Region 2050 Alternative Growth Scenarios Evaluation

Topic: Wastewater Facilities and Services

This summary evaluates the extent to which each scenario meets the Regional Goal and Objectives related to public facilities and services. Specifically, this evaluation assesses the relative impacts of the three scenarios on the capacity and cost to provide wastewater facilities and services.

Summary of Findings

Methodology

This assessment reflects the results of a quantitative and qualitative evaluation conducted by the Wastewater Evaluation Team, comprised of staff from the cities of Eugene and Springfield, Metropolitan Wastewater Management Commission, Lane County, and the Oregon Department of Environmental Quality. A survey was administered on November 4, 2004 (attached).

Factors for Evaluation:

- General feasibility, is it possible to implement?
- Capital value of system per dwelling unit verses per person
- Operation and Maintenance costs per dwelling unit
- Ownership and Administration of facilities

Variables:

- Environmental protection: Vulnerability due to soil and water conditions.
- Legislative: institutional arrangements, planning/operating/enforcement
- Economic: Cost per dwelling, equity, burden/safety net, and ability to payEngineering: Design, treatment, performance, adaptability, topography, distance, population density, capacity of existing municipal system.
- Administrative: Records, decision authority, staffing, flexibility, regulatory
- Social: group responsibility/bigger government, public support, user education
- Management: maintenance, repair, operation, ownership

General description and findings for types of disposal systems:

Options – Three growth scenarios have been considered. Sewage disposal could be achieved by:

- Individual onsite sewage disposal systems (decentralized onsite)
- Cluster – decentralized cluster systems
- Centralized municipal sewage treatment plant

Centralized system – cost of buried lateral from dwelling to collector pipe, buried collector pile, and interceptor (transmission) sewer. Manholes, lift stations, distance to treatment facility and capacity of the facility to accept increased flows. Distance between lots and distance to treatment plant are likely big factors. Facilities will involve river crossings and other environmentally regulated areas. Development to urban densities must proceed in an orderly progression rather than pockets in isolated locals.

Where distance between lots, and to treatment plant is great, or steep and hilly topography requires pump stations it may be more cost effective to use other types of disposal systems.

Cluster systems. These serve more than one dwelling. The dwellings are grouped by proximity, topography, suitability/severity of soil for onsite disposal, and vulnerability and depth to groundwater. Onsite septic tanks are used to separate the fats, oils and greases, as well as, the settleable solids, thus allowing for smaller diameter collection pipe. The water is discharged from the septic tank to collector mains that discharge to a cluster sewage disposal system. The system is designed in accordance to site conditions.

Individual on-site sewage treatment systems. Onsite systems treat and dispose of the effluent from each dwelling on its own parcel, thereby eliminating the need for centralized collection systems. Each site is first evaluated for its suitability for a septic system. A conventional system consists of a septic tank and drainfield. The septic tank decants the solids and allows anaerobic decomposition to occur. The effluent is then dispersed throughout the drainfield where it infiltrates into the soil; additional aerobic treatment occurs in the soil. More severe site conditions may require additional treatment (sand filter) before the drainfield, or pressurized distribution of the effluent within the drainfield.

Management of on-site sewage treatment systems

Installation of septic systems currently requires a detailed site evaluation, choice of a system that reflects the individual site conditions, and inspection of the system installation. Although time-of-sale inspections and tank pumping is a common requirement of lending institutions, there is no comprehensive management program to aid in the long term effectiveness of an on-site wastewater treatment strategy.

The US EPA has outlined five management models which progressively increase management controls as sensitivity of the environment (or system complexity) increases.

1) Homeowner Awareness – Homeowner owned and operated in areas of low environmental sensitivity. Maintenance reminders are sent to owners.

2) Maintenance Contracts – Because of more sensitive environments or complexity of systems contracts with qualified technicians are employed to ensure proper and timely maintenance.

3) Operating Permits – Sustained performance of system is critical. Renewable operating permits requires owner to demonstrate compliance with maintenance and performance conditions of permits. This type of permit currently exists in Oregon under the DEQ's Water Pollution Control Facility permit. It is required when design flows exceed 2500 gallons per day, or nonresidential waste strength.

4) "Responsible Management Entity Operation and Maintenance". Due to system complexity and/or sensitive environments a RME performs regular and reliable O&M, under an Operating Permit issued to the RME.

5) RME Ownership. The RME owns, operates and maintains the system. Property owner is removed from equation. Similar to municipal system. Provides greatest assurance of performance, in the most sensitive environments.

Assumptions

For all wastewater evaluations the following assumptions apply:

- The purpose of any option is to restore and maintain the quality of public waters and to protect the public health.
- Groundwater shall be protected by based on the impact of the disposal systems related to DEQ vulnerability index of soils, slopes and depth to groundwater.
- Development restricted in WRD Critical Groundwater Areas.
- Evaluations are done under the current regulatory standards.
- Current technologies for disposal are implemented.
- Capital costs used in the evaluation will be in today's dollars.
- Operation and maintenance costs will be based on the 50 year life of this plan.

Criteria

The evaluation is based on the following Regional Goals and Objectives.

Goal

Develop a regional approach to facilitate the efficient provision of infrastructure and community services in the Southern Willamette Valley in conformance with the desires of each utility and district.

Objectives

1. Work collaboratively to ensure the availability of a full range of infrastructure and services to meet the needs of all residents in the region.

2. Identify innovative strategies and partnerships to finance existing and future facility expansions and improvements.

3. Develop a regional strategy to place less demand on infrastructure through enhanced conservation policies and practices.

Wastewater Facilities and Services Assessment

(report on assessment results)

In the matrix below, each scenario is rated high, medium, or low on each criterion. For example, if a scenario strongly meets a criterion, it will receive a rating of "high" for that criterion; if it does not meet a criterion, the scenario will receive a rating of "low" for that criterion. This first threshold analysis is supplemented, where applicable, by a qualitative and/or geographic-specific analysis.

	Growth Scenario			
	Com-pact Urban	**Satellite Com-munities**	**Rural Growth**	**Comments**
Cost: Efficient provision of wastewater services.				
Capacity: Wastewater facilities are available to meet the needs of all residents in the region.				
Identify innovative strategies and partnerships to finance existing and future facility expansions and improvements. (Actions, not criteria for evaluation)				
Develop a regional strategy to place less demand on infrastructure through enhanced conservation policies and practices. (Actions, not criteria for evaluation)				

High = H Medium = M Low = L