall be initially processed by the City. The City shall notify the County of the proposed amendment at least 20 days before the City Planning Commission's first hearing. The City Planning Commission shall consider the County's comments when making its recommendation. The City Planning Commission's recommendation shall be forwarded to the County for comments. The County may provide additional comments prior to the City Council's (Council) final decision. In making its decision, the Council shall consider the comments of the County. The City shall notify the County in writing of its decision.

3.1.2. Within 15 days of receipt of written notice of the Council's decision, the Board of Commissioners (Board) may, on its own motion, notify the City of its intent to review the Council's decision. If the Board fails to respond within 15 days, the Council's decision shall be final and take effect, for the UGA, on the 16th day.

3.1.3. If the Board reviews the Council's decision, the Board shall establish a hearing date for its review which shall be held within 30 days from the date the City is given written notice of the Board's intent to review. If the review is of a quasi-judicial proceeding, it shall be confined to arguments of those who qualified as parties in the proceedings conducted by the City and to a de novo review of the record of the proceeding before the City Council and City Planning Commission. Notice and opportunity to be heard shall be provided as if the hearing were a review of a decision of the County Planning Commission. If the review is not quasi-judicial in nature, the review shall be de novo and any person may appear and be heard. The Board shall render a decision on the review within 30 days after such hearing.

3.1.4. If the Board reviews the Council's decision, the Council's decision shall not take effect in the UGA until 31 days after the hearing by the Board unless the Board affirms the Council's decision before the 31 day period elapses. In such case the Council's decision, if affirmed by the Board, shall take effect immediately upon the decision of the Board. If the Board reverses the Council's decision before the 31 day period elapses, the Council's decision shall not take effect in the UGA and the City may appeal such reversal to the Land Use Board of Appeals within the time period specified in ORS 197.830 and OAR 661-10-015.

3.1.5. If the Board fails to make a decision within 30 days after its hearing, the decision of the Council shall take effect on the 31st day after the Board's hearing.

4. Review Process for Land Use Actions

4.1. Subsection 4.2. applies to the following land use actions being considered in the UGA:

a. Amendments to the Zoning Map
b. Conditional Use Permits
c. Planned Unit Developments
d. Subdivisions
e. Partitions
f. Road Dedications and Vacations
g. Variances

4.2. All applications for land use actions referenced in Subsection 4.1. shall be initially processed by the City. The City shall notify the County of each application and shall give the County 20 days to comment.

4.2.1. The County's failure to timely respond to the notice shall mean no comment regarding the proposal.

4.2.2. In making its decision, the City shall consider, and is obligated to respond to, as appropriate, all comments made by the County with regard to the notice. The City shall notify the County in writing of all land use decisions, as listed in Subsection 4.1., whether or not the County has commented. If a timely response is received by the City from the County, the County shall have standing to appeal decisions consistent with the appeals process specified in the City implementing ordinances or codes.

5. Review Process for Other Specified Land Use Activities

5.1. The City and County shall use the following process for review and action on legislative amendments not covered under Section 3 of this agreement and public improvement projects specified below which affect land use within the UGA.

5.1.1. The County shall coordinate with and seek comments from the City with regard to the following items, for which the County has ultimate decision making authority, and which affect land use within the UGA. The City's comments shall address consistency of the proposal with the City Plan and this agreement.

a. Major public works projects sponsored by the County for transportation improvements.

b. Proposals for significant sewer, water, drainage, solid waste, or transportation improvements.

c. Proposal for formation of, or changes of organization, boundary or function of special districts, as these terms are defined in ORS 198.705 to ORS 198.710.

d. Recommendations for designation of an area as a health hazard.

5.1.2. The City shall seek comments from the County with regard to the following items, for which the City has ultimate decision making authority, and which affect land use within the UGA. The County's comments shall address consistency of the proposal with the City Plan and this agreement.

a. Proposals for significant sewer, water, drainage, solid waste, or transportation improvements.

b. Proposals for the extension of any City service, utility or facility, or their respective service areas within the UGB.

c. Major public works projects sponsored by the City for transportation improvements.

5.2. The initiating jurisdiction shall allow the responding jurisdiction 30 days to comment with regard to the items listed in Subsections 5.1.1. and 5.1.2. Failure to timely respond to the proposal shall mean no comment.

5.3. The initiating jurisdiction shall consider and respond to the comments of the responding jurisdiction in making its decision.

6. Approvals for Structural Development (Building Permits)

6.1. Requests for authorization of structural development which can be authorized at the ministerial level, within the UGA, may be initiated at either the City or the County. If initiated at the County, the County will obtain oral concurrence from the City Recorder prior to authorization. The County will give confirmation of the authorization to the City within five working days. If concurrence cannot be obtained from the City, then the request will be forwarded to the City for their review and action. If the City requires a discretionary structural development review process that precludes oral concurrence, then requests for authorization of structural development shall be initiated at the City.

6.1.1. The City may utilize a discretionary structural development review process if such a process is required by City Ordinances. The City may charge a fee for discretionary structural development review as provided in City Ordinances. Notice of fee changes shall be provided to the County under the process specified in Section 4 of this agreement. The City's discretionary structural development review process may impose additional conditions to approvals of structural development that are necessary to implement the City ordinances.

6.1.2. Floodplain Certifications: The County shall be responsible for authorizing floodplain certification on structural development in the City UGA. Such certification shall be consistent with the County's floodplain ordinance except that the City's floor height elevation shall apply if higher than the County standard.

a. When a request is initially processed by the County, the County may, if appropriate and with the concurrence of the City, approve the land use portion of the request. The County will then review and if appropriate, sign off the floodplain certification clearance, thereby completing the authorization process. The County will give confirmation of the authorization to the City within five working days. If concurrence cannot be obtained from the City then the request will be forwarded to the City and Section 6.1.2.b. of this agreement shall apply.

b. When a request is initially processed by the City, the City will first review and, if appropriate, approve the land use portion of the request. The City will then forward the request to the County and the County will review and, if appropriate, sign off the floodplain certification clearance, thereby completing the process.

6.2. The County shall have the authority for issuing permits (commonly referred to as "building permits"), as provided for by the State Building Codes Agency, within the UGA.

6.2.1. County issued permits include, but are not limited to: structural, mechanical, plumbing, manufactured dwelling alterations and placement, and manufactured dwelling and recreational vehicle Parks.

6.2.2. The County will not issue a temporary or final occupancy permit for any structural development which is subject to City site plan review conditions or other structural development authorization conditions until such time as the City certifies that the conditions have been fulfilled.

7. Annexations

7.1. City Annexations: The City may annex land or enter into agreements for delayed annexation in accordance with state law.

7.1.1. At least ten days prior to the City's final action, the City shall notify the County of any proposed annexation and permit the County to make comments.

7.1.2. Proposals for annexations to the City which are for areas outside the UGB shall be considered concurrently with a proposal to amend the UGB in accordance with Section 3.

8. Urban Services in the UGA

8.1. The extension, development and maintenance of sewer, water and storm drainage facilities shall be consistent with the City Plan and any Master Coordination Agreement that has been made for the extension, development and maintenance of these facilities.

8.2. The City shall be responsible for public facility planning within the UGA unless other arrangements are provided for in the Master Coordination Agreement.

9. Coordination With Urban Service Providers

9.1. The City and County may jointly enter into a Master Coordination Agreement with individual Urban Service Providers in order to promote and strengthen coordination between the City, the County and the various other urban service providers within the UGB (including, but not necessarily limited to, special districts as defined by ORS 450.005, county service districts as defined by ORS 451.410, authorities as defined by ORS 450.710, and corporations and associations). The Master Coordination Agreement should at a minimum:

a. set out the functional role of all parties for the future provision of urban services within the UGB;

b. determine the future service area within the UGB for each party;

c. establish design standards within the respective service areas, and assign responsibilities for planning, constructing and maintaining service facilities within the UGB, as well as for the management and administration of the various urban services;

d. describe the respective role and responsibility of the City, the County and the Urban Service Provider in the comprehensive planning process, including public facility and transportation planning, plan amendments, periodic review, and amendments to land use regulations;

e. establish procedures and timeframes for providing the other parties with notice of major development proposals, significant capitol improvement projects, and proposed changes to jurisdictional boundaries or service areas;

f. describe the respective role and responsibility of the City, the County and the Urban Service Provider in reviewing, commenting on, or taking action on major development proposals, significant capitol improvement projects, and proposed changes to jurisdictional boundaries or service areas;

g. provide a framework for other measures intended to enhance the efficient, cost effective and timely delivery of urban services;

h. provide a process for resolving disputes between the parties; and

i. establish a process for review and modification of the Master Coordination Agreement.

9.2. Nothing in this Section shall restrict the right of the City or the County to enter into separate special-purpose intergovernmental agreements with each other or with any other entity as provided for by state law. Such other agreements shall not be inconsistent with this UGMA and the Master Coordination Agreement.

10. Standards For Urban Growth Boundary Streets

10.1. Standards for Construction of New Streets

10.1.1. All new streets within the UGB, which are part of a new land division or planned development, shall be constructed to City standards.

10.1.2. The City and County will maintain coordinated urban street construction standards for new streets that are not part of a land division or planned development.

10.1.3. All new streets within the UGB that are not part of a land division or planned development shall be constructed to coordinated urban street construction standards. The coordinated standards would apply County construction standards which would be coordinated to allow for other amenities or improvements the City may require in the future.

10.2. Existing Streets Within the UGB

10.2.1. The County shall maintain all streets in the County road maintenance system until annexed by the City.

10.2.2. Upon annexation, the City agrees to accept jurisdiction of all streets and maintenance responsibility of all streets in the County road maintenance system except major collectors and arterials.

CANYONVILLE NORTH ROAD #172 MP 0.12 to MP 0.32

CANYON CREEK ROAD #300	MP 0.25 to MP 0.52
JEFFRIES ROAD #383	MP 0.08 to MP 0.43

10.2.3. The County shall continue to be responsible for the maintenance of all major collectors and arterials within the County road system unless otherwise agreed to by the City and County.

11. Enforcement

11.1. Within the UGA, the City shall be responsible for enforcement of City implementing ordinances (or codes) and optional codes not administered by Douglas County.

11.2. The County shall be responsible, within the UGA, for enforcement of State building codes as specified in Section 6.2. of this agreement.

11.3. The City and County may enter into separate intergovernmental agreements for the enforcement of optional building codes in the UGA and/or enforcement of the Uniform Building Code and other optional codes inside the City Limits.

12. Amendment and Termination

12.1. This agreement may be amended at any time by mutual consent of the parties, after public hearings and adoption by both the City Council and County Board of Commissioners.

12.2. This agreement may be terminated by either party under the following procedure:

a. A public hearing shall be called by the party considering termination. The party shall give the other party notice of hearing at least 60 days prior to the scheduled hearing date. The 60 day period shall be used by both parties to seek resolution of differences.

b. Final action on termination shall not be taken until at least 90 days after the final public hearing.

This Urban Growth Management Agreement is signed and executed this 28th day of June, 1995.

CITY OF CANYONVILLE, OREGON

Mayor

Attest:

City Recorder

BOARD OF COUNTY COMMISSIONERS
OF DOUGLAS COUNTY, OREGON

Joyce Morgan, Chairman

Doug Robertson, Commissioner

Michael Winters, Commissioner

<c:\data\wp51\!canugma.doc>

Zoning for sewer plant

Chapter 18.60

SD-CS COMMUNITY SERVICES ZONE

Sections:

18.60.010	**Intent.**
18.60.020	**Permitted uses and structures.**
18.60.030	**Permitted accessory uses and structures.**
18.60.040	**Conditional uses.**
18.60.050	**Setbacks and lot coverage.**
18.60.060	**Building height.**

18.60.010 Intent.

This district is intended to provide for the review and location of public and semi-public uses which, by reason of their convenience, necessity, character or effect may be appropriate in any district. (Ord. 343 § 6.79, 1980)

18.60.020 Permitted uses and structures.

In an SD-CS zone, the following uses are permitted:

A. Museums, public and private;

B. Churches, school, public and parochial;

C. Cemeteries and mortuaries;

D. Parks, playgrounds, public golf courses;

E. Government buildings or uses, hospital;

F. Philanthropic or eleemosynary institutions;

G. Public utility;

H. Nonprofit campgrounds. (Ord. 343 § 6.80, 1980)

18.60.030 Permitted accessory uses and structures.

In an SD-CS zone any use or structure customarily accessory to a permitted use shall be permitted. (Ord. 343 § 6.81, 1980)

18.60.040 Conditional uses.

The following uses are permitted after hearing and attachment of conditions:

A. None. (Ord. 534 § 1 (part), 1997: Ord. 343 § 6.82, 1980)

18.60.050 Setbacks and lot coverage.

See regulations for underlying district. (Ord. 343 § 6.83, 1980)

18.60.060 Building height.

In an SD-CS zone the height of a building shall not exceed thirty-five feet. (Ord. 343 § 6.84, 1980)

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Appendix C

Collection System Evaluation from Draft 1998 Wastewater Facilities Plan

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CHAPTER 3

WASTEWATER COLLECTION SYSTEM

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CHAPTER 3

WASTEWATER COLLECTION SYSTEM

The City of Canyonville is responsible for operating and maintaining the collection system that conveys wastewater from residential, commercial, and industrial users to the municipal wastewater treatment plant. This chapter describes the collection system infrastructure, assesses existing sewerline capacities, and estimates the influence of infiltration and inflow (I/I) in the system. Based on this information, the chapter identifies problem areas in the system under existing and future wastewater flow conditions and presents a cost-effectiveness analysis for I/I removal.

SYSTEM DESCRIPTION

Canyonville's wastewater collection system was largely designed and constructed between 1959 and 1961. Although this infrastructure development project did incorporate a small portion of an older sewer system in the downtown area, the vast majority of the system was newly constructed at that time. Over the years, the City has extended sewer service to various new developments on the periphery of the core system. In addition to incremental system expansions, the City constructed a low pressure line in 1989 to serve wastewater generators in the North Canyonville Sanitary District and Stanton Park. Figure 3-1 provides an overview layout of the wastewater collection system and Table 3-1 summarizes system characteristics.

Table 3-1. Collection System Inventory

Pipe Diameter, inches	Pipe length, feet												
	Depth, feet												Total
	4	5	6	7	8	9	10	11	12	13	14	Unknown	
6												400	400
8	1465	2084	8647	6160	2720	2264	1436	450	1165	100	90	4750	31331
10		327	480	275		600		315					1997
12	110	542	742	164				127	175	106			1966
15		646	206	567	627	509	144						2699
Total	1575	3599	10075	7166	3347	3373	1580	892	1340	206	90	5150	38393

Gravity Sewers

Most of Canyonville's collection system is composed of gravity sewers. The prevalence of sloping terrain in the area creates the necessary topographic conditions for an effective gravity system.

The main trunk of the gravity sewer parallels the course of Canyon Creek, conveying wastewater to the treatment plant which is sited at the confluence of Canyon Creek and the South Umpqua River. Sewer pipe diameters range from six inches in the furthest upstream reaches of the collection system to fifteen inches in the main trunk as it approaches the treatment plant. The majority of the sewers are eight inches in diameter. Slopes vary considerably in the system, ranging from 0.16 percent along Canyon Creek to an extreme of nearly 30 percent for a hillside development. Topographic conditions determine the invert elevations of the sewers, which are as shallow as three feet on the main trunk. Pipe materials are generally asbestos cement and PVC, although there are some concrete or clay pipes dispersed throughout the system. The majority of new sewers are PVC pipe.

The collection system does not contain any known designed overflow points for bypassing wastewater during high flow conditions However, peak flows associated with the high infiltration and inflow from large storm events can cause unintentional overflows at certain manholes along Canyon Creek just upstream of the treatment plant. There are also two locations on the plant site where designed bypasses can occur: at the influent manhole and the secondary effluent collection box.

Past raw sewage bypasses have been the result of raw sewage pump failures during storm events. One or more of the three vacuum-primed pumps would clog or fail to prime, reducing the overall capacity of the pumping station. Since the installation of the new submersible raw sewage pump in 1997, no raw sewage bypasses have been reported.

Pump Stations and Pressure Mains

A small pressurized collection system serves North Canyonville and Stanton Park. The system is designed such that each wastewater generator in this service area operates and maintains their own small-scale pump station that discharges septic tank effluent into the City's low-pressure main. The pressure main is constructed of PVC pipe ranging in diameter from three to six inches.

There is no evidence of problems with hydrogen sulfide corrosion associated with the North Canyonville pressure main. When the relatively small flows from North Canyonville combine with the larger flows from Canyonville proper, any dissolved sulfides that are present are most likely oxidized by the dissolved oxygen in the flow from the Canyonville gravity sewers.

CAPACITY ASSESSMENT

The capacity of a gravity sewer is determined by its diameter, slope, and, to a lesser extent, its material of construction. According to an evaluation of these parameters, the controlling sewer capacity and diameter for each important reach of sewer is identified in Table 3-2.

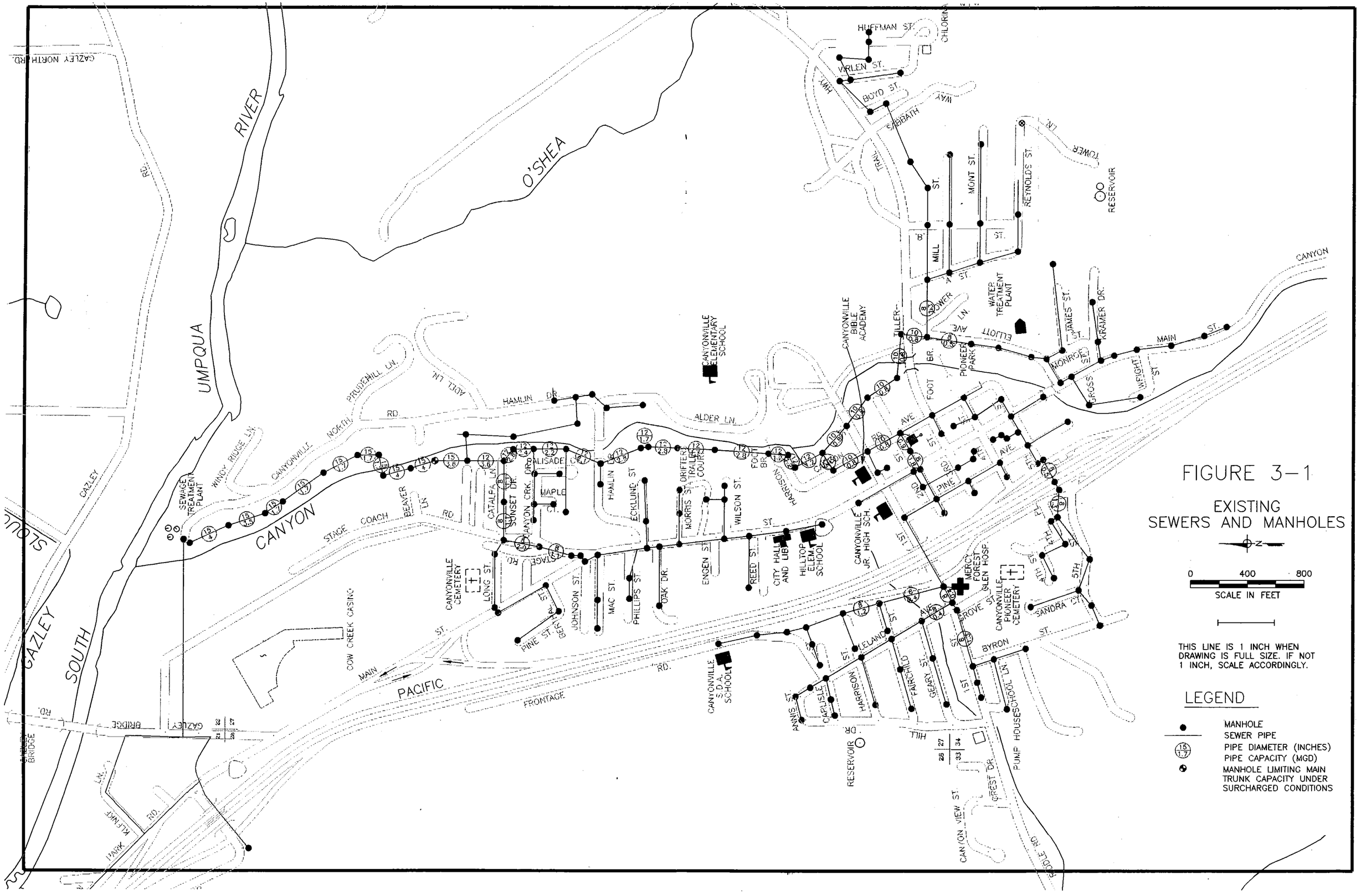
FIGURE 3-1
EXISTING
SEWERS AND MANHOLES
0 400 800
SCALE IN FEET
THIS LINE IS 1 INCH WHEN DRAWING IS FULL SIZE. IF NOT 1 INCH, SCALE ACCORDINGLY.
LEGEND
MANHOLE
SEWER PIPE
PIPE DIAMETER (INCHES)
PIPE CAPACITY (MGD)
MANHOLE LIMITING MAIN TRUNK CAPACITY UNDER SURCHARGED CONDITIONS
UMPQUA RIVER
O'SHEA
CANYON
SOUTH GAZLEY
PACIFIC
CANYONVILLE ELEMENTARY SCHOOL
CANYONVILLE BIBLE ACADEMY
CANYONVILLE JR. HIGH SCH.
CANYONVILLE S.D.A. SCHOOL
HILLTOP ELEM. SCHOOL
CITY HALL AND LIB.
CANYONVILLE CEMETERY
CANYONVILLE PIONEER CEMETERY
MERCY FOREST GLEN HOSP.
WATER TREATMENT PLANT
SEWAGE TREATMENT PLANT
PIONEER PARK
RESERVOIR
PUMP HOUSE
COW CREEK CASING
HUFFMAN ST.
VARLEN ST.
BOYD ST.
SABBATH WAY
TOWER LN.
MONT ST.
REYNOLDS ST.
MILL ST.
ELLIOTT AVE.
TILLER BR.
FOOT BR.
JAMES ST.
KRAMER DR.
MAIN ST.
WRIGHT ST.
CROSS ST.
MONROE ST.
HAMLIN DR.
ALDER LN.
PRUDEHILL LN.
ADEL LN.
CANYONVILLE NORTH RD.
WINDY RIDGE LN.
PALISADE DR.
MAPLE ST.
SUNSET DR.
CATALFA LN.
CANYON CRK. DR.
ECKLUND ST.
DRIFTER TRAILER COURT
MORRIS ST.
WILSON ST.
ENGEN ST.
REED ST.
OAK DR.
PHILLIPS ST.
MAC ST.
JOHNSON ST.
LONG ST.
PINE ST.
STAGE COACH RD.
BEAVER LN.
GAZLEY NORTH RD.
GAZLEY BRIDGE
PARK RD.
KLINKE LN.
FRONTAGE RD.
ANNIS ST.
CARLISLE ST.
HARRISON ST.
LELAND ST.
FAIRCHILD ST.
GEARY ST.
GROVE ST.
BYRON ST.
SANDRA CT.
SCHOOL LN.
CANYON VIEW ST.
CREST DR.
HILL DR.
1ST
2ND
3RD
4TH
5TH
6TH
7TH
8TH
PINE AVE.

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Table 3-2. Main Trunk Controlling Capacities

Sewer Reach	Pipe Diameter, inches	Capacity, mgd
Main Trunk A - Treatment Plant Approach	15	1.7
Main Trunk A - South Canyonville	12	1.2
Main Trunk A - Southeast Canyonville	10	0.8
Main Trunk B - Catalpa Lane	8	1.1
Main Trunk C - Old Downtown	10	0.8
Main Trunk C - West Canyonville	8	0.4
Main Trunk C - Southwest Canyonville	8	0.5

Our flow analysis shows that the current peak wet weather flow at the Canyonville treatment plant is approximately 2.2 mgd. Since the controlling capacity for the main trunk is 1.7 mgd, the sewer system will become surcharged during peak wet weather conditions. Surcharging causes water to back-up in manholes, which in turn raises the water pressure in the system and allows for higher flow rates in the sewer pipes. The surcharging capacity of the system is determined by the maximum height water is able to back-up in the critical manhole without overflowing. Analysis of the system hydraulics shows that manhole A-10 (identified in Figure 3-1), has the critical limiting back-up height, which gives the system a surcharged flow capacity of 3.4 mgd. Figure 3-2 illustrates the hydraulic grade line for the surcharged system relative to the ground surface elevation. The hydraulic grade line has an effective slope of 0.66% when water backs up to the rim of manhole A-10.

Chapter 5 develops flow projections for the wastewater conveyance and treatment system for design year 2022. The design PWWF is 4 mgd, which exceeds the surcharged capacity of the main trunk. To increase the capacity of the main trunk to 4 mgd, a new 18-inch diameter line would have to be installed parallel to the existing 15-inch diameter line from the WWTP upstream approximately 2500 feet. The estimated cost of this line, including the creek crossing, manholes, engineering, and contingency, is $575,000.

INFILTRATION AND INFLOW ANALYSIS

Infiltration and inflow (I/I) refers to water that enters sewer lines due to defects in the system or illicit storm drain connections. Infiltration is groundwater that enters the system from the surrounding soil through defective pipes, joints, or manholes. Inflow is stormwater that directly enters the system from sources such as illicit drainage connections and flooded manhole covers.

The following analysis of plant flow records and field inspections during a winter storm event provides an overview of the I/I flows associated with Canyonville's collection system. This analysis points to the magnitude of the I/I component of wastewater flows and indicates whether

a management strategy for I/I flows is warranted. The Environmental Protection Agency (EPA) advises that an I/I management strategy is warranted if analysis shows that I/I flows are 'excessive' relative to their guidelines.

EPA Guidelines for Infiltration and Inflow

The EPA has established guidelines for evaluating I/I. These guidelines are based on per capita flow rates. If the measured per capita flow at the wastewater treatment plant exceeds the EPA guideline flow rate, then infiltration or inflow for the collection system is deemed 'excessive'.

The EPA guideline for infiltration is based on a dry weather flow rate defined as the highest 7-day average flow recorded over a seven to fourteen day period during high groundwater season. In Oregon, this condition occurs during the winter when precipitation is absent for seven to fourteen days. If the flow measured during such a period exceeds the EPA's guideline of 120 gallons per capita per day (gcd), then infiltration is considered excessive. For Canyonville's population of 1,285, the EPA guideline translates into a total system flow of 0.15 million gallons per day (mgd). Since the average dry weather flow at the Canyonville plant is 0.21mgd or 163 gcd, it is immediately apparent that infiltration is excessive in the collection system. During wintertime dry periods, 7-day average flows range between 0.22 mgd and 0.30 mgd as summarized in Table 3-3. In each of the analyzed periods, the measured plant flow exceeded the EPA guideline of 0.15 mgd.

Table 3-3. High Groundwater Dry Weather Flows

Period	Seven-Day Average Flow, mgd	Seven-Day Average Flow, gcd	Total Precipitation, inches
2/10 through 2/16/96	0.30	233	0
3/14 through 3/20/96	0.23	179	0
4/3 through 4/9/96	0.27	207	.06
1/9 through 1/15/97	0.30	230	.01
3/19 through 3/26/97	0.22	175	.06
Average	0.26	205	.03
EPA Guideline	0.15	120	0

The EPA guideline for evaluating inflow is based on the highest daily flow recorded during a storm event. Inflow is considered to be excessive if the measured high daily flow is greater than 275 gcd. For the Canyonville population, this results in a total system flow of 0.35 mgd. A review of plant records shows that the highest recorded daily flow was 1.38 mgd or 1,073 gcd in December of 1996. Because EPA's infiltration and inflow guidelines are exceeded, an analysis is performed to determine if removal of I/I in Canyonville's collection system is cost effective.

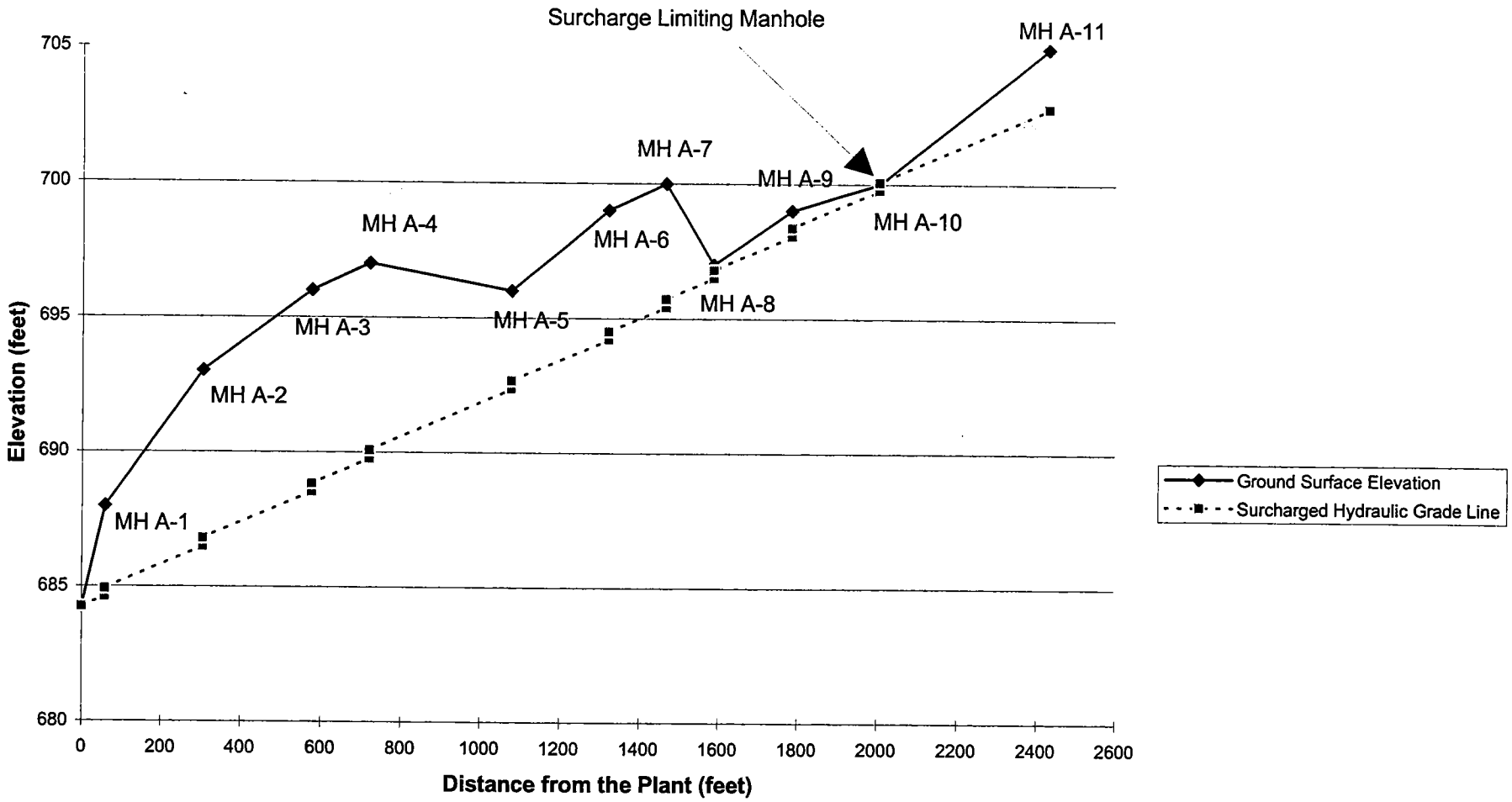

Figure 3-2 Surcharged Capacity Analysis

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Storm Event Field Investigations

In order to further investigate the influence of I/I flows in Canyonville, city staff and West Yost and Associates conducted field surveys of the collection system at the end of a multi-day storm event in March 1998. This field work consisted of estimating flow rates at six key manholes in the system. Each of the selected manholes was located downstream of a sewer service basin in the collection system or on the main sewer trunk along its approach to the treatment plant. Table 3-4 summarizes the results of the field work. The flow measurement at the plant property line manhole agreed well with the plant flow meter (0.74 mgd according to the depth estimates and 0.67 mgd by the plant flow meter), suggesting that the field measurements are reasonably accurate.

A significant result from the field investigations is the substantial increase in flow rate between the Catalpa Lane manhole and the plant property line manhole. As shown in Table 3-4, the measured flow jumps from 0.43 mgd to 0.74 mgd (72% increase) along this reach. There are no significant incoming sanitary flows between these two measurement sites, suggesting that the increase is most likely attributable to I/I sources. Since the main trunk passes beneath Canyon Creek within this particular reach, there is potential that a single I/I source is responsible for the observed flow increase. However, small errors in depth measurement or inaccurate sewer slope information could account for this flow differential. Nevertheless, in order to further investigate the possibility of defects or deterioration in the creek crossing pipeline, we recommend conducting an inspection of this reach of the system with closed-circuit television equipment.

Table 3-4. Storm Event Flow Measurements

Location	Pipe Diameter, inches	Measured Flow, mgd
1st and Pine	8	0.15
5th and Pine	8	0.045
Tiller-Trail Hwy Bridge	10	0.066
Oak and Main	8	0.042
Catalpa Lane	15	0.43
Plant Property Line	15	0.74

INFILTRATION AND INFLOW REMOVAL COST EFFECTIVENESS ANALYSIS

Because I/I in the Canyonville wastewater collection system is considered "excessive" based on EPA guidelines, a cost effectiveness analysis for I/I removal is performed. There are three basic alternatives available for dealing with I/I:

- Construct facilities capable of conveying and treating the peak flows.

- Rehabilitate the entire collection system to reduce I/I, thereby reducing peak flows and the size and cost of new treatment and conveyance facilities.

- Rehabilitate key segments of the collection system to minimize I/I in the most cost effective manner. Construct new treatment and conveyance facilities as appropriate for the lower peak flows. In many cases, this approach can mean eliminating sources of inflow only.

An I/I cost effectiveness analysis compares the cost of rehabilitating sewers and removing I/I against the cost of constructing larger treatment and conveyance facilities. The amount of I/I removal which corresponds to the point at which total project costs are minimized defines the amount of cost effective I/I removal that should be performed.

General System Condition

No television inspection or smoke testing work has been performed on the Canyonville collection system in recent years; therefore, the condition of the sewer lines is unknown. However, several manholes were inspected during the flow testing performed in March 1998 and described previously. All the manholes inspected were in good condition, with no signs of excessive erosion or corrosion. Because the majority of the system is less than 40 years old, there is no reason to suspect that other reaches are in substantially worse condition.

I/I Removal

I/I is removed from a wastewater collection system through rehabilitation or replacement of pipes and manholes. The first step in an I/I removal program is to identify sources of I/I and prioritize rehabilitation projects. Typically, those projects which have the potential to remove the most I/I at the lowest cost are initiated first.

I/I Sources. Extraneous water can enter the collection system in a number of different ways. As discussed previously, inflow is storm water that enters the system directly. Inflow sources include illicit storm drain connections, runoff leaking through manhole lids, and roof drains connected into sewer laterals. Infiltration is groundwater that leaks into the system through defects in pipes, pipe joints, fittings and manholes. It is important to note that infiltration increases during and immediately after storm events. As rain water saturates the soil, it can leak into pipes through defects that are normally well above the groundwater table. This type of infiltration is referred to as rainfall-dependent infiltration. Rainfall dependent infiltration is often difficult to distinguish from inflow and even more difficult to pinpoint. Even sewer television inspections sometimes cannot locate sources of rainfall dependent infiltration unless the inspection is performed during a storm event.

Source Removal and Flow Reduction. I/I sources can be eliminated in numerous ways, including:

- Replacing pipes.
- Slip lining pipes.
- Replacing manholes.
- Grouting manholes.
- Installing waterproof manhole lids.
- Replacing service laterals.
- Replacing lateral connections to sewer mains.
- Eliminating storm drain connections.

Eliminating a number of I/I sources does not guarantee a corresponding reduction in I/I and peak flows. In many cases, eliminating a significant portion of the total number of I/I sources has resulted in little or no peak flow reduction. This can be attributed to several factors:

- When pipe defects are repaired in the upper reaches of a collection system, water migrates down the trench through the granular pipe bedding and backfill material. The water enters collection system once it reaches a defective pipe segment or manhole downstream of the rehabilitated area.

- When large areas are rehabilitated, the groundwater level can actually rise because the sewers are no longer functioning as an underdrain system. The higher groundwater level subjects a larger portion of the collection system to possible infiltration problems.

- Some sewers are flowing full during peak storm events—no additional water can be carried. Eliminating only a portion of the I/I sources may not be enough to reduce the flow in the sewer below its full-flowing capacity.

- Few cities have replaced faulty service laterals as part of their sewer rehabilitation programs. Because the laterals are located primarily on private property, there are a number of issues that must be addressed before they can be replaced or repaired. Therefore, the I/I associated with service laterals is not removed as part of some rehabilitation programs.

Because of these factors, past studies have attempted to develop an empirical relationship between I/I source removal and peak flow reduction. One collection system study for a southern Oregon community estimated that eliminating 50 percent of the I/I sources would result in only a 10 percent reduction in I/I flow. However, because the effectiveness of a rehabilitation program is greatly dependent on the characteristics of the collection system, it is questionable whether the results experienced in one community can be applied to another.

Sewer Rehabilitation Costs. Table 3-5 presents planning level collection system rehabilitation costs. The cost for comprehensive sewer system rehabilitation to essentially eliminate I/I, including engineering and contingency, is estimated at approximately $5.6 million. Of this, approximately $1.5 million is allocated to replacing service laterals and $4.1 million is for replacing and rehabilitating sewer mains and manholes.

Effectiveness of I/I Removal. In order to estimate the amount of peak flow reduction that can be attained through collection system rehabilitation, it is first necessary to estimate the amount of peak flow from I/I. Design year flow projections are developed in Chapter 5. For the purposes of this analysis, the flows of interest are the average dry weather flow (ADWF—the average flow during the dry weather season) and the peak wet weather flow (PWWF—the peak hour flow experienced during a storm with a recurrence interval of once every 5 years). The PWWF is the sum of the peak dry weather flow (PDWF—the peak hour flow during a period of no rainfall) and the I/I experienced during a 1-in-5-year storm event. Plant operators report that the peak-to-average peaking factor experienced during a typical dry weather day is about 2.5 to 1. Therefore, the PDWF can be estimated as 2.5 times the design ADWF of 0.5 mgd, or 1.2 mgd. The peak wet weather I/I (PWWI/I) is estimated as the difference between the PWWF (4 mgd) and the PDWF (1.2 mgd), or 2.8 mgd. Consequently, a collection system rehabilitation program has the potential to reduce peak flows by a maximum of 2.8 mgd. This degree of flow reduction could be approached only through implementation of the $5.6 million comprehensive rehabilitation program summarized in Table 3-5 and an aggressive sewer maintenance program that would keep sewers, manholes, and service laterals in top condition.

The next step in the evaluation is to estimate the amount of I/I associated with service laterals. Because many comprehensive rehabilitation programs which did not include laterals yielded little reduction in I/I, it is reasonable to assume that a significant portion of the total I/I comes from defective laterals. In addition, the cost estimate provided in Table 3-5 shows that replacing the service laterals is significantly less expensive than rehabilitating the sewer mains and manholes; consequently, the cost effectiveness analysis will favor collection system rehabilitation if a relatively high I/I value is assigned to the laterals. Therefore, we will assume that 70 percent of the total I/I enters the collection system through faulty service laterals. This assumption will help ensure that collection system rehabilitation receives thorough consideration.

As discussed previously, it is highly unlikely that any rehabilitation program will be completely effective at removing I/I. A comprehensive program which replaces sewer mains, manholes, and laterals will most closely approach the ideal situation of no I/I. However, over time, even the best designed and constructed system will begin to leak as pipes are damaged during excavation for other utilities, unauthorized connections are made, and differential settlement causes pipe joints to separate. A program which includes only laterals will be less effective than a comprehensive program because water will migrate down lateral trenches to sewer mains and may eventually enter the system through a defect in the main.

Table 3-6 shows the PWWF for rehabilitation programs which include only laterals, only mains and manholes, and a combination of laterals, mains, and manholes as I/I removal effectiveness varies. As discussed previously, it is estimated that 70 percent of the I/I enters the system through laterals. While it is difficult to predict the I/I removal effectiveness of a rehabilitation program, this analysis will be based on the following assumptions:

Table 3-5. Collection System Rehabilitation Costs

Pipe Diameter	Depth (ft) 4 to 9	Depth (ft) 10 to 14	Total
6" Diameter	400	0	400
Replacement Cost ($/lf)[a]	65		
Replacement Cost, $	$26,000	$0	$26,000
8" Diameter	23,340	7,991	31,331
Replacement Cost ($/lf)[a]	65	89	
Replacement Cost, $	$1,517,100	$711,199	$2,228,299
10" Diameter	1,682	315	1,997
Replacement Cost ($/lf)[a]	71	107	
Replacement Cost, $	$119,422	$33,705	$153,127
12" Diameter	1,558	408	1,966
Replacement Cost ($/lf)[b]	77	114	
Sliplining Cost (75% of replacement)	$89,975	$34,884	$124,859
15" Diameter	2,555	144	2,699
Replacement Cost ($/lf)[b]	94	137	
Sliplining Cost (75% of replacement)	$180,128	$14,796	$194,924
Total Feet	29,535	8,858	38,393
Total Rehabilitation Cost	$1,932,624	$794,584	$2,727,208

Number of Manholes	197
Resealing ($/Manhole)	633
Resealing Cost	$124,701
Number of Laterals	499
Replacement/Rehab ($/Lateral)	2000
Replacement Cost	$998,000
Subtotal - Rehabilitation and Replacement Cost	$3,849,909
Engineering, Administration, and Contingency (45%)	$1,732,459
Grand Total (Rounded)	$5,600,000

[a]Assumes pavement replacement necessary.

[b]Assumes pavement replacement unnecessary.

[c]Does not include allowance for replacing landscaping on private property.

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- An I/I removal effectiveness of 60 percent for a rehabilitation program that only replaces laterals.

- An I/I removal effectiveness of 60 percent for a program that only replaces and rehabilitates mains and manholes.

- An I/I removal effectiveness of 80 percent for a comprehensive rehabilitation program.

Table 3-6. I/I Reduction

I/I Removal Effectiveness, %	Replace All Laterals[a]		Replace All Mains and Manholes[b]		Replace Laterals, Mains, and Manholes	
	PWW I/I, mgd	PWWF[c], mgd	PWW I/I, mgd	PWWF[c], mgd	PWW I/I, mgd	PWWF[c], mgd
0	2.8	4.0	2.8	4.0	2.8	4.0
10	2.6	3.8	2.7	3.9	2.5	3.7
20	2.4	3.6	2.6	3.8	2.2	3.4
30	2.2	3.4	2.5	3.8	1.9	3.2
40	2.0	3.2	2.4	3.7	1.7	2.9
50	1.8	3.0	2.4	3.6	1.4	2.6
60	1.6	2.8	2.3	3.5	1.1	2.3
70	1.4	2.6	2.2	3.4	0.8	2.1
80	1.2	2.4	2.1	3.3	0.6	1.8
90	1.0	2.3	2.0	3.3	0.3	1.5
100	0.8	2.1	1.9	3.2	0.0	1.2

[a]Assumes 70% of I/I from laterals.
[b]Assumes 30% of I/I from mains and manholes.
[c]Peak dry weather flow estimated at 1.2 mgd.

These assumptions are optimistic—past experience suggests that actual I/I reduction would be substantially less. However, these assumptions again favor sewer system rehabilitation over constructing additional treatment and conveyance facilities in an effort to ensure that rehabilitation receives appropriate consideration. The PWWFs resulting from these assumptions are:

- For replacement of all laterals at a cost of $1.5 million, PWWF would be 2.8 mgd.

- For rehabilitation of sewer mains and manholes at a cost of $4.1 million, PWWF would be 3.5 mgd.

- For a comprehensive program, including replacement of all laterals and rehabilitation of sewer mains and manholes, PWWF would be 1.8 mgd at a cost of $5.6 million.

Conveyance and Treatment

Chapter 8 presents a detailed cost estimate for the recommended wastewater system improvement alternative. This cost estimate is based on treating a PWWF of 4 mgd. If the plant's PWWF is reduced through collection system rehabilitation, the cost of conveying and treating the wastewater will decrease as well. For the natural treatment system alternative, costs for the following treatment processes would be affected by a reduction in PWWF:

- Headworks. The size of the screening and grit removal system would be reduced.
- Influent pumping. The required capacity of the influent pumping station would decrease.
- Transmission pipeline. The transmission pipeline would convey wastewater from the current plant site to the natural treatment system site. As PWWF decreases, the size of this pipeline could be reduced.

All other processes are unaffected by changes in PWWF. Selected examples of these are:

- Deep pond treatment system. Deep ponds are sized based on average flow and maximum month BOD loading.
- Wetlands. The wetlands are downstream of the effluent storage pond, which would serve as an equalization basin during the wet weather season to reduce peak flows on downstream processes.
- UV disinfection system. As with the wetlands, the effluent storage pond would reduce the peak flow to the disinfection system.
- Irrigation system. The irrigation system would only be used during the dry weather season when flows are relatively low.

As discussed previously, the main trunk sewer along Canyon Creek has a surcharged capacity of 3.4 mgd. Therefore, if the collection system is not rehabilitated to reduce I/I below 3.4 mgd, a new 18-inch-diameter sewer would have to be installed parallel to the existing 15-inch-diameter trunk.

Cost Effectiveness of I/I Reduction

Based on the detailed cost estimate for the recommended wastewater system alternative, three additional wastewater treatment system cost estimates were developed to account for the reduction in cost of some treatment units due to lower PWWFs achieved through collection system rehabilitation. The following collection system alternatives were evaluated:

1. No collection system rehabilitation. This is the recommended wastewater system alternative described in Chapter 8. In addition to the costs for treatment, this alternative includes an allowance for increasing the capacity of the main trunk along Canyon Creek so that the 4-mgd PWWF can be conveyed to the plant.

2. Rehabilitation of the mains and manholes. This alternative would reduce the PWWF from 4 mgd to 3.5 mgd. Because the PWWF would still be above the current system surcharged flow capacity of 3.4 mgd, increasing the capacity of trunk along Canyon Creek would be required. However, since costs for rehabilitation of this line are already included, we estimate that the cost for increasing the capacity would be half those of the previous alternative.

3. Rehabilitation of laterals. This alternative would reduce PWWF to 2.8 mgd. As this is less than the 3.4-mgd capacity of the existing trunk sewer, no collection system capacity expansion would be required.

4. Rehabilitation of laterals, mains, and manholes. This alternative would reduce PWWF to 1.8 mgd; no sewer capacity expansion would be required.

A cost comparison of these four alternatives is provided in Table 3-7. The cost of treatment, sewer capacity expansion, and sewer rehabilitation is combined to obtain a total project cost. The table shows that it is not cost effective to perform extensive collection system rehabilitation work. The primary reason for this is that unlike mechanical wastewater treatment plants, natural treatment systems are relatively unaffected by short-duration high flows. Therefore, the only cost savings realized through I/I reduction is that pipelines and some equipment can be downsized.

Table 3-7. Cost Effectiveness Analysis

Item	No Collection System Rehabilitation	Rehabilitation of Mains and Manholes[d]	Rehabilitation of Laterals[d]	Rehabilitation of Laterals, Mains, and Manholes[e]
PWWF[c], mgd	4	3.5	2.8	1.8
PWWF reduction[c], mgd	--	0.5	1.2	2.2
Treatment system costs, $1,000	7,741[a]	7,655	7,223	6,810
Collection system capacity expansion cost, $1,000	575	288	0	0
Total treatment and collection system cost, $1,000	8,316	7,943	7,223	6,810
Collection system rehabilitation cost, $1,000	0	4,100	1,500[b]	5,600
Total project cost, $1,000	8,316	12,043	8,723	12,410

[a]Cost for Natural Treatment System presented in Chapters 7 and 8.
[b]Does not include allowance for replacing landscaping on private property.
[c]Assumes 70 percent of I/I from laterals, 30 percent from mains.
[d]Assumes 60 percent I/I removal effectiveness.
[e]Assumes 80 percent I/I removal effectiveness.

Recommended I/I Reduction Program Philosophy

While the preceding cost effectiveness analysis showed that a major collection system rehabilitation program is not warranted, the city should nevertheless continue to search for opportunities to reduce I/I on a case-by-case basis where rehabilitation is cost effective. This can often be accomplished by incorporating I/I reduction with projects that target sewers with other deficiencies, such as structural failures or inadequate capacity. For example, replacing a broken pipeline that is creating sinkholes in a street can also help reduce peak flows—a broken line can be a significant source of infiltration. Television inspections can pinpoint structural failures that are not readily apparent from the surface. Removing inflow sources is also often cost effective. Smoke testing the collection system can reveal storm drains that are improperly connected to the sanitary sewer system. Television inspection of the influent sewer will be completed by July, 1998. Any breaks that could drain Canyon Creek will clearly need to be repaired.

Appendix D

Collection System Repairs and Inspections

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Report 2000

CITY HALL

Phone (541) 839-4258

CITY OF CANYONVILLE

Fax (541) 839-4680 PO BOX 765, CANYONVILLE, OR 97417

October 25, 2000

Paul Kennedy
Department of Environmental Quality
725 SE Main Street
Roseburg, OR 97470

RE: Annual Sewer System Infiltration/Inflow
Collection System Maintenance Report

Dear Paul:

The sewer system collection system infiltration maintenance was done in 2000 as follows:

- Sewer line between manholes number A-25 and A-26 crossing Canyon Creek off 3rd Street that is encased in concrete physically inspected for undermining and pipe exposure. No apparent problems were found.

- The following manhole surface water infiltration shields have been replaced with a more durable type of shield.

  1. Berthal & Pine Street – am - lt #I-5
  2. Ecklund – end of street – lt #B-52
  3. B Street between Mill St. and S.E. 3rd St. – am – lt #A-1-2
  4. Byron and School Lane am lt #C-9-1
  5. Fourth Street between Main St. and Canyon St. am – lt #C-2-3
  6. Fifth Street between Main St. and Canyon am lt #C-2-3
  7. South Main – South of Wright St. am – lt #A-34
  8. Elliot and S.E. Gross St. am – lt #A-32
  9. Palisade and Canyon Creek Road am – lt #unknown
  10. + Corner of 3rd + B" St. 150' South bottom of grade.

- A 2-foot riser was installed to manhole #A-3 located off Canyonville North Road just east of Canyon Creek near wastewater treatment plant.

- Approximately 7,500 lineal feet of new sewer line at Knoll Terrace, a manufactured home development located on the west side of Canyonville, was pressure-tested and approved by Douglas County Building Department inspector. Enclosed is documentation of pressure test approval.

- Future plans for 2001 collection system maintenance/infiltration prevention:

    1. Plans to televise possible trouble areas in sewer collection system. Particular areas to be televised will be determined by wastewater treatment plant supervising operator and public work's superintendent and documented when completed.
    2. Collection system jet rod cleaning to be done pending decision of particular areas suspected of infiltration of the collection.
    3. Plans for repairs of problem areas causing infiltration depending on results of areas inspected will be submitted to subject agency.

If you have any questions, please contact me.

Sincerely,

Ray Davenport
Supervising Sewer Plant Operator

RD:slb

SEP 0 8 2000

FIRST PLACE EXCAVATING, INC.

P. O. Box 1133
Canyonville, OR 97417

Developers of: **KNOLL TERRACE**, *a manufactured home community*

(800) 458-9290

TO WHOM IT MAY CONCERN:

On July 28, 2000, First Place Excavating, Inc. demonstrated satisfactory air pressure testing of new sanitary sewer lines from the point of connection in Canyonville-Riddle Road and throughout the Knoll Terrace project. This represents approximately 7,500 lineal feet of new sewer line tested.

The test was witnessed by the undersigned.

Brian E. Place

Brian E. Place

Michael Rokus

Michael Rokus, Inspector - Douglas County Building Department

Attached: Copy of Inspector's On-site Report

City of Canyonville collections system Report 2001

The City's attempt to stop I&I this year consisted of inserting manhole influent shields in low laying and suspected flood accessible manholes.

Manhole influent shields placement:

MH A-8	MH A-26	MH A-31.1	MH C-5
MH Aa-1	MH A-1-6	MH A-31	MH C-6
MH B-2	MH A-1.1-3	MH C-2-13	

The city's plan for the year 2002 is to begin Televising and prioritizing the system for repairs.

City of Canyonville collections system Report 2002

The City's attempt to stop I&I this year consisted of Cleaning and inspecting manhole influent shields. The City also televised and smoke tested several parts of the system and Plans to continue with this plan next year until the entire system has been completed, Eight thousand dollars just does not go very far for evaluation and repair.

Manhole influent shields placement inspections:

MH A-8	MH A-26	MH A-31.1	MH C-5
MH Aa-1	MH A-1-6	MH A-31	MH C-6
MH B-2	MH A-1.1-3	MH C-2-13	

Smoke testing:

Several clean out lids were found to be missing and one illegal gutter drain were found in the old part of town east of Canyon Creek with home owners making the repairs without question. Two stub outs for future development off of Verlin street were found to be leaking the city repaired these.

Televising of system:

The City is now in joint ownership of a new camera truck and has begun viewing and recording the collections system beginning with N.W. Pine St. and Berthal Way to N. Main St. We found root intrusion at manhole B-1-5 and an abandoned service lateral at manhole B-1-6 both problems have been corrected.

Leland Avenue has revealed between manholes C-7-1 and C-5 a long low point which we jet rodded clean and removed 25 gallons of grit and debris.

City of Canyonville's Collection System I&I Report 2003

City of Canyonville Staff is making great head way on collection system Televising and priority maintenance listing.

Televising Results:

MH B-11 Leaking Seams and pipe from Fire Department. Pipe repaired.

MH A-25 West side of Canyon Creek between 3rd and 2nd Streets needs a 3 foot riser to get above flood stage.

MH B-1-6 End of N. W. Pine St. Leaking Seams and open abandoned service lateral. Service lateral plugged. Service lateral exposed and leaking on private property landowner had repairs made.

MH B-1-5 Leaking lateral at confluence with manhole on East side.

MH A-1-11 Between Verlin St and Huffman St. Behind 332 Huffman. Lid need to be regrouted.

MH A-1-8 Just inside of Huffman and Wright's fence on Verlin St. Lower seam needs regrouted.

MH A-36 South Main St. 326 ft N. of MH. bad joint with root intrusion.

MH A-35 South Main St. 2 ft n. of MH. Hole in pipe with root intrusion.

MH B-4-2 Phillips, west of MH possible hole in pipe large mud deposit on north side of pipe.

City Ordinance #559

The City of Canyonville has adopted a new Sanitary Sewers-building Maintenance and repair ordinance (see attached). This Ordinance will put the burden of repairs for private lines on the homeowner and allow the city to make more repairs to their own lines.

2004 Plan:

The City of Canyonville's plan is to continue to televise and smoke test the System to completion and prioritize the findings. This will allow us to look for grant monies or low interest loans to make large scale improvements to the I and I problems the City faces.

Collections System I & I Report 2005

The City is still in the process of televising the gravity system. Several minor leak and root intrusions were repaired in the past year. Manhole risers were installed to below grade manholes as well as re-grouting leaking seams on manholes, abandoned service laterals sealed. This will be an ongoing project for the next year or two.

Sealed Service Laterals

Two abandoned services on Berthal Street lateral B-1
Two abandoned service laterals in manhole B-1-6, 591 and 691 N. Pine St.
Two abandoned service laterals main B 620 and 630 N Main St.
One abandoned service lateral Main C, 430 4th Place.

Manhole riser placement

Manhole A-25, 3-foot riser was installed to bring to grade.
Manhole A-1.2-2, 6- inch riser installed to bring to grade.

Re-grouted Service laterals

Manhole B-11, re-grouted leaking service lateral from 400 N. Main St.

Unidentified sewer lateral

Previously unknown sewer lateral was found on Mill St. a new clean out was installed and root intrusion leek was repaired. This is now on our maps.

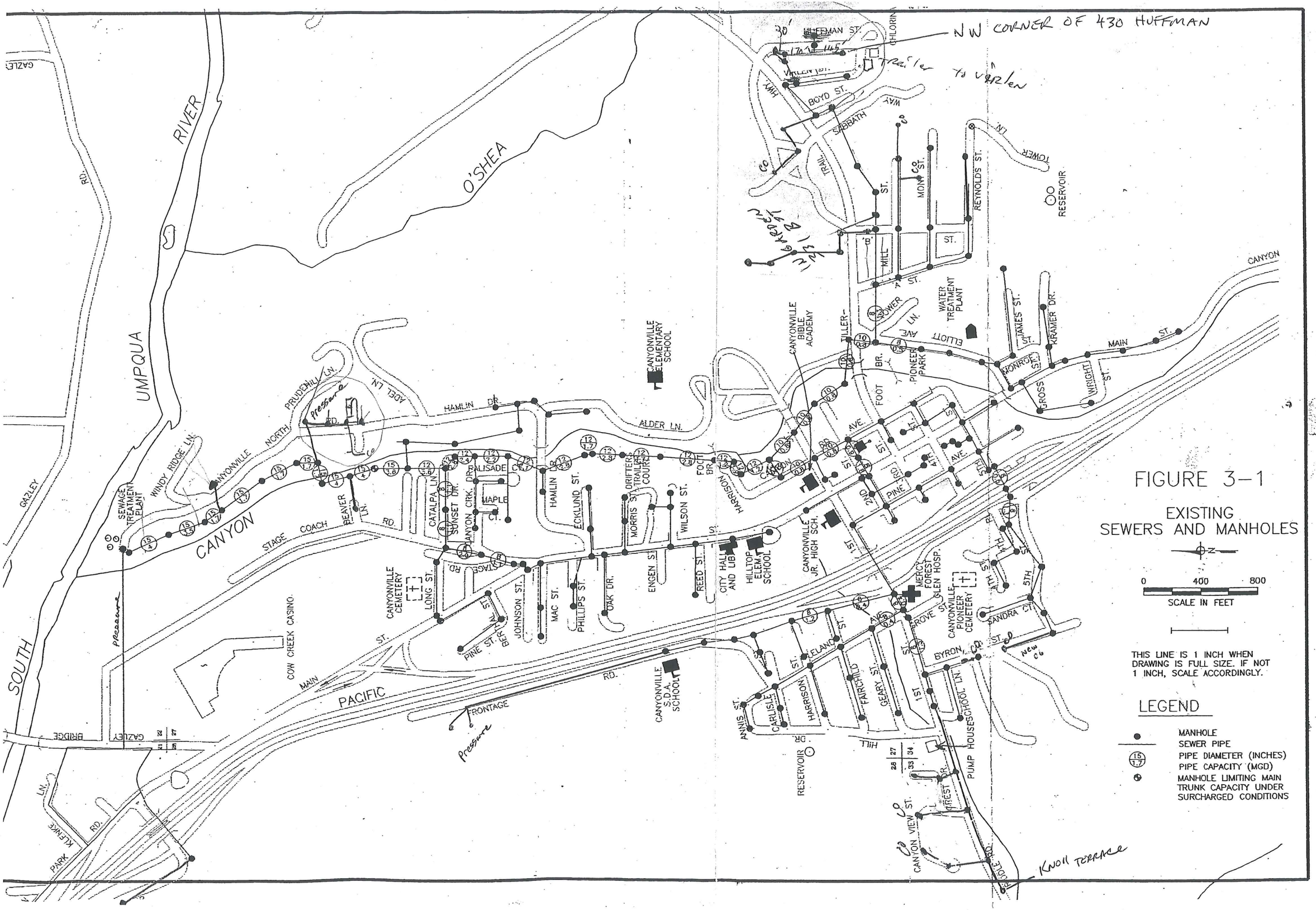


FIGURE 3-1

EXISTING SEWERS AND MANHOLES

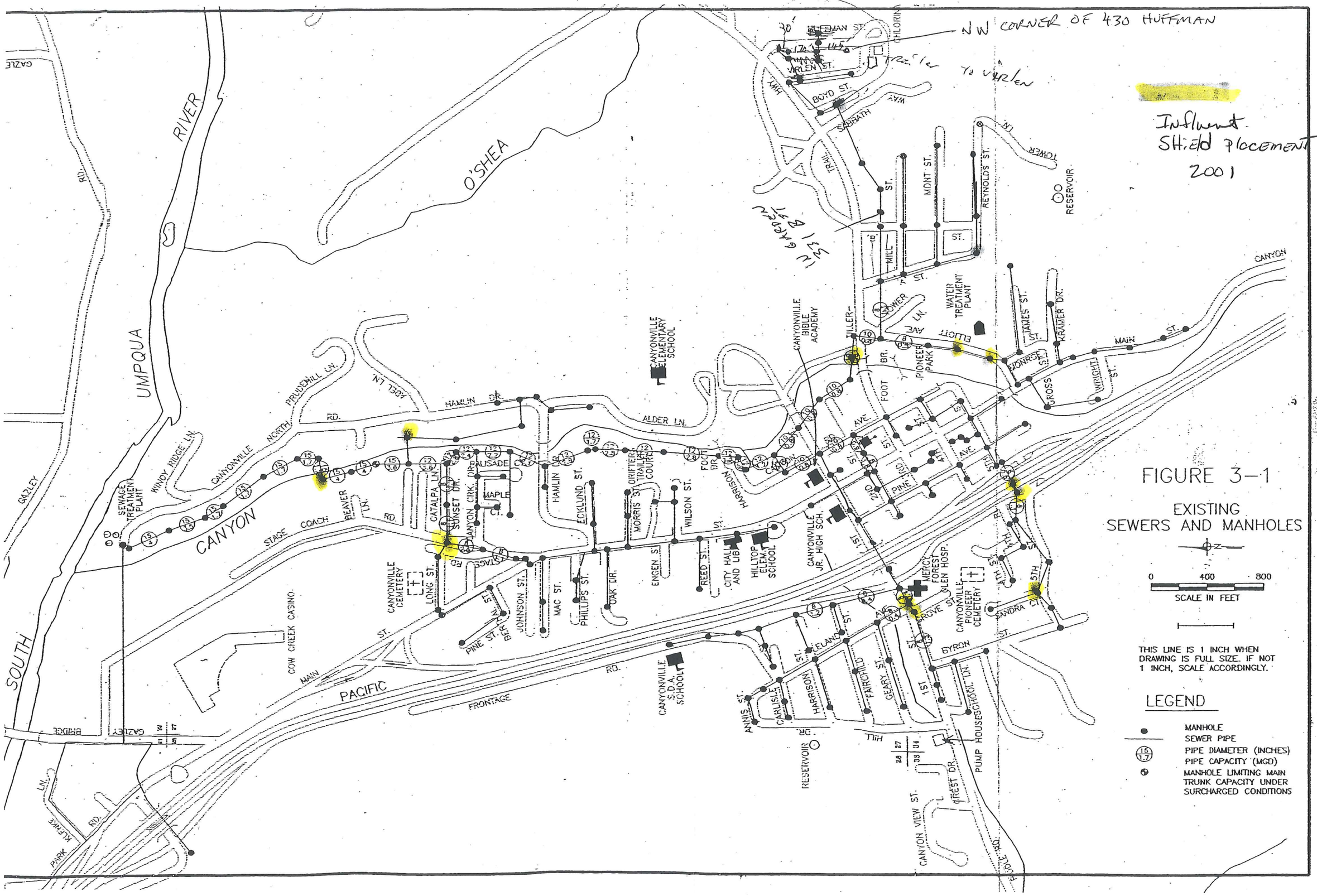
0 400 800

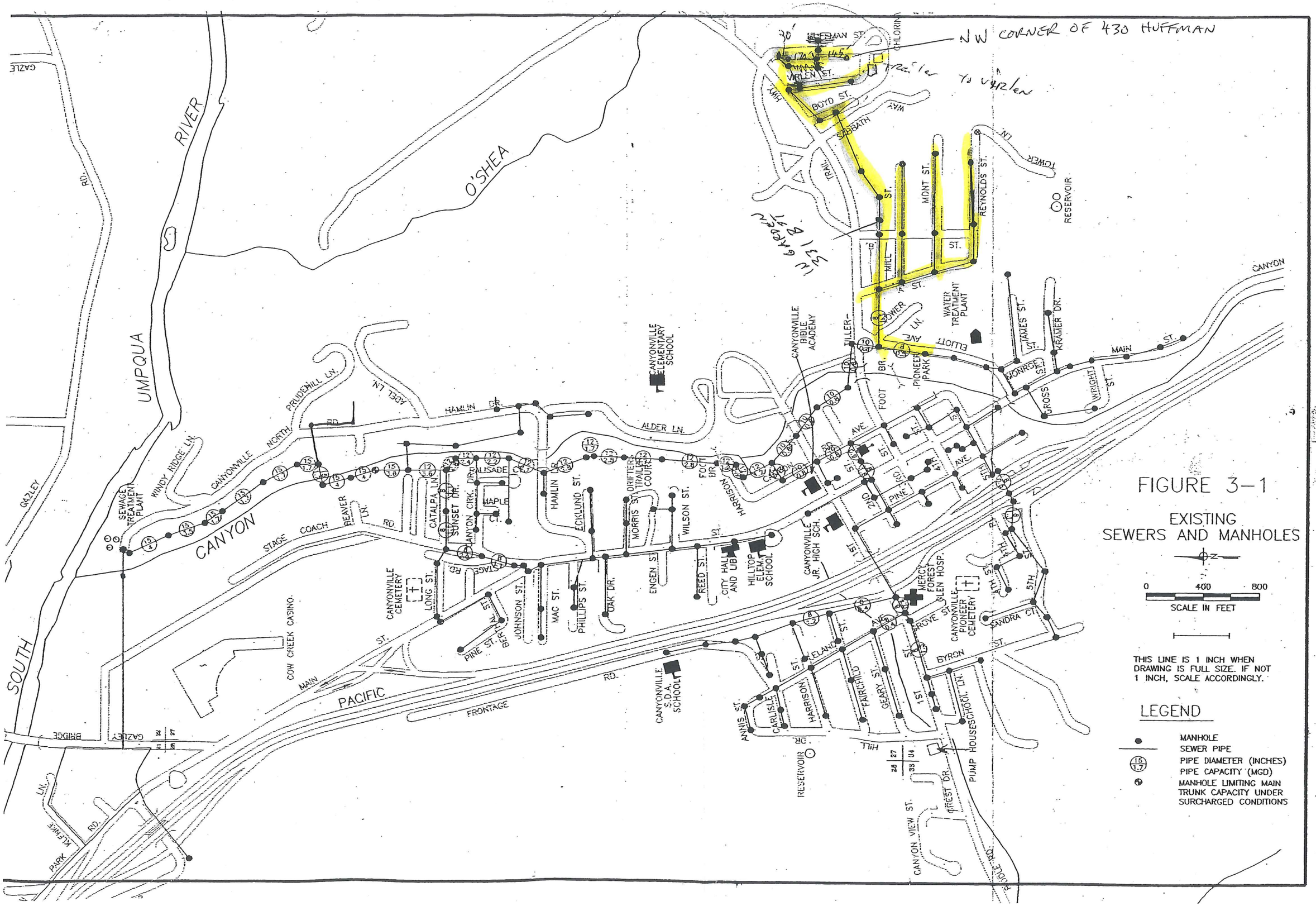
SCALE IN FEET

THIS LINE IS 1 INCH WHEN DRAWING IS FULL SIZE. IF NOT 1 INCH, SCALE ACCORDINGLY.

LEGEND

- MANHOLE
- SEWER PIPE
- (15) PIPE DIAMETER (INCHES)
- (1.7) PIPE CAPACITY (MGD)
- MANHOLE LIMITING MAIN TRUNK CAPACITY UNDER SURCHARGED CONDITIONS


NW CORNER OF 430 HUFFMAN
Trailer to VARLEN
Influent Shield Placement 2001
FIGURE 3-1
EXISTING SEWERS AND MANHOLES
0 400 800
SCALE IN FEET
THIS LINE IS 1 INCH WHEN DRAWING IS FULL SIZE. IF NOT 1 INCH, SCALE ACCORDINGLY.
LEGEND
MANHOLE
SEWER PIPE
PIPE DIAMETER (INCHES)
PIPE CAPACITY (MGD)
MANHOLE LIMITING MAIN TRUNK CAPACITY UNDER SURCHARGED CONDITIONS
SOUTH UMPQUA RIVER
O'SHEA
CANYON
PACIFIC
FRONTAGE
RD.
SEWAGE TREATMENT PLANT
WINDY RIDGE LN.
CANYONVILLE NORTH
PRUDEHILL LN.
HAMLIN DR.
ALDER LN.
BEAVER LN.
STAGE COACH RD.
CATALPA LN.
SUNSET DR.
CANYON CIRC. DR.
MAPLE CT.
PALISADE CT.
HAMLIN ST.
ECKLUND ST.
MORRIS ST.
DRIFTER TRAILER COURT
WILSON ST.
ENGEN ST.
REED ST.
OAK DR.
PHILLIPS ST.
MAC ST.
JOHNSON ST.
BERRY ST.
PINE ST.
LONG ST.
CANYONVILLE CEMETERY
COW CREEK CASINO
CANYONVILLE ELEMENTARY SCHOOL
CANYONVILLE BIBLE ACADEMY
CANYONVILLE S.D.A. SCHOOL
CITY HALL AND LIB.
HILLTOP ELEM. SCHOOL
CANYONVILLE JR. HIGH SCH.
HARRISON AVE.
FOOT BR.
PIONEER PARK
ELLIOTT AVE.
TOWER AVE.
MILL ST.
WATER TREATMENT PLANT
MONT ST.
REYNOLDS ST.
TOWER LN.
RESERVOIR
JAMES ST.
KRAMER DR.
MONROE ST.
GROSS ST.
WRIGHT ST.
MAIN ST.
CANYON
BOYD ST.
SABBATH WAY
HUFFMAN ST.
VARLEN ST.
CHLORINE
MERCY FOREST GLEN HOSP.
CANYONVILLE PIONEER CEMETERY
GROVE ST.
5TH
SANDRA CT.
BYRON ST.
1ST ST.
GEARY ST.
FAIRCHILD ST.
ELAND ST.
HARRISON ST.
CARLISLE ST.
ANNIS ST.
PINE ST.
2ND ST.
4TH AVE.
HILL
FOREST DR.
PUMP HOUSE
SCHOOL TN.
CANYON VIEW ST.
GAZLEY BRIDGE
KLEINKE PARK RD.
GAZLEY RD.


NW CORNER OF 430 HUFFMAN
PRESSURE SEWER
SMOKE TESTED 2002
FIGURE 3-1
EXISTING SEWERS AND MANHOLES
0 400 800
SCALE IN FEET
THIS LINE IS 1 INCH WHEN DRAWING IS FULL SIZE. IF NOT 1 INCH, SCALE ACCORDINGLY.
LEGEND
MANHOLE
SEWER PIPE
PIPE DIAMETER (INCHES)
PIPE CAPACITY (MGD)
MANHOLE LIMITING MAIN TRUNK CAPACITY UNDER SURCHARGED CONDITIONS
SOUTH UMPQUA RIVER
O'SHEA
CANYON
PACIFIC
HUFFMAN ST.
VIRLEN ST.
BOYD ST.
SABBATH WAY
TRAIL
MONT ST.
REYNOLDS ST.
TOWER LN.
RESERVOIR
MILL ST.
WATER TREATMENT PLANT
ELLIOTT AVE.
PIONEER PARK
CANYONVILLE BIBLE ACADEMY
CANYONVILLE ELEMENTARY SCHOOL
HAMLIN DR.
ALDER LN.
PRUDEHILL LN.
WINDY RIDGE LN.
CANYONVILLE NORTH
SEWAGE TREATMENT PLANT
STAGE COACH RD.
BEAVER LN.
CATALPA LN.
SUNSET DR.
CANYON CIRK. DR.
PALISADE CT.
MAPLE CT.
ECKLUND ST.
DRIFTER'S TRAILER COURT
MORRIS ST.
WILSON ST.
HARRISON ST.
FOOT BR.
CANYONVILLE JR. HIGH SCH.
CITY HALL AND LIB.
HILLTOP ELEM. SCHOOL
REED ST.
ENGEN ST.
OAK DR.
PHILLIPS ST.
MAC ST.
JOHNSON ST.
BERTHA ST.
PINE ST.
LONG ST.
CANYONVILLE CEMETERY
COW CREEK CASINO
MERCY FOREST GLEN HOSP.
CANYONVILLE PIONEER CEMETERY
SANDRA CT.
GROVE ST.
BYRON ST.
ELAND ST.
FAIRCHILD ST.
GEARY ST.
HARRISON ST.
CARLISLE ST.
ANNIS ST.
CANYONVILLE S.D.A. SCHOOL
FRONTAGE RD.
MAIN ST.
PINE ST.
2ND ST.
1ST ST.
4TH ST.
5TH ST.
JAMES ST.
KRAMER DR.
MONROE ST.
GROSS ST.
WRIGHT ST.
PUMP HOUSE SCHOOL LN.
FOREST DR.
CANYON VIEW ST.
GAZLEY BRIDGE RD.
KLEMME PARK RD.
GAZLEY RD.

NW CORNER OF 430 HUFFMAN

Trailer to VARLEN

TELEVISED

FIGURE 3-1

EXISTING SEWERS AND MANHOLES

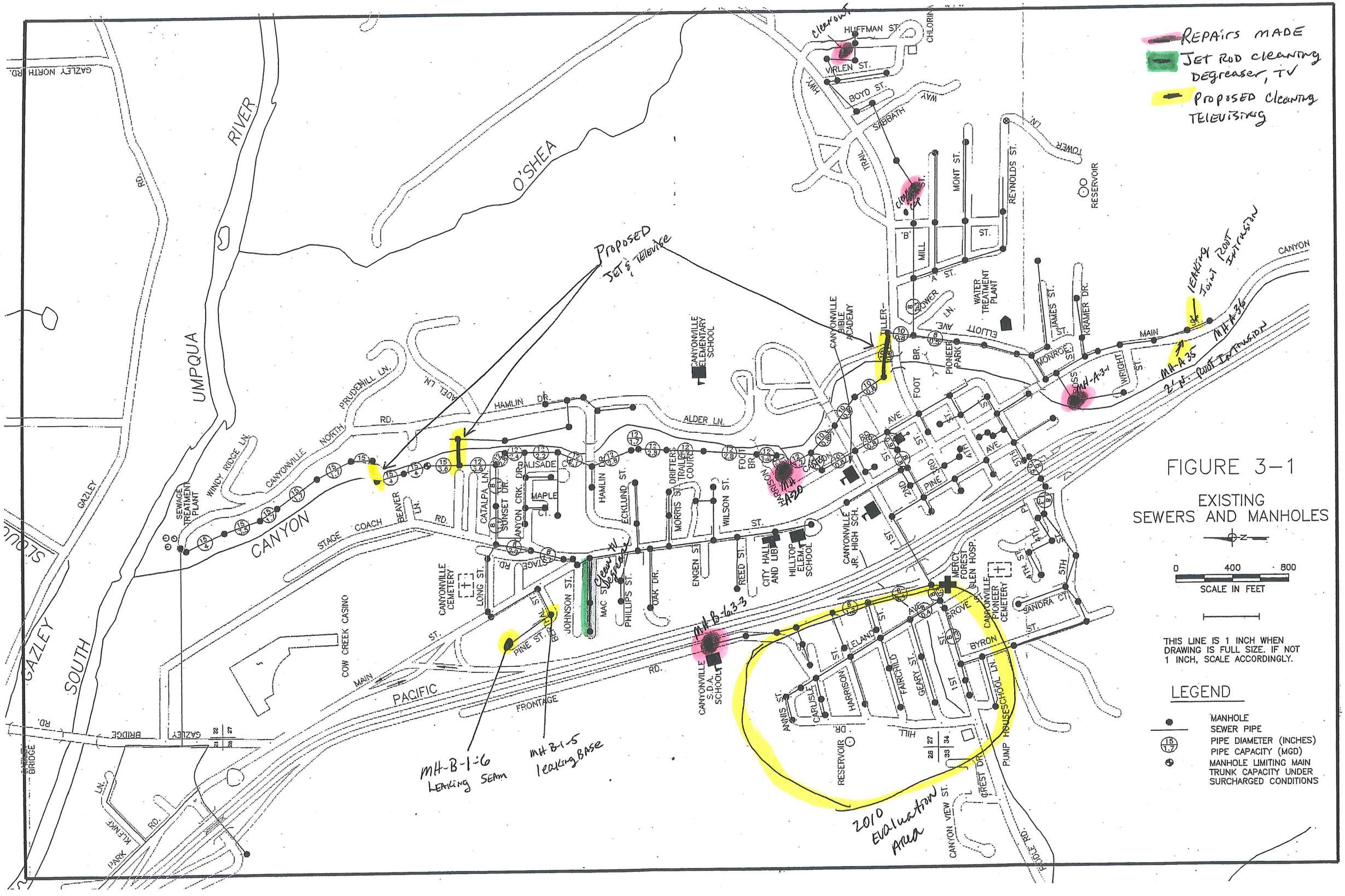
0 400 800

SCALE IN FEET

THIS LINE IS 1 INCH WHEN DRAWING IS FULL SIZE. IF NOT 1 INCH, SCALE ACCORDINGLY.

LEGEND

- MANHOLE
- SEWER PIPE
- (15/1.7) PIPE DIAMETER (INCHES) / PIPE CAPACITY (MGD)
- MANHOLE LIMITING MAIN TRUNK CAPACITY UNDER SURCHARGED CONDITIONS


REPAIRS MADE
JET ROD CLEANING DEGREASER, TV
PROPOSED CLEANING TELEVISING
Proposed Jet & Televise
Clean w/ degreaser
MH-B-1-6 Leaking Seam
MH-B-1-5 leaking Base
MH-B-1-33
MH-A-20
MH-A-31
MH-A-35
MH-A-36
leaking joint root intrusion
2" Root Intrusion
2010 Evaluation Area
UMPQUA RIVER
O'SHEA
CANYON
SOUTH CANYON
GAZLEY
PACIFIC
SEWAGE TREATMENT PLANT
CANYONVILLE ELEMENTARY SCHOOL
CANYONVILLE BIBLE ACADEMY
CANYONVILLE S.D.A. SCHOOL
CANYONVILLE JR. HIGH SCH.
CITY HALL AND LIB.
HILLTOP ELEM. SCHOOL
MERCY FOREST GLEN HOSP.
CANYONVILLE CEMETERY
CANYONVILLE PIONEER CEMETERY
COW CREEK CASINO
WATER TREATMENT PLANT
PIONEER PARK
RESERVOIR
CHLORINE
PUMP HOUSE
SCHOOL LN.
FIGURE 3-1
EXISTING SEWERS AND MANHOLES
0 400 800
SCALE IN FEET
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LEGEND
MANHOLE
SEWER PIPE
PIPE DIAMETER (INCHES)
PIPE CAPACITY (MGD)
MANHOLE LIMITING MAIN TRUNK CAPACITY UNDER SURCHARGED CONDITIONS

Appendix E

Flow Analysis