9.0 Environmental Report

9.1 Introduction

This chapter describes potential environmental impacts associated with alternatives for the construction and operation of expanded MWMC facilities. The analysis includes a description of potential impacts to the physical, biological, and human environment in the immediate vicinity of the expanded facilities, as well as impacts to the receiving waters of the Willamette River at the WPCF outfall.

The alternatives include MWMC's preferred alternative (System[1] Alternative 5) Parallel Primary/Secondary Treatment, and the agency's next best alternative (System Alternative 4) High-Rate Clarification. To compare the project alternatives and potential environmental impacts that could occur if the facilities are not expanded, the analysis also includes a third alternative, the No Action Alternative (System Alternative 1). Because of insurmountable technical difficulties, Alternatives 2 and 3 were considered and eliminated as viable alternatives in this Facilities Plan (see Chapter 7.0). Therefore, an analysis of these alternatives is not included in this Environmental Report.

To provide a basis for identifying how the physical layout of the current facilities will differ from potential future expansions and upgrades, a brief description of MWMC's main facilities is provided below.

9.1.1 Current Process Overview

Currently, wastewater is channeled to the WPCF via 800 miles of Eugene-Springfield sanitary pipes and 50 pump stations (MWMC, 2004). At the WPCF, influent undergoes primary and secondary treatment. Biosolids are pumped to facultative sludge lagoons at the BMF and wastewater is disinfected before being discharged into the Willamette River.

Water Pollution Control Facility (WPCF)

Wastewater entering the WPCF undergoes four treatment phases prior to discharge into the Willamette River. These phases (preliminary, primary, secondary, and disinfection), as well as biosolids management at the facility, are described below.

Preliminary Treatment. Preliminary treatment consists of receiving wastewater from the regional collection system, removing sand and debris, reducing the size of solids, and injecting air (aeration) to remove odorous gases (City of Eugene, 2004). The facility has available four grit removal chambers (each with a volume of 101,000 gallons) and four preaeration chambers (each with a volume of 152,000 gallons) – these are used according to

[1] The Facilities Plan identifies various component alternatives and makes specific recommendations for these alternatives. The Environmental Report consists of a review of potential impacts for the entire system that makes up the WPCF. Therefore, to avoid confusion in how the term "alternative" is used, the two project alternatives in the Environmental Report and the No Action Alternative are described as System Alternatives 1, 4, and 5.

the influent flow requirements. A biofilter is used to remove air odors at 13,000 ft^3/min [2](City of Eugene, 2004).

The current capacity of the preliminary treatment facilities ranges from 175 to 210 mgd, and is limited by the influent screening capacity (see "Peak Flow Management Alternatives" technical memorandum in the appendix).

Primary Treatment. During primary treatment, solids and scum are removed through settling and skimming (City of Eugene, 2004). Primary clarifiers thicken the sludge to 4 to 6 percent solids. The thickened sludge is pushed by rake arms into a hopper, where the sludge is transferred by air-operated diaphragm pumps to the primary (anaerobic) digesters (CH2M HILL, 2003).

The effective peak flow primary treatment capacity is approximately 90 mgd with all four primary clarifiers in service, although the facility moves in excess of 200 mgd through the clarifiers during peak flow events.

Secondary Treatment. Secondary treatment at the WPCF consists of aerating and recycling bacteria, and converting fine particles and dissolved organic matter into settleable solids (City of Eugene, 2004). Secondary treatment facilities consist of eight aeration basins and eight secondary clarifiers.

During secondary treatment, sludge can be thickened in one of two ways, co-thickened by mixing WAS with primary influent and settled in primary clarifiers or thickened directly at the GBT. The activated sludge flow can be routed to the grit channels to be mixed with primary influent or the WAS is combined with polymer and applied to the gravity filter belts, then thickened to 4 percent dry solids. After thickening, the waste activated sludge is pumped to the anaerobic digestion process.

During the anaerobic digestion process, sludge is inoculated with bacteria and heated to approximately 36°C. Bacteria reduce the organic material to water, carbon dioxide, and methane gas. The process takes 15 to 35 days, depending on the amount of sludge pumped into the digesters. The methane gas is used to produce heat and electrical energy, which is used in the operation of the Regional Treatment Facility.

The current peak flow secondary treatment capacity is estimated at 103 mgd and is limited by secondary clarification. PE flows over 103 mgd are diverted around secondary treatment through a diversion conduit and recombined with the SE prior to disinfection.

Disinfection. Disinfection, the final wastewater treatment stage at the WPCF, consists of disinfection by chlorine, followed by addition of sulfur dioxide to dechlorinate. Disinfection facilities consist of gaseous chlorine, four chlorine contact basins, and gaseous sulfur dioxide.

The peak flow disinfection capacity, estimated at 215 mgd, typically is limited by the chlorinators, although hydraulic restrictions based on river level may limit capacity to 175 mgd.

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[2] The biofilter has a peak capacity of 18,000 cfm.

Biosolids Management Facility (BMF)

Digested biosolids from the holding tanks are pumped through a 5.5-mile force main into one of four, 6.25-acre facultative sludge lagoons at the BMF. The lagoons are designed to maintain an aerobic layer free of scum or membrane-type film buildup. The aerobic layer is maintained by controlling annual organic lagoon loading at or below a critical area loading rate, and through use of surface mixers to agitate and mix the aerobic surface layer.

The aerobic surface layer of the lagoons usually is between 1 and 3 feet deep and supports a dense population of algae. Dissolved oxygen is supplied to this layer by algal photosynthesis, by direct surface transfer from the atmosphere, and by the surface mixers. Sludge bacteria use the oxygen to aerobically degrade organic matter. Digested sludge solids settle to the bottom of the lagoons and continue decomposing anaerobically.

Supernatant flows via 10-inch-diameter pipes to a sanitary sewer and is then conveyed to the WPCF (CH2M HILL, 2003).

Seasonal Industrial Waste Facility

The SIWF is a 290-acre site with 190 acres of irrigated cropland and 25 acres of non-irrigated cropland. The total farmable area is approximately 215 acres. The site is located approximately 1 mile northeasterly from the BMF and 5 miles north of Eugene. It is currently developed with three 60-acre circles and one 16-acre circle of grass. The irrigation system consists of 1996 Pierce center pivots.

A 14-acre, 57-MG storage lagoon is also located at the SIWF site. The lagoon no longer receives influent cannery waste but still contains residual waste from prior years influent. Potential future uses for the lagoon include effluent equalization/storage, BFP filtrate storage, and facultative sludge lagoon supernatant equalization/storage/treatment.

The SIWF was built in 1983 to avoid high-strength organic waste loads into the WPCF on a seasonal basis. Since the purchase of the land by Eugene-Springfield, the SIWF has not been used for any land application or liquid storage of non-cannery wastewaters, as the site has been dedicated solely to irrigation of cannery wastewater. The land has been leased to a local farmer and forage producer to ensure that the site is continuously farmed using sound farm management practices.

Biosolids Disposal - Biocycle Farm (Poplar Farm)

The Biocycle Farm currently is in development. This facility is located next to the BMF and along Highway 99 between Awbrey Lane and Meadowview Road. The Biocycle Farm will provide MWMC with a land application site for beneficial recycling of biosolids. It is scheduled to be constructed in three phases and completed by 2008. Phase I will involve planting 160 acres of poplar trees and is scheduled to be operational by Summer 2004. Stabilized dewatered sludge from the BMF lagoons will be applied to the Biocycle Farm to provide the necessary nutrients for the poplar trees. This is anticipated to be the preferred method of biosolids reuse over the current practice of hauling to cooperative farms. Additionally, the Biocycle Farm will provide the flexibility to pump stabilized liquid sludge directly from the BMF lagoons to the Biocycle Farm for land application of liquid biosolids.

Ultimately, the three phases of the Biocycle Farm will occupy 595 acres, of which 400 acres will grow poplar trees.

9.1.2 Analysis of Alternatives

Descriptions of modifications associated the three system alternatives, along with a more detailed analysis of the potential impacts associated with each alternative, is provided sections 9.3, 9.4, and 9.5. The alternatives analysis presented below focuses on potential impacts associated with construction and operational activities that have not been analyzed under an existing or previous facilities plan or other environmental review conducted by MWMC. For this reason, an analysis of potential impacts associated with the Biocycle Farm is not included in this Environmental Report.

The Facilities Plan also includes descriptions and recommendations on selected components of the MWMC system that either specify no change in the physical layout or operational procedures at these facilities, or the impact associated with the component is already incorporated in the environmental impact analysis for the project alternatives described below. For this reason, an impacts analysis for proposed modifications at the BMF are not included in this Environmental Report.

Finally, the Facilities Plan recommends that MWMC's SIWF be put into service for biosolids and effluent reuse. It is anticipated that this activity would result in a net environmental benefit to the Eugene-Springfield metropolitan area. These benefits could be substantially similar to the potential benefits associated with the use of the Biocycle Farm. However, because of the scale of the potential operation—the SIWF facility includes a 290-acre site with a total farmable area of approximately 215 acres and a 14-acre, 57-MG treatment pond—a more detailed analysis of the environmental issues associated with this site is beyond the scope of this Environmental Report. It is assumed that further review of the environmental characteristics of this site along with an assessment of environmental affects associated with biosolids and effluent reuse will be performed at a later date pending MWMC's decision on the future of the facility.

9.2 Purpose and Need

The MWMC Facility Plan proposes a preferred alternative for expanding and upgrading its facilities to meet the future growth needs and regulatory requirements for water quality in the MWMC service area. By providing additional capacity when needed, the expanded and upgraded MWMC facilities would help to preserve water quality in the Eugene-Springfield area and protect public health and safety for future generations. In addition, upgraded facilities will allow MWMC to meet applicable state and federal regulations and satisfy service contracts with the cities of Eugene and Springfield.

The purpose and need for this section is to identify the potential environmental effects associated with development of MWMC's preferred alternative (System Alternative 5), System Alternative 4, and System Alternative 1. The existing MWMC treatment system is running out of capacity. It is anticipated that sufficient dry weather treatment capacity exists to meet short-term growth through 2005; however, peak wet weather flows currently constrain the life span of the plant's design capacity. In addition, new regulatory

requirements, changes in regulatory policy, and new treatment technologies drive the need for upgrades and expansion of the existing MWMC treatment facilities.

9.3 System Alternative 1—No Action

9.3.1 Affected Environment

Although the entire Eugene-Springfield area could be indirectly impacted by the implementation of System Alternative 1, the area of greatest impact would likely occur in the vicinity of the present location of the WPCF, as well as areas in the Willamette River downstream from the WPCF outfall.

In System Alternative 1, implementation of MWMC's preferred alternative (System Alternative 5) and the agency's next best alternative (System Alternative 4) would not occur. MWMC facilities would remain in their current operating configuration and the footprint of the facilities would remain unchanged. Upgrades and replacement of facilities and equipment that take place because of normal maintenance would continue to occur. Changes to equipment and operating procedures during normal maintenance would not constitute a major expansion or overhaul to the MWMC facilities. However, technological advances associated with these modifications could result in greater efficiencies and higher flow capacity.

9.3.2 Water Quality

System Alternative 1 would result in significant potential impacts to water quality in the Willamette River and other local waterways. Impacts from the No Action Alternative would be greater than impacts from System Alternatives 5 and 4.

If MWMC facilities are not upgraded or expanded, flows from all parts of the MWMC service area would continue to increase in conjunction with population growth and increasing industrial expansion in the Eugene-Springfield area. These flows would continue to go to the existing facilities, and the increasing volume would ultimately exceed the capacity of the treatment plant and conveyance system to treat the wastewater. There would be a strong likelihood that wastewater would overflow into the local environment whenever volumes exceeded the capacity of the treatment plant and conveyance system, thereby greatly increasing the risk of environmental health hazards and the potential for degrading the water quality in the Willamette River and other waterways. This situation would put MWMC out of compliance with its NPDES permit and violate the Clean Water Act and possibly other laws.

Although No Action would provide no new capacity for existing facilities to treat flows from the service area, other MWMC programs and projects could be implemented under System Alternative 1. This could include continuation of programs to control the amount of I/I (groundwater and stormwater) that enters the conveyance pipelines through cracked pipes, leaky joints, manhole covers, and illegal connections such as storm and roof drains. MWMC and a CAC (Citizen's Advisory Committee) studied several methods of managing wet weather flows within the Wet Weather Flow Management Plan (WWFMP) (CH2M HILL, 2000). The recommended cost-effective solution by the CAC and governing bodies is to implement a "convey and treat" solution that includes pipe rehabilitation of the collection

system and WPCF wet weather treatment improvements. The WWFMP study determined that collection system rehabilitation programs alone could not cost-effectively reduce WPCF influent flows to the point that additional treatment capacity would not be required. If the WPCF is not improved for wet weather, MWMC facilities would still experience capacity issues and be at risk of sanitary sewer overflows.

Other, more dramatic actions could include enacting new regulations that would restrict water use in the metropolitan area, or implementation of zoning changes and building moratoriums throughout the MWMC service area. To protect public and environmental health, these restrictions would need to be in place to constrain population and industrial growth in the area, thus slowing the increase in wastewater flow to the treatment facilities. While these programs would help to maintain the wastewater system and provide additional environmental protection over the short-term, they would not eliminate the eventual need to construct additional conveyance and treatment capacity for predicted long-term increases in wastewater flows in the MWMC service area.

An additional option could include construction of new treatment facilities in an undisclosed location in the Eugene-Springfield metropolitan area. However, the construction of additional treatment capacity would require sizable funding, site acquisition, design, permitting, and construction. These activities would require time to complete and during this period MWMC facilities would be at maximum capacity and at risk of overflow and violation of NPDES permit conditions.

9.3.3 Biological Resources

System Alternative 1 would result in impacts to biological resources in the Willamette River. Impacts from the No Project Alternative would be greater than impacts from System Alternatives 5 and 4.

As noted above, System Alternative 1 would increase the potential for the discharge of untreated wastewater into the Willamette River and other area waterways. This, in turn, would impact water quality and would likely result in significant degradation of the biological resources in the river downstream of the WPCF outfall. The discharge of untreated wastewater would also likely result in increased potential to harm public health.

9.3.4 Air Quality, Odor, and Noise

System Alternative 1 would result in impacts to air quality, odor, and noise. Impacts from System Alternative 1 would be greater than impacts from System Alternatives 5 and 4.

As the current MWMC facilities reach their capacity, increased flows during wet and dry weather conditions will result in increased releases of fugitive odors. In general, the proposed changes under System Alternatives 5 and 4 will improve odor control by capturing more fugitive odors and using odor-reducing technologies. These changes in odor control technology will greatly improve odor control in comparison to current and future operating conditions under System Alternative 1.

With System Alternative 1, noise and air quality could also be impacted if the flow through the facilities approaches full capacity. Increased facility loading could mean changes in

operation hours and increased noise and emissions and potential violations of air quality permit conditions.

9.3.5 Energy Management and Consumption

System Alternative 1 would result in impacts to energy consumption. Impacts from System Alternative 1 would be less than impacts from System Alternatives 5 and 4. However, it is anticipated that energy consumption at MWMC facilities will still increase under System Alternative 1.

Energy consumption is tied to volume of treated material processed throughout the MWMC system. Flows and loadings processed through the facility are, in turn, driven by various factors including population and industrial growth, seasonal precipitation, and equipment efficiencies. As noted above, replacement of equipment during normal maintenance procedures would likely incorporate new technology. The corresponding equipment efficiencies would reduce energy demand. However, even with increased equipment efficiencies, anticipated increases in flows and loadings would likely result in energy demands that exceed current levels.

9.3.6 Floodplains and Soils

System Alternative 1 will have no anticipated impact on the floodplain because no changes will be made that affect flow in the river channel. Construction activities would not occur and there would be no disturbance of surface soils at MWMC facilities.

9.3.7 Land Use and Zoning

System Alternative 1 would avoid land use and zoning impacts. Because the MWMC facilities would remain in their current configuration, potential impacts related to land use compatibility would not occur.

System Alternative 1 could result in secondary (indirect) land use and zoning impacts. To reduce wastewater flows, the cities of Eugene and Springfield could consider zoning changes and building moratoriums as a method to constrain population and industrial growth in the metropolitan area. Under this scenario, impacts associated with land use and zoning could be greater than System Alternatives 5 and 4. In addition, violations of permit requirements tied to growth in flow and loadings to the treatment facilities could result in enforcement actions by the State, including moratoriums on future development and hookups to the sanitary collection system until the problems are resolved.

9.3.8 Transportation

System Alternative 1 would avoid impacts to transportation/circulation in the vicinity of MWMC facilities. This alternative would not contribute to short-term construction-related impacts resulting from additional truck and construction vehicle traffic. This alternative also would not result in vehicular increases on the surrounding street system. Impacts associated with transportation/circulation would be less than impacts associated with System Alternatives 5 and 4.

9.3.9 Cultural Resources

System Alternative 1 will have no anticipated impact on cultural resources. Construction activities would not occur at MWMC facilities and there would be no potential to disturb culturally significant resources.

9.3.10 Socioeconomics

System Alternative 1 could result in negative impacts to the economic growth in the Eugene-Springfield metropolitan area.

Expansion and upgrades to MWMC facilities would result in an increase in temporary construction and construction-related employment in the Eugene-Springfield metropolitan area. In addition, it is anticipated that the local market would benefit from the sale of construction materials, thus increasing the level of economic activity during construction periods. Construction activities would not occur under the no action alternative and this alternative would not provide the same level of economic benefits to the local economy as System Alternatives 5 and 4.

As the current MWMC facilities reach their capacity, the increasing volume would ultimately exceed the capacity of the treatment plant and conveyance system to treat the wastewater. There would be a strong likelihood that wastewater would overflow into the local environment. As noted in sections 9.3.2 and 9.3.3, these wastewater overflows could seriously degrade water quality and biological resources in the Willamette River downstream from the WPCF outfall, and in other local waterways. Impacts to water quality and biological resources could, in turn, have a negative impact on property values, recreational resources, and human health downstream from the outfall. These impacts could negatively affect economic activity in the area by lowering property values, reducing recreational opportunities, and increasing the potential for proliferation of water-borne illnesses in the area.

As noted in section 9.3.4, increased flows and loadings during wet and dry weather conditions will result in increased releases of fugitive odors. Increased fugitive odors could, in turn, affect property values and have a potential negative impact on human health in the vicinity of the MWMC facilities.

9.4 System Alternative 5 – MWMC Preferred Alternative: Parallel Primary/Secondary Treatment

9.4.1 Affected Environment

Upgrading the WPCF could result in two types of impacts: temporary, construction-related impacts, and environmental impacts not related to construction processes.

Similar to System Alternative 1, the affected environment associated with System Alternative 5 includes areas where both direct and indirect impacts could occur, such as in the vicinity of the present location of the WPCF and areas in the Willamette River downstream from the WPCF outfall (direct impacts), and the entire Eugene-Springfield area (indirect impacts).

To provide a basis for comparison to System Alternative 1 and System Alternative 4, the features that would be added to the WPCF and the wastewater treatment process are described below. An analysis of the types of potential environmental impacts under MWMC's preferred alternative are presented in sections 9.4.2 through 9.4.10.

Water Pollution Control Facility

Under the parallel primary/secondary treatment alternative (PP/ST), the peak wet weather flow capacity of the WPCF would increase from approximately 160 mgd to 300 mgd. All wastewater entering the plant would receive preliminary treatment (grit removal, etc.). Additionally, a new tertiary treatment system would be added with capacity to treat 30 mgd of secondary-treated wastewater. Under this alternative, wastewater treatment would vary depending on plant influent flows, as follows.

- **0-137 mgd:** Total influent flows to the plant of 0-137 mgd would undergo the same series of treatment processes currently used to treat plant flows: preliminary screening followed by primary treatment, secondary treatment, and disinfection prior to discharge.
- **137-160 mgd:** With plant influent flows of 137-160 mgd, preliminary-treated wastewater (0-23 mgd) would bypass primary treatment and go directly to secondary treatment.
- **160-300 mgd:** When plant influent flows totaled 160-300 mgd, 23 mgd would bypass primary treatment and go directly to secondary treatment, as described above. The rest of the flow above 160 mgd (0-140 mgd) would undergo primary treatment and bypass secondary treatment, heading to high-rate disinfection.

Table 9.4.1-1 describes how the influent would be routed under this project alternative.

TABLE 9.4.1-1
Parallel Primary and Secondary Treatment Flow Strategy
MWMC Facility Plan, Eugene-Springfield

Plant Influent Flow (mgd)	Total Flow Through Secondary Treatment	Preliminary Treated Effluent to Secondary Treatment	Primary Treated Effluent to Secondary Treatment	Primary Treated Effluent Diverted Around Secondary Treatment
0-137	0 increasing to 137	0	0 increasing to 137	0
137-160	137 increasing to 160	0 increasing to 23	137	0
160-297	160	23 increasing to 160	137 decreasing to 0	0 increasing to 137
297-300	160	160	0	137 increasing to 140

The diverted primary effluent and secondary treated effluent would be disinfected in separate flow streams and blended together prior to being discharged into the Willamette River.

Implementing PP/ST at the WPCF would involve constructing the following features (Figure 9.4.1-1):

- Pretreatment expansion

- Primary diversion pump station
- Secondary diversion pump station
- Clarifier upgrades: primary clarifier baffles, primary clarifier blending structure, secondary clarifier baffles
- Two new secondary clarifiers
- New high-rate disinfection basin
- New effluent blending and outfall structure
- New tertiary filtration system
- New bank outfall
- New bioscrubbers for odor control
- New reuse disinfection facility
- New digester
- WAS thickening building expansion

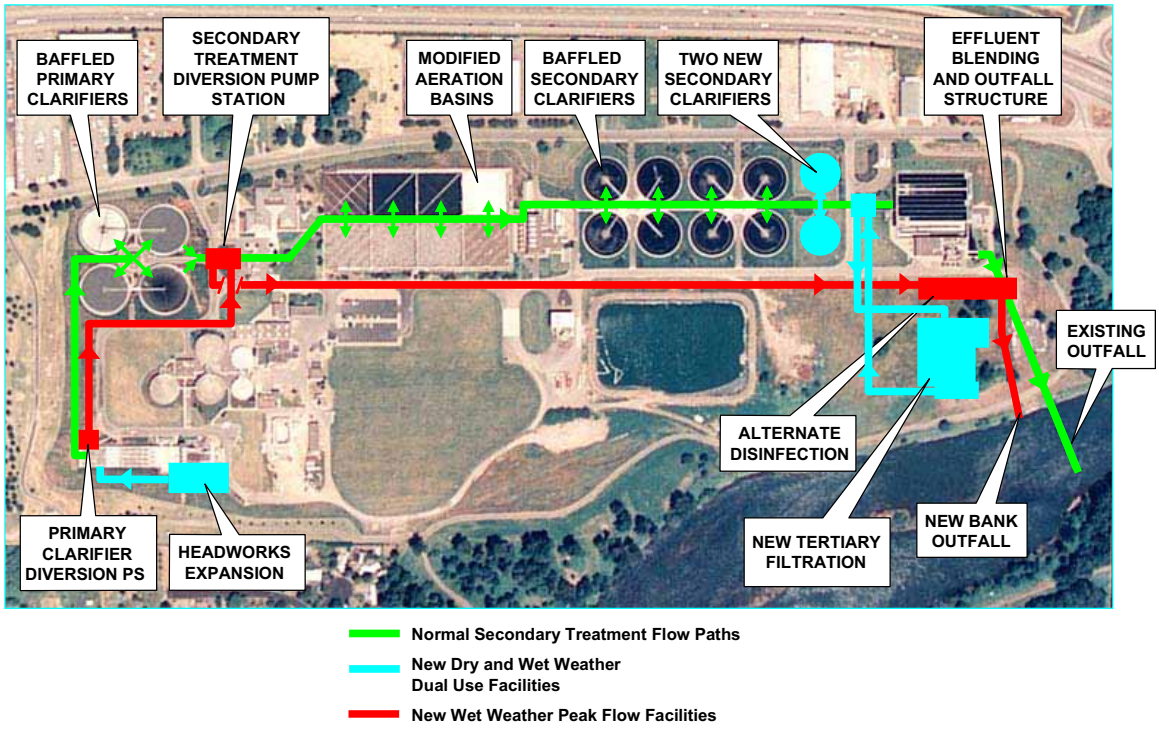

FIGURE 9.4.1-1
Proposed Layout for System Alternative 1 - Parallel Primary and Secondary Treatment
MWMC Facility Plan, Eugene-Springfield

9.4.2 Water Quality

Compared to System Alternative 1, System Alternative 5 could result in potential negative impacts to water quality in the Willamette River. These potential impacts would be temporary and would be related to project construction activities. However, compared to System Alternative 1, the implementation of System Alternative 5 during the operational

period could improve water quality in effluent discharge, thus reducing the potential for adverse affects to wildlife, fish, and habitat in the river.

Construction Period

Construction impacts would be temporary and would be primarily related to the installation of a third (bank) outfall on the Willamette River. Excavation and construction activities at the outfall site could increase the potential for erosion and the discharge of sediment into the river. Accidental spills of petroleum product and hazardous material and releases of debris and other materials used for site construction activities could also occur during the construction period but sound practices would reduce/eliminate river impacts.

Operational Period

Compared to System Alternative 1, implementation of System Alternative 5 would likely result in a net beneficial impact to water quality in the Willamette River. The quality of effluent discharged to the Willamette River, and thus water quality in the Willamette River, would be higher under System Alternative 5 than under System Alternative 1. Implementation of System Alternative 5 would reduce the potential for untreated sewage discharges to the river during peak flow periods. Additionally, under System Alternative 5, water discharged from the WPCF would meet NPDES requirements for TSS and $CBOD_5$. Table 9.4.2-1 compares NPDES permit limits for TSS and $CBOD_5$ with predicted discharges in treated effluent under System Alternative 5.

TABLE 9.4.2-1.
Comparison of WPCF NPDES Permit Conditions with Predicted Conditions
Under System Alternative 5 (Parallel Primary/Secondary Treatment)
MWMC Facility Plan, Eugene-Springfield

Parameter	Permit Limit/ Removal Requirements	Predicted Discharge/Removal Efficiency
Maximum Week TSS	28,000 lb/day	20,550 lb/day
Maximum Week $CBOD_5$	24,000 lb/day	14,160 lb/day
Maximum Month TSS Removal	85 percent	87.6 percent
Maximum Month $CBOD_5$ Removal	85 percent	86.5 percent

Mitigation

Construction best management practices (BMPs), including spill prevention, control, and countermeasures (SPCC) planning and sediment and erosion control practices, will be implemented to minimize and avoid erosion and the discharge of sediment, petroleum products, hazardous materials, and construction debris from the project site.

9.4.3 Biological Resources

Wetland and riparian areas are the primary habitat types of concern in the vicinity of the WPCF. Compared to System Alternative 1, System Alternative 5 could result in temporary,

construction-related impacts to biological resources and permanent habitat alteration in the vicinity of the WPCF outfall. However, no direct wildlife mortality is anticipated from implementing WPCF upgrades.

Construction Period

Temporary (Construction-Related) Impacts

Wetland habitat in the vicinity of the WPCF is found along the Willamette River (see Figure 2.2.7-3). Wetlands in the Eugene area support a variety of wildlife and plant species, including at least eight species designated as Endangered, Threatened, Sensitive, or Species of Concern (see Table 2.2.7-2). Riparian habitat along the Willamette River also supports a variety of mammals, birds, reptiles, amphibians, and plants.

Temporary disturbance of a limited area of riverbank is expected as a result of construction of a third outfall at the WPCF. Disturbance resulting from movement of construction equipment, excavation, and installation of the outfall would be limited to the direct area of construction activity. Sediment and erosion would be prevented by following construction BMPs and sediment and erosion control practices. In-stream or riverbank impacts to wildlife or habitat in the vicinity of the WPCF would be minimal.

Project construction activities at the WPCF will generate noise and dust. Most species potentially using habitat near the WPCF for feeding, roosting, breeding, and migration (e.g., birds such as bald eagles, great blue herons, red-winged blackbirds, and warblers, and mammals such as bats, raccoons, and fox) likely would avoid the area immediately surrounding the WPCF during periods of construction activity. Therefore, impacts on wildlife from noise and dust during construction would be minimal.

Operational Period

Biological Impacts

Compared to System Alternative 1, it is anticipated that System Alternative 5 would result in a net beneficial impact to biological resources in the vicinity of the WPCF. Relative to the no action alternative, Parallel Primary/Secondary Treatment would reduce the potential for discharge of untreated sewage into the Willamette River and ensure achievement of NPDES permit effluent limitations. Thus, the potential for adverse affects to wildlife, fish, and habitat resulting from reduced water quality would be lower under System Alternative 5.

Habitat Alteration

Habitat alteration in the vicinity of the WPCF could result from changes in water quality or habitat character, or from habitat loss. As noted in section 9.4.2, water discharged from the WPCF will meet NPDES permit requirements for TSS and $CBOD_5$, and water in the Willamette River will experience minimal project-related erosion and sedimentation. For these reasons, impacts to habitat or wildlife in the area as a result of impaired water quality are not anticipated.

- No permanent habitat loss or alteration is expected to result from System Alternative 5, with the exception of potential permanent streambank or wetland habitat losses associated with installation of the third outfall.

Mitigation

Wetland losses would be mitigated following U.S. Army Corps of Engineers (USACE) and Oregon Division of State Lands (DSL) guidance, and could involve direct or indirect mitigation. Direct mitigation includes options such as creating replacement wetlands on site or off site, or preserving existing wetlands in the project area. Indirect mitigation activities include purchasing "credits" from a wetland mitigation bank (credits are used to preserve the wetland area at which the bank is established), or conserving other wetland areas.

9.4.4 Air Quality, Odor, and Noise

Compared to System Alternative 1, System Alternative 5 will have a beneficial impact on odor. However, System Alternative 5 will result in temporary, negative impacts to air quality and noise during the construction period. Because of increased treatment capacity, air quality and noise impacts under System Alternative 5 are expected to remain essentially unchanged during the operational period from the impacts described under System Alternative 1.

In general, the proposed changes will improve odor control by capturing more fugitive odors and using odor-reducing technologies.

Construction Period

Odor. Odor emissions during construction are not anticipated to change. Construction work on expansion to the liquids processes will not affect the odor control processes.

Air Quality. Air quality impacts from engine and dust emissions would occur during the construction period. However, these emissions would be temporary and limited to hours when construction activities occur.

Noise. Noise impacts to nearby residential neighborhoods and commercial areas from construction traffic, engines, and construction activities would occur during the construction period. However, these impacts would be temporary and limited to hours when construction activities occur.

Operational Period

Odor. The proposed changes to the WPCF will increase the capacity of the wet weather treatment processes. Changes to wet weather processes will have minimal impacts on odor because odor emissions are largely driven by dry weather conditions such as low flows and high temperatures. However, modifications to the system will improve odor control during dry weather conditions.

Proposed changes involve increasing the odor control by covering existing and new process areas. Proposed odor control technologies will also improve the efficiency of the odor control system. Using bio-scrubbers will greatly improve odor control because of the increased odor reduction and the increase in mixing/dilution capacity of the bio-scrubber tower.

9.4.5 Energy Management and Consumption

Information regarding energy management and consumption is unavailable at this time; however, it is assumed that System Alternative 5 will use more energy than is currently consumed by the WPCF. It is also assumed that energy consumption under System Alternative 5 would be greater than energy use under System Alternative 1.

It is anticipated that the amount of energy consumed by expanded facilities would be proportional to the amount of energy used by the current facility. Although data are unavailable at this time, the upgrades and expansions proposed in the Facilities Plan would double the size of the current facility. Therefore, it is assumed that a maximum capacity energy use would increase relative to the amount that the facility is currently using.

9.4.6 Floodplains and Soils

With the exception of soils disturbed during project construction activities, impacts to floodplains and soils are not anticipated. Construction of project outfalls would not impede flow in the Willamette River or affect the floodplain in the project area.

9.4.7 Land Use and Zoning

Construction Period

Project construction and operations will not impact land use and zoning in the immediate vicinity of the WPCF. Construction of either system alternative would likely require staging areas, an excess materials storage area, or similar temporary land uses associated with a major municipal or industrial-style construction project. It is anticipated that such uses during the construction period and planned expansions and upgrades at the WPCF will not require additional land beyond the current perimeter of the facility boundary and thus would not affect overall land use or supply in the project area.

Operational Period

On a regional basis, planned expansions and upgrades at the WPCF will increase MWMC's wastewater treatment capacity. This increased capacity would indirectly affect long-term land use and zoning activities by providing land use planners with additional flexibility to incorporate projected residential, commercial, and industrial growth in the Eugene-Springfield metropolitan area.

9.4.8 Transportation

Impacts to the transportation system could include temporary traffic delays in the project area. Impacts would be primarily caused by the delivery of construction-related equipment and materials. Peak hours for workforce transport (commuting) during project construction periods could also contribute to temporary traffic delays. Although unlikely, it is conceivable that construction activities may result in some visible damage to the roadway surface on River Avenue that is scheduled for street replacement in the summer of 2005.

Impacts to the transportation system are not expected to occur after project completion. It is assumed that once construction is complete, the WPCF could require additional employees and materials for project operations. However, employment and supply needs would be

small, and in relation to daily traffic loads in the area, impacts to the local transportation corridor from these activities would be substantially similar to conditions that occur under current operations.

Affected Environment

The site is bordered to the east by the Willamette River, to the south and west by the River Road residential neighborhood, and to the north by River Avenue. Commercial property and Beltline Highway are located to the north of River Avenue.

Major roads in the immediate vicinity of the WPCF include Beltline Highway to the north and River Road to the west. Major roads and highways leading to Beltline Highway include Delta Highway and Interstate 5 (I-5) to the east, River Road, Northwest Expressway and Highway 99 to the west, and West 11th Avenue (State Highway 126) to the south.

Most of the traffic volume in the immediate vicinity of the WPCF is handled by Beltline Highway. Other roads in the immediate area of the facility that carry significant traffic volume include Delta Highway and River Road.

Transportation Corridors

The property is accessed via River Avenue. Beltline Highway will be the primary roadway to and from the project site. Most construction traffic is expected to enter and leave the site via the Beltline/River Avenue on and off ramps. Construction traffic could also enter the site via the Beltline/River Road/River Avenue interchange. Construction traffic traveling along Beltline Highway from the east will likely originate from Delta Highway and I-5. Construction traffic traveling along Beltline Highway from the west will likely originate from Highway 99 and State Highway 126.

It is anticipated that the majority of the construction traffic will originate from the Eugene-Springfield area, reaching the project site via the Beltline Highway. It is expected that the majority of the construction workers required to build the project would likely access the site from within a 75-mile radius.

Impacts from Construction Activities

Construction activities could result in temporary traffic delays on River Avenue, River Road, and Beltline Highway. These impacts would most likely occur during peak traffic periods. As mentioned above, it is conceivable that construction activities may result in some visible damage to the existing roadway surface on River Avenue that is scheduled for replacement in Spring/Summer 2005. However, the delivery of construction materials and equipment is not expected to significantly degrade existing conditions.

Impacts from vehicle parking are not expected to occur. Workers traveling to the project site will most likely park their vehicles at the WPCF. It is assumed that the WPCF site is large enough to accommodate a worker parking area as well as a materials and equipment staging area.

Construction Activities

Construction activities at the WPCF will occur during phased operations through the year 2025. Construction-related traffic increases will consist of workforce transport and deliveries of project equipment and construction materials (such as concrete and steel) by truck.

Workforce transport is anticipated to occur between 7:00 a.m. and 5:30 p.m. and truck deliveries are anticipated to occur between 8:00 a.m. and 4:30 p.m. on weekdays. It is anticipated that truck deliveries will include:

- Major equipment (components of the WPCF)
- Gravel, concrete, and reinforcing steel
- Mechanical equipment
- Electrical equipment and material
- Miscellaneous steel, roofing, and siding
- Construction consumables
- Contractor mobilization and demobilization
- Construction equipment delivery and pickup

It is premature to provide accurate schedules for construction periods and peak hour traffic times, as well as the size of the onsite peak workforce and estimates of the types and number of vehicles and round trips needed during project construction. However, it is reasonable to assume that construction period, delivery vehicles (e.g., gravel, concrete, steel trucks, materials/equipment) will make multiple round trips and deliver construction materials to the site on a frequent basis. It is assumed that one round trip will be required for heavy equipment that will be needed at the site during the various project construction phases. Heavy equipment will remain at the site for the duration of the construction phase.

Table 9.4.8-1 is a general list of the types of vehicles and equipment to be used at the project site during construction periods, their approximate gross vehicular weights (GVWs), and capacities and the nature of trips planned for the vehicles and equipment.

TABLE 9.4.8-1
Specifications of Vehicles and Equipment Used During Typical Project Construction Activities
MWMC Facility Plan, Eugene-Springfield

Vehicle/ Equipment	Use/Location	Approximate GVW (pounds)	Capacity	Nature of Trips
Gravel trucks with trailer	Haul road fill material	80,000	22 yards gravel	Ongoing during construction
Concrete trucks	Concrete delivery	80,000	8 yards concrete	Ongoing during construction
Water trucks	Compaction; erosion and dust control	60,000-80,000	5,000 gallons water	Ongoing during construction
Flatbed trucks	Miscellaneous equipment	--	Variable	Ongoing during construction
Pickup trucks	General use and minor equipment hauling	5,000	Passengers and small equipment	Ongoing during construction
Bulldozers	Leveling/ earth moving	D8: 100,000 D9: 400,000	N/A	Brought once to site; at site for duration of construction
Cranes	Bioscrubber, etc. construction	80,000	N/A	Brought once to site; at site for duration of construction

TABLE 9.4.8-1
Specifications of Vehicles and Equipment Used During Typical Project Construction Activities
MWMC Facility Plan, Eugene-Springfield

Vehicle/ Equipment	Use/Location	Approximate GVW (pounds)	Capacity	Nature of Trips
Backhoe	Digging trenches	--	N/A	Brought once to site; at site for duration of construction
Hydraulic forklifts	Loading and unloading equipment	80,000 +	N/A	Brought once to site; at site for duration of construction

Note: Materials will be transported to the site on a schedule that will be determined at a later date based on construction contracts and project needs.

As the primary access route to the site, Beltline Highway and River Avenue will likely experience the greatest traffic impacts from construction vehicles and workforce transport. As previously noted, most construction traffic is expected to enter and leave the site via the Beltline/River Avenue on and off ramps. Construction traffic could also enter the site via the Beltline/River Road/River Avenue interchange. Therefore, the Beltline/River Road/River Avenue area could also experience traffic impacts from the construction vehicles and workforce transport.

As noted above, trucks will be used to deliver construction equipment and materials. Some of these trucks will have a GVW of the legal load limit of 80,000 pounds. Heavy equipment will be transported to the project site using a semi-truck and lowboy transporter designed for heavy loads (i.e., multiple axles). The largest vehicles would likely be D8 and D9 bulldozers weighing approximately 100,000 and 400,000 pounds, respectively. These vehicles exceed the legal load limit and would require a permit.

Cranes would be required to install new equipment at the WPCF. Cranes would be within the legal load limit of 80,000 GVW. They would be brought in on six axles with rubber tires and would drive on the highway. Movement of the heavy equipment transporters will have a short-term impact on traffic along the Beltline Highway and other roadways used along the transporter route.

Construction Accidents

Although the additional vehicular and construction traffic attributable to the project could increase the risk of accidents, it is anticipated that the overall accident rate or pattern would be similar to existing conditions.

Mitigation

Traffic control would be written into contract specifications, which would address traffic safety. Flaggers would be used for equipment transporter access and turn-around on an as-needed basis.

9.4.9 Cultural Resources

According to the Eugene Cultural Resource Inventory Program (Eugene Planning and Development Department, 2003), the River Road area in Eugene has not been surveyed for

historical resources. However, the MWMC project site is highly disturbed from previous construction activities and it is unlikely that cultural resources exist at the project site. Additionally, proposed upgrades under System Alternative 5 would not expand the footprint of the facility; therefore, impacts to cultural resources from project activities are not anticipated.

9.4.10 Socioeconomics

Construction Period

Socioeconomic impacts during periods of project construction include changes in travel patterns and accessibility that affect nearby residential and commercial neighborhoods, impacts on highway and overall public safety, and noise and emissions impacts that affect property values and quality of life in the area. Socioeconomic impacts during construction phases also include indirect impacts such as construction-related employment and materials sales.

Compared to System Alternative 1, project construction associated with System Alternative 5 could result in potential negative impacts to quality of life in nearby residential and commercial neighborhoods. These impacts would result from increased dust, air pollution, and noise from truck and equipment traffic and site construction activities. Increased truck traffic may also have limited impacts on accessibility and public safety along access and egress corridors to the project site. However, the impacts noted above would be temporary and limited to the construction period and the time of day when construction activities occur.

Construction for expansion and upgrades to MWMC facilities would result in beneficial indirect impacts such as an increase in temporary construction and construction-related employment in the Eugene-Springfield metropolitan area. Furthermore, it is anticipated that the local market would benefit from the sales of construction materials, thus increasing the level of economic activity during construction periods.

Operational Period

Socioeconomic impacts during the operational period primarily consist of impacts to quality of life in residential neighborhoods and commercial areas related to changes in water quality and biological resources (primarily in the Willamette River); and odor, air emissions, and noise in the area.

Compared to System Alternative 1, operation of the upgraded facilities under System Alternative 5 will have a direct net beneficial impact to the quality of life in nearby residential neighborhoods, and will benefit recreational resources in the Willamette River. Indirect impacts could include the preservation or enhancement of property values in the adjacent area. These impacts would occur by reducing the potential for discharge of fugitive odor emissions, and of untreated wastewater into the Willamette River.

9.5 System Alternative 4 – High-Rate Clarification

9.5.1 Affected Environment

As with System Alternative 1 and Alternative 5, the affected environment associated with Alternative 4 includes areas where direct and indirect impacts could occur. Similar to the other alternatives, impacts could occur in the vicinity of the WPCF and along the Willamette River downstream from the WPCF outfall. The larger Eugene-Springfield area could experience indirect effects, such as noise or air quality impacts.

The features that would be added to the WPCF under Alternative 4, and the wastewater treatment process under this alternative, are described below. Potential environmental impacts under this alternative are discussed in sections 9.5.2 through 9.5.10.

Water Pollution Control Facility

Under the High-Rate Clarification (HRC) alternative (System Alternative 4), as with the Parallel Primary/Secondary Treatment alternative (System Alternative 5), the peak wet weather flow capacity of the WPCF would increase from approximately 160 mgd to 300 mgd. Following preliminary treatment, influent to the plant in excess of 160 mgd (up to 140 mgd) would be diverted around the existing primary clarifiers to a new HRC facility. Primary-treated wastewater from the HRC will be blended with secondary-treated wastewater that has passed through the existing primary and secondary treatment stages, before discharge to the Willamette River. Additionally, as with System Alternative 5, a new tertiary filtration system would be built to treat 30 mgd of plant effluent prior to disinfection.

The influent flow-dependent treatment steps for wastewater entering the WPCF are described below for Alternative 4.

- **0-160 mgd:** Total influent flows to the plant of 0-160 mgd would undergo preliminary screening, primary treatment, secondary treatment (with two new secondary clarifiers; 10 total), and disinfection prior to discharge.
- **160-300:** With plant influent flows of 160-300 mgd, preliminary-treated wastewater (0-140 mgd) would bypass the existing primary treatment system and be treated in a new, HRC facility.

Implementing System Alternative 4 at the WPCF would involve constructing the following features (Figure 9.5.1-1):

- Pretreatment expansion
- Clarifier upgrades: primary clarifier baffles, primary clarifier blending structure, secondary clarifier baffles
- Two new secondary clarifiers
- Bypass pump station high rate clarifier
- High rate clarifier (HRC) facility
- New high-rate disinfection basin
- New effluent blending and outfall structure
- New bioscrubbers for odor control
- New tertiary filtration system

- New bank outfall
- New reuse disinfection facility
- New digester
- WAS thickening building expansion

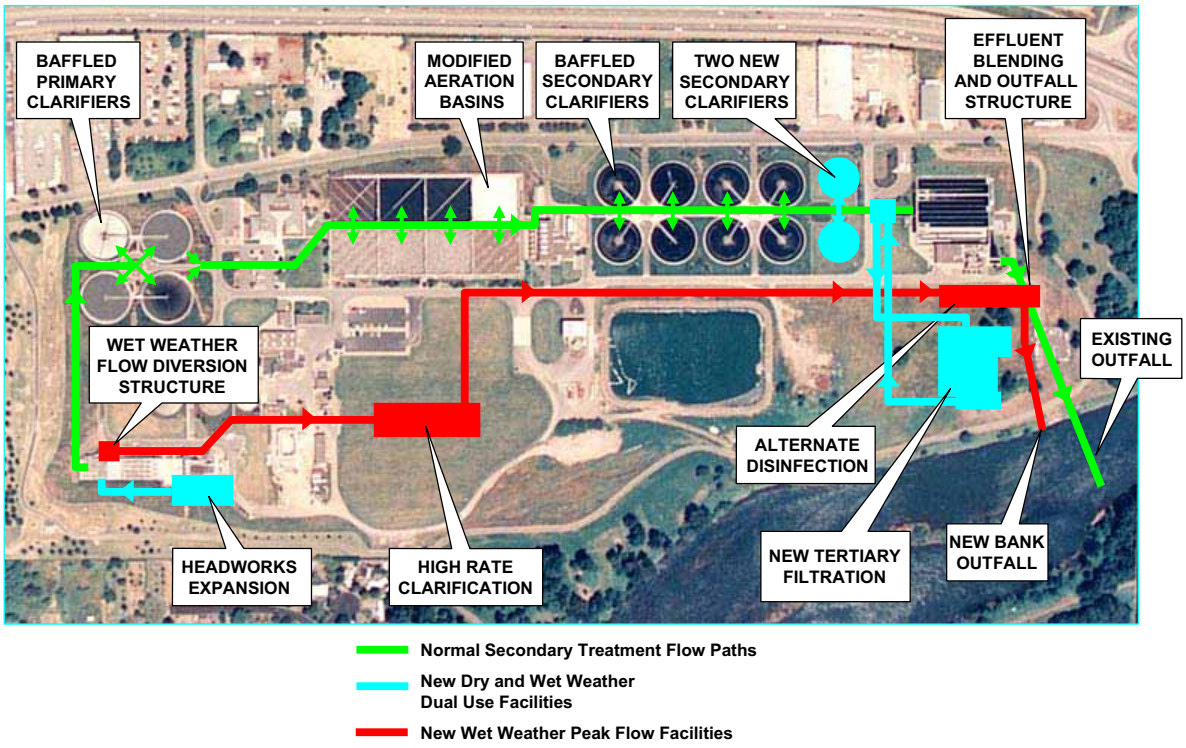

FIGURE 9.5.1-1
Proposed Layout for System Alternative 2 – High-Rate Clarification
MWMC Facility Plan, Eugene-Springfield

9.5.2 Water Quality

Impacts under System Alternative 4 would be substantially similar to water quality impacts under System Alternative 5; that is, the quality of treated effluent discharged to the Willamette River would be higher than under System Alternative 1.

Similar to System Alternative 5, effluent discharge under System Alternative 4 would meet NPDES requirements for TSS and $CBOD_5$. However, compared to Alternative 5, the High-Rate Clarification alternative would slightly improve TSS and $CBOD_5$ removal (Table 9.5.2-1).

TABLE 9.5.2 -1.
Comparison of WPCF NPDES Permit Conditions with Predicted Conditions Under System Alternative 4 (High Rate Clarification)
MWMC Facility Plan, Eugene-Springfield

Parameter	Permit Limit/Removal Requirements	Predicted Discharge/ Removal Efficiency
Maximum Week TSS	28,000 lb/day	18,820 lb/day
Maximum Week $CBOD_5$	24,000 lb/day	13,908 lb/day
Maximum Month TSS Removal	85 percent	88.0 percent
Maximum Month $CBOD_5$ Removal	85 percent	86.5 percent

Mitigation planning would be the same as that in System Alternative 5. Sediment and erosion control BMPs and SPCC planning would be implemented during construction activities. These practices would eliminate, reduce, or avoid the potential for discharge of sediment, petroleum products, hazardous materials and debris to the Willamette River during the construction period.

9.5.3 Biological Resources

Potential impacts to biological resources in the vicinity of the WPCF under the High- Rate Clarification alternative would be limited and essentially identical to those under the Parallel Primary/Secondary Treatment alternative (see section 9.4.3). Temporary, construction-related impacts on wildlife and habitat (e.g., from noise and dust generation) would be minimal, because animals likely would avoid areas near construction activity. Temporary riverbank disturbance from construction of the third outfall would be limited to the immediate construction area and would be minimized through implementation of construction BMPs and sedimentation and erosion control measures. Potential permanent wetland losses resulting from installation of the third outfall would be mitigated through direct measures (e.g., creation of replacement wetlands) or indirect measures (e.g., purchase of credits from a mitigation bank). No direct wildlife mortality or other permanent habitat alterations or losses are expected under System Alternative 4.

9.5.4 Air Quality, Odor, and Noise

Impacts to air quality, odor, and noise under System Alternative 4 will be similar to impacts under System Alternative 5 (see section 9.4.4.).

9.5.5 Energy Management and Consumption

Similar to System Alternative 5 (see section 9.4.5), it is assumed that the WPCF would consume more energy under System Alternative 4 than is currently consumed, as well as more energy than would be consumed under System Alternative 1. As described for System Alternative 5, the proposed upgrades would roughly double the capacity of the facility; therefore, it could be assumed that under System Alternative 4 energy consumption would increase relative to the amount of energy currently used.

9.5.6 Floodplains and Soils

Similar to System Alternative 5 (see section 9.4.6), System Alternative 4 would not affect area floodplains and would result in soil disturbance only during project construction activities.

9.5.7 Land Use and Zoning

As with System Alternative 5 (see section 9.4.7) construction activities, System Alternative 4 would not require use of additional land beyond the current facility boundaries, and thus would not affect land use or zoning in the project area. Regionally, upgrades planned under System Alternative 4 (as with System Alternative 5) would increase the treatment capacity of the WPCF, and thus would facilitate residential, industrial, and commercial growth in the Eugene-Springfield metropolitan area.

9.5.8 Transportation

Transportation issues under System Alternative 4 would be similar to those under System Alternative 5 (see section 9.4.8).

9.5.9 Cultural Resources

As with System Alternative 5 (see section 9.4.9), the footprint of the WPCF would not expand under System Alternative 4. Therefore, although cultural resources have not been surveyed in the River Road area (Eugene Planning and Development Department, 2003), it is unlikely that project activities within the already-disturbed facility boundary would affect cultural resources.

9.5.10 Socioeconomics

Socioeconomic impacts under System Alternative 4 would be similar to those under System Alternative 5 (see section 9.4.10). Construction activities could result in increased traffic in the project area, and thus increases in noise, emissions, dust and traffic congestion on area roads. Conversely, project construction would be expected to benefit the local economy through job creation and materials sales.

9.6 Public Outreach

Building and maintaining public trust and credibility requires clear and consistent communications. Recent national research has demonstrated that the public is deeply concerned about health risks, environmental protection, and the affordability of services. MWMC recognizes that involving the public in decisions about service changes, public health, safety, environmental protection, and cost increases is essential to the success of its programs. In the past, MWMC has provided proactive public education and participation programs to enhance understanding of the environmental services being provided. CACs have aided the MWMC in establishing the foundational policies and strategies that continue to guide the management of biosolids and wet weather flows, which are the two key areas of increased facilities needed over the next 20 years. Regular and special meetings and workshops have been scheduled to brief MWMC Commissioners and the public on the status of evaluations and proposed alternatives that provide solutions to regional

wastewater needs. Table 9.6-1 summarizes the public meetings where the Facilities Plan development was discussed. In addition to public outreach programs, it will be essential to educate the public regarding the capital improvements and policies included in this Facilities Plan. A guidance document will be prepared to assist the MWMC in designing and implementing public information, education, and outreach programs that meet state and federal guidelines for major improvement projects.

TABLE 9.6-1
Public Meeting Summary
MWMC Facility Plan, Eugene-Springfield

Date	Discussion Topics
November 24,2003	Briefing to the Commissioners and the general public
January 8, 2004	20-year project list presented to commissioners, obtained direction on effluent reuse (thermal loading) and odor control issues
March 3, 2004	Briefing to the general public

The 2004 MWMC Facilities Plan and 20-Year Project List was adopted by the following agencies at public meetings noted in Table 9.6-2.

TABLE 9.6-2
Adoption of 2004 MWMC Facilities Plan and 20-Year Project List
MWMC Facility Plan, Eugene-Springfield

MWMC	May 6, 2004 (MWMC Resolution 04-04)
City of Springfield	May 17, 2004 (Springfield Resolution 04-19)
Lane County	June 23, 2004 (Lane County Order 04-6-23-2)
City of Eugene	June 28, 2004 (Eugene Resolution 4793)