

PUBLIC FACILITIES ELEMENT

SANITARY SEWER SYSTEM

The city's wastewater treatment facility consists of a four-cell aerated/facultative lagoon system and a two-cell wetlands treatment system which provides "natural" effluent polishing. From November 1 to April 30, after the influent has been processed in the aerated/facultative lagoon system, the effluent is released directly to Ecola Creek. Between May 1 and October 31, the effluent is pumped to the wetland cells for eventual discharge into Ecola Creek. (A more detailed discussion of the city's wastewater treatment system is contained in *Wastewater Treatment Supplement to Master Plan, January 1998*).

The wastewater treatment system was significantly upgraded in 1984; this upgrade included the construction of the two-cell wetland treatment element. Since these improvements, the city has consistently met the discharge requirements of its National Pollution Discharge Elimination Permit System (NPDES) permit. The NPDES permit was renewed in June of 1993 and is effective until June 30, 1998.

The report, *Wastewater Treatment Supplement to Master Plan, January 1998* (Report) includes an analysis of the city's wastewater treatment facility to the year 2015. The Report estimates that in the year 2015, the projected peak daily flow to the treatment facility would be 3.6 million gallons a day. The treatment facility (the lagoon, chlorine contact chamber and plant piping) has an overall hydraulic capacity of four million gallons a day. Based on this finding, the Report concluded that the overall capacity of the city's treatment system was adequate during the planning period. The Report also concluded that, through modifications in the operation of the system, it is likely the facility will be able to meet dilution requirements related to BOD and suspended solids during the planning period.

The Report identified a number of wastewater treatment system improvements. All these capital improvements are near term projects, to be implemented within the next three years. The two major improvements are upgrading the aerators and sludge removal and disposal. Upgrading the west aerators is scheduled for FY 98-99, at an estimated cost of \$150,000. Sludge removal and disposal are scheduled for FY 1999-2000. The Report estimated that sludge removal and disposal would cost \$300,000. The city will explore alternatives for sludge disposal including mechanical dewatering and hauling, liquid land disposal and composting as part of an overall organic waste handling program. The final cost of sludge disposal will depend on the disposal method selected. Depending on the outcome of the review of the city's NPDES permit, the city may be required to install a dechlorination facility, at an estimated cost of \$50,000 - \$130,000. If required this facility is scheduled for FY 2000-01. The required improvements to the wastewater treatment facility will be funded from sewer renewal and replacement fund.

The Report identified the following as issues that may be raised during the review of the city's NPDES permit: the level of BOD and suspended solids, chlorine and ammonia toxicity as they relate to salmonoids, dissolved oxygen concentrations as they relate to salmonoids, and the impact of the marsh treatment element on groundwater quality.

If more stringent water quality standards are implemented through the renewal of the city's NPDES permit, the city may be required to make capital improvements to the treatment system. Potential improvements include modifications to the chlorination facilities and to the marsh treatment area.

The Report also updates the "*City of Cannon Beach Waste Water Collection System Master Plan*" (Plan). The Plan was completed in May of 1991 and adopted by the city council in June of 1991. The Plan and Report include the following elements: an inventory of the existing collection system, including mapped locations of improvements; an assessment of wastewater collection system requirements; a hydraulic analysis of the collection system; and recommendations for system improvements.

The Report's major conclusion is that, with several exceptions, the existing collection system has adequate capacity to serve the growth that will result from a build out of the urban growth boundary.

The Report recommends both near term and long term improvements. Near term improvements are defined as those needed to meet existing system requirements and are to be implemented within the next three years. Long term improvements are defined as those required to meet projected growth within the urban growth boundary and are to be implemented during the next decade.

Near Term Projects

- 1). Upgrade the Matanuska pump station - estimated cost \$200,000.

Long Term Projects

- 1). Main Pump Station North Interceptor - Provide additional system capacity between the Ecola pump station and Main pump station - estimated cost \$173,000
- 2). Ecola Pump Station Trunk Main - Replace capacity deficient pipes within the trunk main north of Ecola Creek - estimated cost \$79,000.
- 3). Upgrade the Elkland pump station - estimated cost \$50,000.
- 4). Upgrade the Ecola pump station - estimated cost \$80,000.

The near term projects can be funded from the sewer system renewal and replacement fund.

The mapping of the city's waste water collection system is periodically updated to reflect system improvements and modifications.

The Plan utilized a twenty year planning horizon, from 1990 -2010. For this planning period, the Plan assumed an annual growth rate of 1%, for both the permanent population and the equivalent service population. The plan's analysis was also based on a "build-out" of the city's 1990 urban

growth boundary at the density permitted by the zoning designations in place at that time. In conformance with the plan's recommendations, these assumptions have been reviewed to determine their ongoing validity.

The Portland State Center for Population Research and Census estimates that the city's 1997 permanent population is 1,425. The Plan's population projection for 1997 was 1,400. This is less than a 2% variance from the population projection and therefore it is concluded that the city's permanent population growth since 1991 has been in conformance with the Plan's projection's. Since 1991, there have been two small additions to the urban growth boundary, with an area of approximately 23 acres. Development of these two parcels is likely to add only two dwelling units. Since 1991, there have been no significant changes in land use density standards or zone boundaries that would affect the "build-out" assumptions of the plan. The city reviewed the extent of its urban growth boundary in 1995 and determined not to expand the boundary. In summary, the Plan's assumptions about future city growth and the demands that growth will place on the collection system continue to be valid. Thus it is found that the Plan's basic conclusion, that the existing collection system generally has adequate capacity to serve the growth that will result from a build out of the urban growth boundary, continues to be valid.

The next comprehensive review of the urban growth boundary is not likely to occur before the year 2002. If the urban growth boundary is expanded at that time, the city's sewer system has the treatment capacity to accommodate a larger urban growth boundary area.

WATER SYSTEM

Historically, the city has obtained its water supply from three springs. These springs yield a maximum supply of between 800 and 1,000 gallons per minute (gpm). However, during the summer month the flow rate has dropped to as low as 300 gpm. When peak water usage occurred during these low flow periods, the city augmented the supply by pumping water from the West Fork of Ecola Creek into the source transmission line.

In addition to the 1.6 cubic feet per second (cfs) water right for the springs, the city possesses a 1.5 cfs (673 gpm.) water right on the West Fork of Ecola Creek.

In 1996, the city completed a slow sand filtration water treatment facility utilizing water from the West Fork of Ecola Creek. The facility has been designed, with later upgrades, to have the capability to treat all of the water from the springs and the entire 1.5 cfs of water from the West Fork

of Ecola Creek. It is estimated that the supply of water that the treatment facility can produce will meet the city's water supply needs beyond the year 2050.

Presently, the water filtration plant is operated only during the summer months, July through September, to supplement the water drawn from the springs. During these summer months the water from the springs is also processed through the water filtration plant, with the spring water representing approximately 75% of the volume. During the remainder of the year, the spring water is transmitted directly to the city's chlorination facility.

The basic document describing the city's water distribution system is titled "*City of Cannon Beach Water Distribution System Master Plan*" (Plan). The Plan was completed in May of 1991 and adopted by the city council in June of 1991. The Plan includes the following elements: an inventory of the existing water distribution system, including mapped locations of improvements; an assessment of projected water demands; a hydraulic analysis of the water system; and recommendations for water systems improvements.

The following are the major findings of the Plan:

- 1). The existing water distribution system operates effectively under average day, peak day and peak hour water demand periods.
- 2). The system is capable of providing acceptable fire flows and system pressures for a majority of the water distribution system service area.
- 3). The few areas experiencing less than normal system pressures and fire flows are small areas in the higher elevation portions of the system. These areas are on the extreme southern end of town (south of Maher Avenue), the Haystack Lane area, and the extreme northern end of town (north of Seventh Street). The conditions at these locations are not significantly severe to warrant specific water system improvements.
- 4). The fire flow capabilities of the water distribution system are very compatible with the existing land uses.
- 5). The change in peak day water demand through the 20-year planning period (1990 to 2110) is approximately 22 percent (1.06 to 1.29 million gallons per day, MGD). This percent increase is small relative to required fire flows. As such, fire flows become the driving force for system improvements, and it follows that improvements proposed for existing problem areas will be adequate to accommodate future population growth.
- 6). The existing reservoir storage is adequate to the year 2050, assuming a one percent average annual population growth rate, and allowances for peak day demand and fire flow requirements. Even under aggressive growth rates as high as 5 percent, reservoir storage would be adequate to the year 2000 to 2005.

The report includes the following recommended water system improvements; these improvements were recommended to enhance available fire flow:

Improvement No. 1

Description: Add 8-inch water line from Hemlock Street to Spruce Street along Second Street.

Rationale: Deficit fire flow; increase fire flow from 1,900 to 2,800 g.p.m..

Length: 270 feet

Cost: \$10,100

Improvement No. 2

Description: Add 8-inch water line from Fifth Street to between Fifth and Sixth Street along Beech Street.

Rationale: Deficit fire flow; increase fire flow from 1,400 to 1,800 g.p.m..

Length: 450 feet

Cost: \$16,900

Improvement No. 3

Description: Add fire hydrants to existing system

Rationale: Decrease hydrant spacing to 300 feet from 400 feet for better fire protection.

Location: 14 locations

Cost: \$54,600

A comparison of actual water use with the projections in the Plan indicates that water demand has been less than anticipated. For 1997, the Plan projected that the average day water demand would be .50MGD and the peak day water demand would be 1.15 MGD. The actual average day water demand for 1997 was .36MGD and the calculated peak day water demand was .80 MGD. This discrepancy between projected usage and actual usage appears to be the result of inaccurate 1990 water use data particularly since the Plan projected a 1% annual growth rate in water demand and the actual water use between 1991 and 1997 increased at an annual rate of 2%.

Assuming that water use continues to grow at 2% annually, in 2010, average daily water demand is projected to be .46MGD and the peak daily water demand is projected to be 1.04 MGD. These projections are substantially lower than those contained in the Plan. The Plan projected an average daily water demand of .58MGD and a peak daily water demand of 1.29 MGD for the year 2010.

The city has taken the following actions with regard to the listed water system improvements. Improvement No. 1 has been revised to extend the existing 6" water line in Second Street to the existing 12" water inch water line in Hemlock Street. The estimated cost of this project is \$4,000. The project has been scheduled for either FY 1997-98 or FY 1998-99. Improvement No.2 has been

deleted from the list of improvements because the existing fire flow availability of 1,400 gallons per minute is adequate for this zone. Improvement No. 3 has been incrementally implemented. Five fire hydrant installations remain to be completed. The installation of these hydrants is scheduled for FY 1999-2000 at a cost of \$3,000 per hydrant. These improvements will be funded from water system capital reserve funds.

The city has made the following water distribution system improvements, not listed in the plan, since 1991:

- 1). On Alternative Highway 101, between Antler Street and Beaver Street, replaced a two inch steel water line with an 8" PVC line.
- 2). Upgraded the upper reaches of the transmission line near the city springs
- 3). On S. Hemlock Street, between Matanuska Street and Fernwood Avenue, the replacement of transite pipe with PVC pipe.
- 4). Replacement of the pump station on Seventh and Ash.

The city has undertaken a study to ascertain the best method of providing improved domestic and fire protection water service to the north end area (between 7th and 9th Street and Oak and Spruce Street). Water service in this area is constrained by the area's elevation relative to that of the city's water reservoir. The alternative which has been selected is to construct a small storage tank and to upgrade the pump station serving the area. The upgraded pump station has been completed. Construction of the water tank is planned for FY 1999-2000, with funding from the water system replacement and renewal fund.

An additional water distribution system improvement that has been identified is the extension of approx. 800 feet of 8" water line from 2nd and Spruce Street to the city's recycling building. The estimated cost of the project is \$25,000. The project is scheduled for FY 1999-2000. The mapping of the city's water distribution system is periodically updated to reflect system improvements and modifications.

Clatsop County's Regional Problem Solving Program (RPS) includes the report "*Water Management Plan for Coastal Clatsop County.*" This report includes information on the environmental consequences of water supply practices of cities in Clatsop County, including Cannon Beach. The report states that based on instream water rights that were filed by the Oregon Department of Fish and Wildlife (ODFW) in the late 1980's, the West Fork of Ecola Creek is over-appropriated from April through November, where over-appropriated is defined as total water rights exceeding the actual amount of water in the stream at certain times. At this time, this over-appropriation has a limited impact on the city's ability to obtain water from the West Fork of Ecola Creek because the city's water right predates ODFW's instream water right. The report contains the results of a hydrologic analysis which was conducted to determine how frequently flow in certain streams in Clatsop County, including the West Fork of Ecola Creek, is insufficient to meet both the future demand for municipal water and the needs of aquatic life, as defined by ODFW's instream water

rights. The analysis concludes that in the year 2050 approximately 10% of the time flow in the West Fork of Ecola Creek will be less than the sum of the peak water demand and the instream flow requirements. The report notes that this conclusion probably overstates the percentage of time that stream flow will be insufficient because the analysis assumed that the full water demand will be met from the West Fork of Ecola Creek, when in fact a substantial amount of the city's water supply will still be obtained from the city springs. The report concludes by stating that "if it is accepted that ODFW's specified instream flows accurately represent the needs of fish and other aquatic life, then it appears that estimated future diversions of water for municipal supply will have an adverse effect on fish habitat. The most severe effects are felt on the Lewis and Clark River and the South Fork of the Necanicum River. The mainstem of the Necanicum River and the West Fork of Ecola Creek are less seriously affected."

The RPS makes a number of recommendations for actions to improve water supply management. Several of these recommended action items are applicable to Cannon Beach:

1. Reduce unaccounted-for water in all communities to 10 to 15% of production and maintain it at this level or better.
2. Implement water conservation measures.
3. Install flow and temperature gauges on all rivers and creeks subject to water diversions so that compliance with in stream requirements can be properly determined.
4. Refine minimum fish flow requirements. Current fish flows were calculated in the late 1960's and do not take account of meteorological variation. A more refined analysis is needed to set minimum flows for wet, typical, dry and very dry years.

A number of these recommendations are being implemented. The city estimates that its unaccounted-for water is already less than the target range. Installation of gauges on Ecola Creek has been budgeted for the FY 98-99.

The Plan utilized a twenty year planning horizon, from 1990 -2010. For this planning period, the Plan assumed an annual growth rate of 1%, for both the permanent population and the equivalent service population. The Plan's analysis was also based on a "build-out" of the city's 1990 urban growth boundary at the density permitted by the zoning designations in place at that time. In conformance with the Plan's recommendations, these assumptions have been reviewed to determine their ongoing validity.

The Portland State Center for Population Research and Census estimates that the city's 1997 permanent population is 1,425. The Plan's population projection for 1997 was 1,400. This is less than a 2% variance from the population projection and therefore it is concluded that the city's permanent population growth since 1991 has been in conformance with the Plan's projection's. Since 1991, there have been two small additions to the urban growth boundary, with an area of

approximately 23 acres. Development of these two parcels is likely to add only two dwelling units. Since 1991, there have been no significant changes in land use density standards or zone boundaries that would affect the “build-out” assumptions of the plan. The city reviewed the extent of its urban growth boundary in 1995 and determined not to expand the boundary. In summary, the Plan’s assumptions about future city growth and the demands that growth will place on the city’s water system continue to be valid.

The next comprehensive review of the urban growth boundary is not likely to occur before the year 2002. If the urban growth boundary is expanded as part of that review, the capacity of the city’s water supply and treatment system are such that the added water demands from an expanded urban growth boundary area can be accommodated.

STORM DRAINAGE

The basic document describing the city’s storm drainage system is titled “*City of Cannon Beach Storm Drainage System Master Plan*” (Plan). The Plan was completed in February of 1995 and adopted, with amendments, by the council on January 23, 1996. The report includes the following elements: an inventory of the existing drainage system, including mapped locations of improvements; the establishment of a the five year storm event as the design criteria, hydraulic analysis of the existing system; and recommendations for system improvements.

The following are the major findings of the Plan:

- 1). The existing storm drainage system has not experienced severe capacity problems from recent storm events.
- 2). Drainage problems in Cannon Beach have not endangered life, health or public safety.
- 3). Many of the problem areas in the city can be categorized as nuisance drainage from inefficient conveyances and resulting ponding of overland flows.
- 4). The city is drained by many small drainage areas or catchments which discharge to the ocean by separate independent outfalls.
- 5). Drainage improvements within the city’s system will not reduce flooding from tidal effects on Ecola Creek, nor will regulatory flood plain areas be reduced.
- 6). Based on an analysis of costs, level of protection and experience by other Oregon communities, a 5-year storm has been selected for pipe sizing.

The Plan recommends improvements in three categories, immediate need, future need, and possible future need. The projects include pipe replacement and new lines. Immediate need projects represent current existing system deficiencies or problem areas needing attention within five years. Future needs projects represent minor system deficiencies and near-term growth related improvements. These are expected to be constructed after the immediate need projects, however, a project may be determined to be an immediate need based on a demonstrated need. Possible future needs projects are those deemed less desirable due to relationship of the cost to the benefit obtained, or it addresses a long-range future need. Sixteen immediate need projects were identified, at a total cost of \$453,000. Sixteen future projects were identified, at a total cost of \$362,900. Seventeen possible future projects were identified, at a total cost of \$757,700.

A number of the immediate projects were completed in 1997. These projects were in the Coolidge, SGulcana and Tolovana drainage basins. Four improvement projects are scheduled for FY 98-99. These projects were identified as immediate need projects in the Plan.

In 1998, the city will initiate two additional storm drainage studies for areas that were not analyzed as part of the master plan. The areas to be studied are the downtown commercial core and the city's north side. It is anticipated that these studies will recommend storm drainage improvements for their respective areas. Upon study completion, the city council will determine the priority of such projects, relative to those that were identified in the Plan.

SUMMARY - CAPITAL IMPROVEMENTS

Near Term Projects

Sewer System

Capital Improvement	Time Frame	Project Cost
Waste water ponds, west aerators - upgrade	FY 98-99	\$150,000
Matanuska pump station - upgrade	FY 98-99	\$200,000
Waste water pond sludge disposal	FY 99-00	\$298,000
Waste water treatment system modifications - NPDES renewal	FY 00-01	Unknown

Water System

Capital Improvement	Time Frame	Project Cost
Northside water storage	FY 99-00	Unknown

Second Street/ Hemlock Street water line	FY 98-99	\$5,000
Water line extension to recycle building	FY 99-00	\$25,000
Installation of fire hydrants - 300 foot standard	FY 98-99	\$5,000

Storm Drainage System

Capital Improvement	Time Frame	Project Cost
Coos/Hemlock Street	FY 98-99	\$24,000
Ocean/Pacific	FY 98-99	\$2,000
Gulcana/Hemlock	FY 98-99	\$11,700
Hemlock/Nelchena	FY 98-99	\$14,800
Downtown Basin Improvements	To Be Determined	
Logan Creek Basin Improvements	To Be Determined	

Long Term Projects

Sewer System

Capital Improvement	Time Frame	Project Cost
Main Pump Station/ North Interceptor - upgrade	2000-2010	\$173,000
Trunk Main - North of Ecola Creek - upgrade	2000-2010	\$79,000
Elkland Pump Station - upgrade	2000-2010	\$50,000
Ecola Pump Station	2000-2010	\$80,000

Water System

Sunset Boulevard Pump Station - upgrade	2000-2010	\$30,000
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ORDINANCE 00-01

AN ORDINANCE AMENDING THE COMPREHENSIVE PLAN BACKGROUND REPORT
PUBLIC FACILITIES - SUMMARY CAPITAL IMPROVEMENTS

The City of Cannon Beach does ordain as follows:

Section 1. The table, Summary - Capital Improvements, contained in the Public Facilities element of the Comprehensive Plan Background Report is deleted in its entirety and replaced as follows:

SUMMARY - CAPITAL IMPROVEMENTS

Near Term Projects

Sewer System

Capital Improvement	Time Frame	Project Cost
Waste water treatment system modifications		
Dechlorination Facility	FY 00-01	\$50,000
Chlorine Gas Scrubber	FY 00-01	\$80,000
Main Pump Station/ North Interceptor - upgrade	FY 01-02	\$173,000
Trunk Main - North of Ecola Creek - upgrade	FY 01-02	\$79,000
Matanuska pump station & Force main	FY 01-02	\$586,000

Water System

Capital Improvement	Time Frame	Project Cost
Northside water storage	FY 00-01	\$150,000
Ecola Creek Gauging	FY 00-01	\$30,000
Master Plan Update projects	FY 01-02	Unknown

Ordinance 00-01

Storm Drainage System

Capital Improvement	Time Frame	Project Cost
Downtown Basin Improvements	FY 00-01 FY 01-02	To Be Determined To Be Determined
Logan Creek Basin Improvements	FY 00-01 FY 01-02	To Be Determined To Be Determined
Monroe Street	FY 00-01	To Be Determined
Laurel Street	FY 00-01	To Be Determined
Haystack Heights	FY 01/02	To Be Determined

Long Term Projects

Sewer System

Capital Improvement	Time Frame	Project Cost
Elkland Pump Station - upgrade	2000-2010	\$50,000
Ecola Pump Station	2000-2010	\$80,000

Water System

Sunset Boulevard Pump Station - upgrade	2000-2010	\$30,000
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THIS ORDINANCE shall become effective on February 10, 2000.

Ordinance 00-01

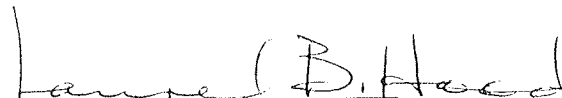
PASSED by the Common Council of the City of Cannon Beach this 11th day of January 2000, by the following vote:

YEAS: Councilors Kramer, Adamson, Swigart; Mayor Hood

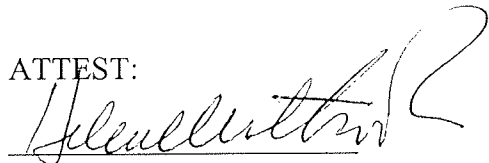
NAYS: None

ABSTAINED: Councilor Standridge

SUBMITTED to the Mayor this 11th day of January 2000, and APPROVED by the Mayor this 11th day of January 2000.


Laurel Hood, Mayor

ATTEST:


Helen Westbrook, City Manager

REVIEWED:

Bill Canessa, City Attorney