# CITY OF PHOENIX

## Comprehensive Land Use Plan

## PUBLIC FACILITIES ELEMENT

## March 2, 1998

**As Amended**
**August 20, 1984 (Ordinance No. 576)**

**Updated November 4, 1996 (Ordinance No. 772)**
**Updated March 2, 1998 (Ordinance No 787)**

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## Introduction

The operation, maintenance and expansion of public facilities is a key responsibility of local government. These activities are crucial to meeting the community's objectives for the future. These activities are crucial to meeting the community's objectives for the future, and ensuring the health and safety of the City's residents. The Public Facilities Plan provides the context in which decisions about the future development, management and expansion of the various systems; sewer, water, transportation, and storm drain, can be made.

Adam Smith wrote two centuries ago in The Wealth of Nations that the state is responsible for 'erecting and maintaining those public institutions and those public works, which though they may be in the highest degree advantageous to a great society, are however, of such a nature, that the profit could never repay the expense to any individual or small number of individuals, and which it, therefore, cannot be expected that any individual or small number of individuals should erect or maintain.'

State law requires that the City develop and adopt a public facility plan for areas within its urban growth boundary. These provisions (OR197.712 and OAR660-11) require that the Plan include; a listing of future public facility projects, a description of the lands to be served, when the project(s) will be constructed, and agreements with other providers of urban facilities within the urban growth boundary.

A management plan for the unincorporated urbanizable area was jointly adopted by Jackson County and the City of Phoenix. These joint urbanizations policies are a part of the City's and County's acknowledged plans. These policies have recently been amended to reflect the City's responsibility for public facility planning, and City/County responsibilities for contract annexation. Urbanized lands, those outside the City limits but within the urban growth boundary, are committed to urban uses but their conversion from rural to urban use is contingent upon the provision of urban services and facilities, and consistency with City comprehensive plan policies and standards.

The Public Facilities Plan includes a discussion of growth forecasts, an overview of key public facilities, and a description of required improvements (both maintenance and capital), review of intergovernmental agreements, and a financial review.

## Population and Employment Forecasts

The 1983 Comprehensive Plan population projection for the year 2000 was 6,465. This forecast was the basis of the urban growth boundary adopted at that time. The City's 2016 population forecast is 5,250. (Note: Portland State University estimated the City's 1997 population at 3,780).

Residential growth will be concentrated is areas already committed to development such as Meadow View and Avalon Subdivisions. These general

Areas, east and southwest, will account for the majority of the forecast's 1,635 new Phoenix residents. Specific distributions will be developed as a part of the Land Use Element.

Employment growth will be concentrated in the Fern Valley Road, OR99, Bear Creek Drive and the North Phoenix Road areas. Specific employment forecasts for these and other areas will be developed as a part of the Land Use Element.

**Waste Water (Sewer) Treatment**

In 1957, in an effort to modernize the City and address widespread well-water contamination, the City embarked upon the development of a modern sewage collection and treatment system. Fourteen years later, as a part of the 1969 interagency agreement the City abandoned its own sewage treatment plant and joined with other local governments in the Bear Creek Valley to utilize Medford's Water Quality Control Plant located off of Kirkland road near White City. The Interagency Agreement provides that the City of "Medford will have responsibility for operating and maintaining the STP" (sewage treatment plant) "to serve the area within the Region. The Plant shall be enlarged or the capacity increased in timely increments to meet the needs of the participants. Medford's determination of need shall be conclusive upon the Participants unless overruled by a majority vote."[1] All participating agencies share in the cost of its operation. Medford, Central Point, Talent and Phoenix, as well as the Bear Creek Sanitary Authority (serving White City, Talent, Jacksonville and unincorporated areas of Jackson County) utilize the facility. The City of Eagle Point has recently initiated plans to have its effluent treated at the plant.

Because the City does not have any operations or management responsibilities for the Water Quality Control Plant a detailed discussion of the plant and its planned expansion are not included. The interested reader may want to review the Facilities Plan for the Water Quality Control Plant, Brown and Caldwell, August 1992 for more information. The key issue is discussed in the facilities plan is the discharge of treated effluent into the Rogue River, a nationally designated Wild and Scenic River.

The Facilities Plan includes treatment plant expansion projects, prioritized in five year construction periods, and extending through 2010 and beyond. The total coast to meet increased demand due to population growth is estimated to be $21.7 million in 1993 dollars. The Plan's 2010 forecast population for the people to that total. This forecast is approximately 2,360 people higher than the most recent forecast for 2016.

[1] Regional Sewer Agreement, September 1985

**Waste Water Collection**

The local collection system is composed of three main parts; collector pipes, trunk lines, and interceptors. The collector pipelines are generally eight inches in diameter and "collect" and transport waste-water from point sources (dwellings, industries, and businesses) to the trunk lines. More than 90 percent of the local system is composed of collector lines.

Trunk lines, generally 12 inches in diameter, transport waste from collectors to the interceptor lines. Interceptors transport the sewage to the Medford Water Quality Control Plan. The Bear Creek Sanitary Authority, has "the responsibility for operating and maintaining the Interceptor System to serve the area within the Region."[2] The interceptor in the vicinity of Phoenix is 36 inches in diameter.

The effluent generated by the businesses and residents within the City (averaged 300,000 gallons per day in 1989 and forecast to grow to 800,000 in 2010[3]) is collected through a network of pipes largely owned, operated and maintained by the City. Much of the system, 38%, was constructed in 1957. The table below summarizes the City's existing collection system.

**Table 1**

| Sewage Collection System Construction Periods | | |
|---|---|---|
| Year Constructed | Lineal Feet | Material |
| 1957 | 18,250 | Concrete |
| 1963 | 6,400 | Concrete |
| 1966 | 3,050 | Asbestos / Concrete |
| 1974 | 900 | Asbestos / Concrete |
| 1979 | 13,375 | Asbestos / Concrete |
| 1985 | 375 | PVC |
| 1990 | 5,150 | PVC |
| 1995 | | PVC |
| Total | 47.500 | |

Concrete and asbestos / concrete sewer pipe has a design life of 50 years. Without replacement before the end of its design life, pipes may collapse resulting blockage. Additionally, older pipes require higher levels of maintenance. Sections of the 1957 system were examined via remote television in late 1995 to assess their condition. Four major deficiencies were identified.

[2] IBID, September 1985

[3] Facilities Plan for the Water Quality Control Plant, Brown and Caldwell, 1992, page 1-2

They include; ground water infiltration (inflow and infiltration), pipe deterioration, root intrusion, and line bellying. (Note: the interested reader may choose to view a video illustrating these problems – available for loan at the Planning Office). These problems plague the 1957 collection system. Based upon this evaluation, a systematic replacement schedule has been included in the finance section which would replace aging sewer pipe throughout the planning period.

The extent of infiltration and inflow (I&I) cannot be assessed through visual observation. Flow meters must be installed during dry and wet (rainy) periods and comparisons between the two flow measurements made to calculate I&I. I&I can easily double or quadruple flows. The increased volume of effluent increases the cost of treatment and can cause flows to exceed the capacity of transmission lines or treatment plant. The City of Medford, as the regional treatment plant operator, has placed specific limits on I&I. Wet weather flows cannot exceed three times dry weather flows (3:1). I& information was not available for inclusion in the Plan.

Capacity problems within the existing collection system cannot be made without I&I information. Consequently, a discussion of the need for capacity enhancements within the existing collection system is not provided. Currently there are not any know capacity problems based upon expert knowledge of the Public Works staff.

Sewers for Unserved Areas

Two largely undeveloped tracts of land within the City's urban growth boundary are not served by sanitary sewers. The first lies west of the railroad tracks in the vicinity of Dano Drive. The lands, totaling 33 acres, are owned by Jackson County which acquired them through property tax foreclosure. The second set of properties lies along North Phoenix Road north of Fern Valley, excluding the Peterbuilt site. Both are within the Bear Creek Sanitary Authority's service area.

The Dano west property is isolated from other served lands by the railroad tracks. This barrier substantially increases the cost of extending services to this site. Table 2 describes the project and its construction components.

**Table 2**

**Dano West – Waste Water Collection Projects**

| Construction Date | Construction Material | Total Lineal Feet | Cost per lineal foot | Cost |
|---|---|---|---|---|
| After 2006 | Plastic 8" | 900 | $25 | $22,500 |
| After 2006 | Bore under | 75 | $200 | $15,000 |
| | | | | $37,500 |

**Water System**

This section presents a summary and evaluation of the future Phoenix water system under year 2008 demand conditions. (Note: the Water master Plan included a year 2015 population of 4630. The City's adopted Plan year 2016 population is 5,250. Assuming even growth throughout the 20 year period, the City will reach 4,630 people by 2008. The Water System Master Plan's references to 2016 have been changed to 2008 in this summary to reflect the adopted 2016 population.)

Pumping

The Phoenix supply pump station was upgraded in 1996 with two 1,200-gpm pumps. If the Phoenix water supply continues to be fed solely from this pump station, the 1,200 gallons per minute (gpm) firm pump station capacity is adequate to meet year 2008 maximum daily demand (MDD).

The supply pump station is currently at its maximum 1,200 gpm capacity because of pressure limitations in the 12-inch PVC transmission main. The 12-ich PVC discharge piping is rated for a maximum operating pressure of 120 pounds per square inch (psi). The current discharge pressure at the pump station is about 115 psi with the 1,200 gpm pump operating. Therefore, to increase capacity of the pump station above 1,200 gpm capacity, the discharge piping would need to be upgraded. The capacity of the existing 1,200 gpm pumps could be increased to about 1,400 gpm by upgrading the existing 11,400 feet of 12-inch transmission piping with 16-inch piping.

The existing 12-inch PVC transmission main is in good condition; the main does not have a history of leakage problems. The transmission main was installed in 1982. The expected life of the PVC transmission main can be expected to vary between 30 to 50 years, depending on the conditions to which the pipeline is exposed. A factor that may affect the reliability of the transmission main is the proposed road improvement on the pipeline route. If construction on the roadway occurs, adequate cover must be maintained over the PVC transmission main.

It is important that waterhammer and surge pressures are controlled to prevent pressure surges in the transmission main. It is recommended that the air-release valves on the pipeline and the pump control, and surge-relief valves at the supply pump station, be periodically checked to ensure they are operating according to their intended function.

The supply pump station does not have emergency backup power. If a power outage occurred at the pump station, the City would have to rely on storage to serve demands. The current supply and distribution

Storage volumes can serve approximately 2.9 days of year 2008 average daily demand (ADD). If this supply pump station continues to be the sole water supply for Phoenix, it is recommended that emergency power capability be installed to operate one pump during emergency power outages.

Proposed MWC Water intertie

The MWC and the Cities of Talent, Phoenix, and Ashland are planning a new water intertie that will convey water south from the MWC water system. The preliminary route of the intertie is in the Bear Creek Greenway / OR99 corridor. When this proposed water intertie is constructed, the intertie could provide a second water supply to Phoenix. The existing Phoenix Supply Pump Station has adequate capacity to serve projected 2008 MDD. A second supply would provide redundancy and increase the reliability of the Phoenix water source.

It is recommended that Phoenix pursue a second water supply through the new intertie to provide backup for the Phoenix water supply. The capacity of the new supply connection should be about 1,200 gpm to meet 2008 MDD needs; this will allow the existing supply pump station to be out of service for maintenance or emergency situations without affecting the water supply to the Phoenix water system. If the new intertie is used as a supply source, the distribution pump station should be controlled cycle-on periodically to prevent stagnant water in the supply reservoirs.

To serve Phoenix by gravity from the new intertie, the minimum hydraulic grade line in the intertie near the City would need to be about 1,680 feet, assuming the new distribution reservoir overflow elevation is at 1,670 feet. If this hydraulic grade is not available in the intertie, Phoenix would need a new booster pump station to pump water from the intertie to the City's distribution reservoir.

Distribution Pump Station

The Phoenix distribution pump station has three identical 25-hp pumps capable of delivering 500 gpm each. The firm pumping capacity of the distribution pump station is about 1,000 gpm. The distribution pump station does not have adequate capacity to meet year 2008 demands if this pump is the sole water supply for Phoenix. The pump station would need to be upgraded to about 1,200 gpm firm capacity. The maximum sustained capacity of the existing 12 inch PVC transmission main from the distribution pump station is about 2,000 gpm. At this flow rate, the fluid velocity in the pipeline is about 6 feet per second (ft/s) and the discharge pressure at the distribution pump station is about 70 psi.

If Phoenix is able to secure additional water supply through the Talent transmission main, upgrading the existing distribution pump

Station to 1,200 firm capacity gpm would not be a high priority.

However, the pump station will need to be upgraded with higher head pumps if the proposed new distribution reservoir is constructed at a higher overflow than the existing distribution reservoir. The proposed reservoir is discussed in more detail below. Because the 1.85 million gallons (MG) of supply storage is dependent on this pump station, it is recommended that emergency power capability be installed at this pump station.

Amerman Pump Station

The Amerman Pump Statin does not have additional capacity for growth. This pump station currently serves just eight houses. Any additional growth in this service would require increasing the capacity of the pump station. The capacity at this pump station should be upgraded when actual growth occurs in this area. The Amerman Pump Station currently does not have any emergency power. If a power outage occurred at the pump station, the eight houses would be supplied directly from the distribution reservoirs, but with static pressures below 20 psi. When the pump station is upgraded, emergency power capability should be added.

Storage

Based on the storage criteria described above, the existing storage will not be adequate to serve the year 2008 Phoenix storage needs. The existing storage is adequate to serve up to a population of approximately 4,000 projected to occur in the year 2000.

The existing distribution reservoirs do not have adequate water surface elevation to serve the southwest area of Phoenix with pressures above 40 psi. Phoenix often receives complaints of low water pressure in this area. The existing distribution reservoirs have a total of 0.5 MG storage. To raise the service pressure in the entire City, a new reservoir with a higher water surface elevation is needed and the existing distribution reservoirs would be abandoned.

The additional storage needed to meet year 2008 demands, assuming the distribution reservoirs are abandoned, is 0.80 MG. It is recommended that a new 1.0 MG reservoir be constructed at an overflow elevation of 1,670 feet to serve Phoenix. The 1.0 MG

reservoir will increase the storage available in the distribution service level that is not dependent on the distribution pump station. This new reservoir will increase the overall service pressure in the Phoenix water system by about 15 psi. The service pressures in the Phoenix water system would range between 40 to 90 psi with the new reservoir overflow elevation. The 90 psi areas are near Bear Creek and Fern Valley Road. The 40 psi areas are in southwest Phoenix.

Phoenix has old asbestos cement pipes and polybutylene services that might develop leaks as a result of the increased service pressure. The existing asbestos cement pipes are Class 150, according to Phoenix records. Phoenix already has leakage problems with the polybutylene services at the existing service pressures. The leakage of polybutylene services could be expected to increase with the higher service pressures. It is recommended that Phoenix replace all the polybutylene services prior to increasing the service pressures.

Currently all of the City's storage is located on the southwest side of the city. It is recommended that new reservoir be located on the east side of Phoenix because future development is anticipated in this area. This would distribute storage to the east and west sides of Phoenix. The west side would have 1.85 MG of storage with the supply reservoirs; the east side would have 1.0 MG of storage with the new distribution reservoir. The location of the reservoir site can vary as long as the elevation is adequate for the proposed overflow elevation.

Pipeline

New pipelines are needed for the new distribution reservoir and new development outside the existing water system grid. The areas east and west of the freeway are currently interconnected with one 12 inch pipeline crossing under the freeway. A second freeway crossing is recommended to provide reliability and capacity to the water system. A second freeway crossing would allow the new distribution reservoir to adequately serve the areas west of the freeway. The proposed pipeline sizes serving the new developments are preliminary, and assume residential development.

With the new distribution reservoir overflow elevation and proposed pipelines, the service pressures in the system during MDD will range between 40 to 90 psi. The 40 psi areas are in the southwest area of Phoenix, west of the railroads tracks. The 90 psi areas are near Bear Creek and Fern Valley Road. The piping network is adequate to serve MDD in the distribution system.

The future system is adequate for reservoir refilling during low demands. The discharge pressure at the distribution pump station can be expected to be about 60 psi during reservoir refill. The pump

Station was assumed to be supplying a future flow of 1,200 gpm during reservoir refill. The highest pressures occur near Bear Creek and Fern Valley Road at about 90 psi during reservoir refill.

Fire Flow

The proposed future system, as shown in the Water System Map, was analyzed for fire flows under MDD. Additional fire flow locations for future development were included in the analysis. The fire flows were analyzed assuming the water surface elevation in the new distribution reservoir is at 1,668 feet elevation. The distribution pump station was assumed to be not in use.

The results of the fire flow analysis for the proposed future system indicate that fire flows will be adequate in all areas except at the Associated Fruit Company. The available fire flow to this area is about 2,500 gpm without the distribution pump station operating. With the distribution pump station supplying 1,000 gpm during the fire flow, below the required amount. The Associated Fruit Company is served mainly by an existing 10 inch and 8 inch grid. No improvements are recommended at this time to the existing grid.

Capital Improvements

The improvements are prioritized according to the importance and immediacy of the needs. The high-priority improvements are those required to meet existing system needs and improve fire flow and overall reliability; this includes replacing polybutylene services, fixing leaks, installing emergency power to the pump stations, and increasing service pressures.

The improvements that are needed to meet future growth are lower priority. Improvements for future growth should be constructed by developers as the system grows; however, improvements that benefit the existing system and are needed for future overall growth, such as the new distribution reservoir, could be installed before development occurs.

The high-priority improvements should be implemented in years 1997 to 1999 under Phase I improvements. The lower-priority improvements are scheduled in 2-year increments from year 2000 to year 2008. The improvements were prioritized with input from Phoenix staff. Table 4 presents the first 2 year improvements from 1997 to 1999. Table 5 describes the recommended improvements for the 12 year period.

**Table 3**

## 1997 to 1999 Phase I Capital Improvement Plan

| Priority | Proposed Improvement | Purpose | Money Allocated for Implementation Period ($) 1997 | 1998 | 1999 |
|---|---|---|---|---|---|
| Pipeline | | | | | |
| 1 | Install 2,200 feet of 16-inch pipeline from intersection of Oak St. and Main St. across freeway to future 12-inch Winmar development main. | Reliability and future growth | 254,000 | | |
| 2 | Install 1,200 feet of 18-inch pipeline from 16-inch main at freeway crossing to new distribution reservoir. | New distribution reservoir utilization and future growth | | | 119,000 |
| 3 | Upgrade 400 feet of existing 8-inch main to 12-inch main on Oak St. from Main St. to Church St. | Increase fire flow capability in existing system | | | 31,000 |
| | Subtotal Pipeline | | 254,000 | | 150,000 |
| Talent Transmission Main Connection | | | | | 95,000 |
| 1 | Talent water transmission main supply connection, assume gravity supply with meter and vault. | Supply reliability | | | 95,000 |
| | Subtotal Controls | | | | 95,000 |
| Pump Station Upgrade | | | | | |
| 1 | Install portable emergency power to operate one 100-hp pump at the supply pump station, assume mobile engine generator. | Reliability | 60,000 | | |
| 2 | Install permanent emergency power to operate two future 600-gpm pumps at the distribution pump station, assume weatherproof engine generator on concrete pad. | Reliability | | 80,000 | |
| 3 | Upgrade existing distribution pump station to firm capacity of 1,200 gpm; replace three existing pumps, assume minimal building modifications. | Future growth | | | 162,000 |
| | Subtotal Pump Station Upgrade | | 60,000 | 80,000 | 162,000 |
| Reservoir | | | | | |
| 1 | Construct new 1.0-MG distribution reservoir. | Increase existing service pressure and for future growth | | | |
| | Subtotal Reservoir | | | | |
| Maintenance | | | | | |
| 1 | Replace polybutylene services. | Reliability | 24,000 | 24,000 | 24,000 | 24,000 | 24,000 |
| 2 | Replace old asbestos cement mains. | Reliability | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| 3 | Conduct leak survey; conduct spot check every 5 years. | Reliability | | | 10,000 | | |
| 4 | Conservation | Conservation | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| | Subtotal Source | | 37,000 | 37,000 | 47,000 | 37,000 | 37,000 |
| | Total Phase I Capital Improvement Plan | | 97,000 | 291,000 | 127,000 | 199,000 | 282,000 |

**Table 4**

## 1997 to 2008 Capital Improvement Plan

| | | | Money Allocated for Implementation Period ($) | | | |
|---|---|---|---|---|---|---|
| Priority | Proposed Improvement | Purpose | Phase I 1997 - 1999 | Phase II 2000-2002 | Phase III 2003 - 2005 | Phase IV 2006 - 2008 |
| Pipeline | | | | | | |
| 1 | Install 2,200 feet of 16-inch pipeline from intersection of Oak St. and Main St. across freeway to future 12-inch Winmar development main. | Reliability and future growth | 254,000 | | | |
| 2 | Install 1,200 feet of 18-inch pipeline from 16-inch main at freeway crossing to new distribution reservoir. | New distribution reservoir utilization and future growth | 119,000 | | | |
| 3 | Upgrade 400 feet of existing 8-inch main to 12-inch main on Oak St. from Main St. to Church St. | Increase fire flow capability in existing system | 31,000 | | | |
| 4 | Install 1,300 feet of 12-inch pipeline from Fern Valley Rd. north to new development. | Future growth | | 100,000 | | |
| 5 | Install 3,000 feet of 12-inch pipeline from Dano Dr. and Arana Dr. to new development. | Future growth | | | 231,000 | |
| 6 | Install 3,000 feet of 12-inch pipeline from B St. to south area development near Camp Baker Rd. and Colver Rd. | Future growth | | | | 231,000 |
| 7 | Install 1,500 feet of 8-inch pipeline for south area development near Camp Baker Rd. and Colver Rd. | Future growth | | | | 81,000 |
| 8 | Install 900 feet of 12-inch pipeline from new distribution reservoir to new East Hill development. | Future growth | | | | 69,000 |
| Subtotal Pipeline | | | 404,000 | 100,000 | 231,000 | 381,000 |
| Talent Transmission Main Connection | | | | | | |
| 1 | Talent water transmission main supply connection, assume gravity supply with meter and vault and $40,000 MWC SDC. | Supply reliability | 95,000 | | | |
| Subtotal Controls | | | 95,000 | | | |
| Pump Station Upgrade | | | | | | |
| 1 | Install portable emergency power to operate one 100-hp pump at the supply pump station, assume mobile engine generator. | Reliability | 60,000 | | | |
| 2 | Install permanent emergency power to operate two future 600-gpm pumps at the distribution pump station, assume weatherproof engine generator on concrete pad. | Reliability | 80,000 | | | |

| Priority | Proposed Improvement | Purpose | Money Allocated for Implementation Period ($) Phase I 1997 - 1999 | Phase II 2000-2002 | Phase III 2003 - 2005 | Phase IV 2006 - 2008 |
|---|---|---|---|---|---|---|
| 3 | Upgrade existing distribution pump station to firm capacity of 1,200 gpm; replace three existing pumps, assume minimal building modifications. | Future growth | 162,000 | | | |
| Subtotal Pumping | | | 302,000 | | | |
| Reservoir | | | | | | |
| 1 | Construct new 1.0-MG distribution reservoir. | Increase existing service pressure and for future growth | | 675,000 | | |
| Subtotal Reservoir | | | | 675,000 | | |
| Maintenance | | | | | | |
| 1 | Replace polybutylene services. | Reliability | 120,000 | | | |
| 2 | Replace old asbestos cement mains. | Reliability | 50,000 | 50,000 | 50,000 | 50,000 |
| 3 | Conduct leak survey; conduct spot check every 5 years. | Reliability | 10,000 | 10,000 | 10,000 | 10,000 |
| 4 | Conservation | Conservation | 15,000 | 15,000 | 15,000 | 15,000 |
| Subtotal Maintenance | | | 195,000 | 75,000 | 75,000 | 75,000 |
| Total Capital Improvement Plan | | | 996,000 | 850,000 | 306,000 | 456,000 |

Finance

The Water System Master Plan identifies $2.6 million dollars of projects over the twelve year planning horizon. Approximately, $874,000 of the total is related to future growth. Those improvements that provide improve services for the existing residents (reliability and pressure) and provide for future growth total $1.1 million. Finally, those improvements that are needed for the existing system, not considering growth, total $686,000. The finance section assumes that the cost burden for projects that benefit existing residents and future growth are logically split 50:50.

It is likely that a portion of the capital improvement costs can be secured through grants from the federal or State government. However, those grants are growing increasingly rare. Most of the federal and State water system improvement programs are for loans. Those that do provide grants are targeted to low income or distressed communities, or based upon a private sector job creation (i.e. improvements must be related to the siting of a new or the expansion of an existing employer).

Based upon this overview and the City's relative wealth compared to other communities in the State and nation, only 20 percent of the total capital improvement cost is assumed to be in the form of grants. That places the balance of the costs, roughly two million dollars, on City revenue sources.

**Transportation**

The transportation system is described within the Transportation Element. The discussion here is limited to needed maintenance and capital improvements.

Pavement Management

In late 1995 the City initiated a pavement management program. Pavement management ensures that the quality of pavement in maintained and thus avoids the reconstruction of roadways. Each segment of the City's system was evaluated for following defects; alligator cracking, transverse cracking, longitudinal cracking, and raveling. Through these ratings the appropriate remedy or pavement treatment was derived.

Like most maintenance, pavement management is much more cost effective than replacement. In fact, the cost to rebuild a roadway, once deteriorated, is roughly two and one-half times as expensive as maintaining the quality of the pavements through periodic overlay and sealing.

Map 1 details the results of the 1995 evaluation by overall condition. Only 0.14 miles of roadway are beyond maintenance treatments and require reconstruction. The objective of the pavement management program is to prevent deterioration to that extent in the future.

The pavement management program will help to identify specific pavement management projects on an ongoing basis. Overall program scope and funding should rely upon standard engineering pavement life and maintenance requirements. Based upon these standards and average conditions, thin lifts should be applied to minor roads every nine years. This approach yields an annual required expenditure for pavement management of $94,569 (excluding reconstruction and periodic crack sealing). Table 6 details the mileage by treatment.

**Table 5**

**Pavement Management Treatment Needs**

| Pavement Treatment | Miles |
|---|---|
| Thin Lift (1 inch) | 8.71 |
| Thin Lift (1.5 inch) | 1.65 |
| Reconstruction | 0.14 |

Existing funding is insufficient to cover the cost of maintaining existing roadways. The finance section itemizes the sources of funding available to cover the needed investment.

System Improvements

Few roadway projects will be needed to increase capacity for motor vehicles during the planning period. The majority of roadway improvement projects included in the following sections focus on improving the network to serve other modes of transportation; particularly walking and biking. But the bulk of the money will go toward projects which improve motor vehicle operations ($22 million of the $29 million total).

The City, Oregon Department of Transportation and Jackson County each have responsibilities for segments of the local transportation system. This joint ownership provides an opportunity to share the cost of some needed roadway improvements. Projects where the City along with another jurisdiction would jointly fund the improvement are listed in Table 7. Projects shown in italics are needed but are not expected to be funded during the planning period.

These improvements will serve the entire City as well as an extensive area beyond the urban growth boundary. The regional function and their ownership by other agencies warrants that the cost of these projects be borne by State, County or regional sources. Additionally, the City has no jurisdictional authority or financial capability to schedule or initiate these projects. The City does advocate construction consistent with the time frames established within the Regional Transportation Plan.

Not included in Table 7 are improvements to the Fern Valley – Interstate 5 (I5) interchange. Three separate projects are planned for the interchange; Fern Valley and north bound on-ramps, Fern Valley and south bound on-ramps, and the Fern Valley interchange with I5. These projects will be fully funded through State and Federal funds. The ramps are considered short range projects (1996 – 2000) while the interchange reconstruction is long range (beyond 2008).

A key issue relating o improvement on State and County roads within the UGB is which jurisdiction will ultimately have responsibility for maintenance. It has been Jackson County's preference to transfer jurisdiction to cities upon improvement of County rural roadways to urban standards. In 1995 Medford accepted jurisdiction for parts of OR99 within its city limits in return for a direct State payment. Clearly, both the County and State are motivated, for financial reasons, to focus on their extensive countywide and statewide networks and leave urban streets to the cities. While improvement of all roadways within the UGB to urban standards is highly desirable, transfer of jurisdiction can place future financial burdens upon the City in the form of additional pavement management costs. Together, the State and County own almost 7.5 lane miles of streets within the UGB (42 percent of the total mileage within the UGB). If the City accepted maintenance responsibility for these

roads, and assuming that these pavements were in good or excellent condition the City would need to add approximately $135,000 to its annual pavement management budget (not adjusted for inflation) excluding any operations costs (i.e. sweeping, pot hole patching, storm drain cleaning, etc). The costs associated with acceptance of jurisdictional responsibility for State and County roadways have not been included in the financial section.

**Table 6**

| Project Location | Project Description |
|---|---|
| Bear Creek Drive (Phoenix), Oak St to 6th St | Widen to provide curb, gutter, bike lanes and sidewalks |
| Houston Rd, Phoenix UGB to Colver St | Widen to two lanes with curb, gutter, bike lanes and sidewalks |
| Luman Rd and Fern Valley Rd | Install new traffic signal, realign four-way intersection |
| Main St (Phoenix), Oak St to 4th St | Widen to provide curb, gutter, bike lanes and sidewalks |
| Rogue Valley Hwy and Bolz Rd | Install new traffic signal, right turn lane, modify turning radius |
| Rogue Valley Hwy and First St | Install new traffic signal, right turn lane, modify turning radius |
| Rogue Valley Hwy and Fourth St | Install new traffic signal, right turn lane, modify turning radius |
| Rogue Valley Hwy, Bear Creek Dr to Rose St | Widen to provide curb, gutter, bike lanes and sidewalks |
| Rogue Valley Hwy, MPO Limits to Bear Creek Dr | Widen to provide curb, gutter, bike lanes and sidewalks |
| *Rogue Valley Hwy, Rose St to Stewart Ave* | Widen to provide bike lanes |
| *Alford Frontage Rd, Fern Valley Rd to 2,600 ft north* | Realign and reconstructed three lane roadway |
| *Fern Valley Rd, bridge* | Widen bridge structure |
| Fern Valley Rd and Alford | Install new traffic signal |
| Rogue Valley Hwy and Fern Valley Rd/Cheryl Ln | Realign Intersection and Upgrade Signal |
| *Colver Rd, Pacific Ln to Pioneer* | Widen to provide curb, gutter, bike lanes and sidewalks |
| *Hilsinger Rd, Camp Baker Rd to Pacific Lane* | Widen to two lanes with curb, gutter, bike lanes and sidewalks |

Improvements to City owned streets and roads during the planning period are estimated to total $4,340,000. Projects are distributed throughout the City and largely focus on improving the utility of the roads for all modes of travel. Only improvements to Fern Valley Road provide for additional vehicle capacity in the form of new traffic lanes. Table 8 lists City system improvements, including the type of projects, benefits, time frame, and cost. (Note: Overlap between improvement projects included in Table 8 and reconstructions of poor pavements have not been identified. The double counting would have the effect of reducing the needs set out in the financial section).

Besides being the only project which would add lanes to the City's transportation system, Fern Valley Road is uniquely costly. It represents almost 45 percent of the total outlay for improvements on the City's network. Due to the extraordinary expense and its regional function, the financial section assumes that only 20 percent of the total project cost will be borne by the City. The balance will be paid through either region, State or Federal grants. (Note: The City will also use region, State, or Federal grants for other local projects if available although it is assumed, within the financial section, that they will be unavailable).

With only 20 percent of the Fern Valley Road improvements being the responsibility of the City, the distribution of costs through the planning period is more even. Yet even still, the long-term projects account for slightly more than 40 percent of the improvement needs. The Table 9 summarizes projected improvements costs by time period (including only 20 percent of the Fern Valley Road project).

**Table 7**

**Phoenix Street System Project List**[4]

| Project Location | Impvt. Categroy | Project Description | Vehicle | Bicycle | Pedestrian | Transit | Freight | Access | Economic | Safety | Operations | Trk Trffc | Urb Upgrd | Project Phasing | Proj. Dist. (mi.) | Unit Cost (per mile) | Project Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cheryl, Rose to rogue Valley Hwy (Hwy 99) | Urban upgrade | Widen to provide curb, gutter, bike lanes and sidewalks | | $ | $ | | | | | # | | | # | Short range | 0.3 | $1,000,000 | $300,000 |
| Bolz, Rogue Valley Hwy (Hwy 99) to Fern Valley Rd | Urban upgrade | Widen to provide curb, gutter, bike lanes and sidewalks | | $ | $ | | | | | # | | | # | Short range | 0.1 | $1,000,000 | $100,000 |
| Colver Rd, Houston St to First St | Urban upgrade | Widen to provide curb, gutter, bike lanes, sidewalks and storm drain | $ | $ | $ | | | | | # | | | # | Short range | 0.2 | $1,300,000 | $260,000 |
| Oak St, Rose to Bear Creek Dr (Hwy 99) | pedestrian | Add sidewalks | | | $ | | | | | # | | | | Short range | 0.2 | $100,000 | $20,000 |
| First St, Colver Rd to Bear Creek Dr (Hwy 99) | Urban upgrade | Widen to provide curb, gutter, bike lanes and sidewalks | $ | $ | $ | | | | | # | | | # | Medium range | 0.5 | $1,300,000 | $650,000 |
| Fourth St, Colver to Bear Creek Dr (Hwy 99) | Urban upgrade | Widen to provide curb, gutter, bike lanes and sidewalks | $ | $ | $ | | | | | # | | | # | Medium range | 0.4 | $1,300,000 | $520,000 |

[4] Preliminary Draft Reginal Trnasportatin Plan, David Evans & Associates, October, 1995
Cheryl Lane project – City of Phoenix addition to Regional Plan list

**Table 7 (continued)**

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hilsinger Rd, Pacific Lane to first St | Urban upgrade | Widen to two lanes with curb, gutter, bike lanes and sidewalks | $ | $ | $ | | | # | | # | | | # | Long range | 0.2 | $1,300,000 | $260,000 |
| Fern valley Rd, Rogue Valley Hwy to UGB (east) | Major | Widen to five lanes with curb, gutter, bike lanes and sidewalks | $ | $ | $ | $ | $ | | # | # | # | # | | Long range | 0.6 | $3,200,000 | $1,920,000 |
| Colver Lane, First St to Pacific Lane | Urban upgrade | Widen to provide curb, gutter, bike lanes and sidewalks | | $ | $ | | | # | | | | | # | Long range | 0.4 | $1,000,000 | $400,000 |
| Hilsinger Rd, First St to Colver Rd | Urban upgrade | Widen to two lanes with curb, gutter, bike lanes and sidewalks | $ | $ | $ | | | # | | # | | | # | Long range | 0.2 | $1,300,000 | $260,000 |
| | | | | | | | | | | | | | | Total cost of Short term Projects | | | $680,000 |
| | | | | | | | | | | | | | | Total cost of Medium term Projects | | | $1,170,000 |
| | | | | | | | | | | | | | | Total Cost of Long term Projects | | | $2,840,000 |
| | | | | | | | | | | | | | | Total Cost all Projects | | | $4,690,000 |

**Table 8**

| Local Roadway Improvement Costs by Improvement Period | | | |
|---|---|---|---|
| **Time Period** | **Years** | **Projected Cost** | **Percent of Total** |
| Short-term | 1996 to 2001 | $680,000 | 22% |
| Medium-term | 2002 to 2008 | $1,170,000 | 37% |
| Long-term | 2009 & beyond | $1,304,000 | 41% |
| Total | | $3,154,000 | |

Note: Long-term projects include only 20% of the cost of Fern Valley Rd.

The needs outlined in Table 8 are included in the financial section of the Plan.

Streets for Unserved Areas

The only area not served by streets is Dano West, previously described within the Sanitary Sewer Section. One proposed improvement would extend Cheryl Lane west from its existing terminus, over the railroad tracks and to a point approximately 1,000 feet west of the existing tracks.

With the realignment of Cheryl and Fern Valley Road, the extension of Cheryl to serve this area represents one of several alternatives. Table 9 below summarizes the costs of the Cheryl Lane extension.

**Table 9**

| Cheryl Lane Extension | | | | | |
|---|---|---|---|---|---|
| **Project Name** | **Construction Date** | **Major Phase** | **Total Lineal Feet** | **Cost per Lineal Foot** | **Cost** |
| Dano West | After 2005 | Railroad Crossing | 75 | $1,000 | $75,000 |
| Dano West | After 2005 | Collector Street Const. | 1700 | $560 | $952,000 |

**Storm Drain System**

Most of the City is not served by storm drain system. Consequently, storm water runoff is not contained or managed. Those areas served by storm drain systems (subdivisions constructed after 1979) are based upon small drainage area plans and are not integrated. Additionally, existing storm drain systems serving lands west of the Phoenix Irrigation Canal utilize the canal system as a primary receiving "stream" for runoff.

While the irrigation canal eventually flows into Bear Creek it is not designed nor managed for storm runoff. There have been instances when the canal has overflowed during heavy storm flooding adjacent lands.

Open ditches, used for irrigation water distribution and storm drain runoff are poor substitutes for a planned storm water management system. Integrating these structures, however, may be possible if storm water retention is a priority. Providing pre-treatment of storm water run-off prior to entering Bear Creek or other water courses reduces pollution, nutrient and sediment loadings. It is anticipated that water quality regulations protecting Bear Creek will increasing limit direct storm water discharges.

Developing a storm drain plan is essential to creation of a storm drain system. Ad hoc approaches will not work. The financial section includes the cost for engineering and planning for a storm drain system.

**Financing**

The public facility needs are great. Greater than a casual observer might imagine. The Plan has inventoried existing systems, identified deficiencies, and described new projects to serve previously unserved areas. Now the key question is whether the funding is adequate to meet the identified meet? At the present time the answer is a resounding NO!

Without new funding many of the needs described in this plan will go unmet. It is the objective of the plan to match needs and resources. To the degree that additional resources cannot be garnered, then the Plan's scope must be limited to match the forecast revenues. For instance, if insufficient revenues are available for roadway pavement management, then a strategic approach to planned pavement deterioration must be devised. In other words, selected roadways will be allowed to return to gravel. It is crucial that limited resources be targeted to gain the highest community benefit. In the case of pavements, it is by maintain good and excellent condition surfaces in that same condition.

The City has a well-balanced public facilities financing system. It uses a combination of direct payment for service, user fees, and development fees to generate revenue. Unfortunately, the diversity of funding does not yield the required revenue to keep pace with maintenance, system wide improvements, and systems expansions. The waste water collection, water distribution system, and transportation systems are underfunded. Only through dramatic increases in fees will the City be able to keep pace with the demand. Table 10 illustrates revenues, how they are used, and the deficit or surplus by function.

**Table 10**

## Public Facilities Financing

| Transportation | | | | | FY 95-96 Forecast Revenue | Note |
|---|---|---|---|---|---|---|
| Funding Source | Operations & Mainten. | Pavement Managmt. | Rehabili-tation | Capital | | 1 |
| Transportation SDC | | | | $32,300 | $32,300 | |
| Street Fund (State Gas | $144,800 | $18,200 | | | $163,000 | |
| Transportation Utility | | $48,000 | | | $48,000 | |
| Misc. Income | $7,500 | | | | $7,500 | |
| Misc. State Grants | | | $25,000 | | $25,000 | |
| Total | $152,300 | $66,200 | $25,000 | $32,300 | $275,800 | |
| Estimated Annual Need | $152,300 | $94,569 | | | $472,258 | 2 |
| Total Need (Capital) | | | $140,000 | $4,181,000 | $472,258 | 2 |
| Annual Surplus/(Deficit) | $0 | $28,369 | N.A. | N.A. | ($196,458) | |

| Sewage Collection | | | | | FY 95-96 Forecast Revenue | |
|---|---|---|---|---|---|---|
| Funding Source | Operation & Mainten. | Rehabilita-tion | Exten/Exp | Treatment & Trans. | | |
| Sewer user fees | $74,376 | $0 | $0 | $67,940 | $152,000 | 3 |
| Estimated Annual Need | $79,218 | $30,500 | | $67,940 | $192,658 | 4 |
| Total Need (Capital) | | | $160,000 | | | |
| Annual Surplus/(Deficit) | ($4,842) | ($30,500) | | $0 | ($40,658) | |

| Water System | | | | | FY 95-96 Forecast Revenue | |
|---|---|---|---|---|---|---|
| Funding Source | Operation & Mainten. | Rehabilita-tion | Capital | Supply | | |
| Water user fees | $364,000 | $0 | $0 | $50,000 | $414,000 | 5 |
| Water Res. Fund (SDC) | | | $37,500 | | $37,500 | |
| Property Tax | | | | $105,200 | $105,200 | 6 |
| Total | $364,000 | $0 | $37,500 | 155,200 | $556,700 | |
| Estimated Annual Need | $365,631 | $48,400 | | $142,000 | $538,831 | |
| Total Need (Capital) | | | $2,608,400 | | | |
| Annual Surplus / (Deficit) | ($1,631) | ($48,400) | N.A. | $13,200 | $17,869 | |

| Storm Water Collection | | | | | FY 95-96 Forecast Revenue | |
|---|---|---|---|---|---|---|
| Funding Source | System Plan | Operation & Mainten. | Capital | Treatment | | |
| None | | | | | | |
| Estimated Need | $12,000 | ?????????? | ?????????? | ?????????? | | |
| Surplus / (Deficit) | ($12,000) | | | | | |

**Financial Notes and Definitions**

Operations and Maintenance: Includes the regular activities to keep the systems functioning. Activities such as inspection, cleaning, patching, emergency repairs, and low cost maintenance activities are included.

Pavement Management: The periodic sealing or overlay of streets whose pavements are in fair, good or excellent condition.

Rehabilitation: The replacement of significant parts of the existing system that are deteriorated beyond repair.

Capital: The expenses associated with the expansion of the existing system to meet new demands due to growth.

Treatment & Transmission: Cost for the transportation and treatment of local sewage through and to regional facilities.

Supply: Costs for purchases and transmission of Lost Lake water, including bonded indebtedness.

System Plan: The costs for the development of a storm drain master plan.

NOTES:

1. Does not include interest earnings
2. Estimates of annual maintenance & rehabilitation need are based upon average outlay (not adjusted for inflation) during the 1995 – 2015 period to bring all City roads to "good or better" condition.
3. Reconstruction costs are limited to existing needs and are not ongoing.
4. Includes $5,000 from connection fees.
5. Capital cost through 2006
6. Includes utility fees ($25,000) and miscellaneous income ($5,000). Capital expenses in FY95/96 budget includes the reconstruction of pump station (app. $95,000) which was funded through cash carry forward
7. Includes $9,6000 property taxes from prior years
8. There is some overlap between transportation extension and expansion projects, and needs identified within pavement management projects

| | |
|---|---|
| Goal 1 | To ensure that the City's public facilities are designed, developed, and maintained to ensure their reliability, safety, and cost effectiveness. |
| Policy 1.1 | The City shall endeavor to generate and budget sufficient revenues to meet the needs according to the following priority order: 1) operations, 2) maintenance, and 3) expansion |
| Policy 1.2 | The costs for expansion of system capacity shall be borne by new development. System development charges shall be updated annually to account for modifications in standards, the adoption of new system master plans, availability of engineering specifications, or other factors which have the effect of changing the adopted capital improvement program. For purposes of this policy, the term system capacity shall also include the addition of bicycle paths and sidewalks as new transportation modes. |
| Policy 1.3 | The costs to operate and maintain the developed system shall be shared as equitable as possible by all users according to demands placed upon the system. Water and sewer user fees, and transportation utility fees shall be reviewed to consider all costs associated with operations and maintenance of their respective systems. The Council shall consider annual adjustments to account for changing system needs, demands, and the adoption of system master plans. |
| Goal 2\| | The City shall structure deferred improvement charges, system development fees, and user fees in a manner to avoid double charging. |
| Goal 3 | Manage and coordinate City-wide storm water runoff. |
| Policy 3.1 | The City shall provide for the design, development, and maintenance of storm drain system. |
| Policy 3.2 | The council shall consider the adoption of a storm drain master plan. The Plan should be the basis for storm drain system development charge and storm drain utility fees. |