

Appendix D

Benefit Scoring Matrix from
March 2013 Workshop

Benefits Scoring from March 2013 Workshop

Benefits scoring is one way to rate options when there are many variables to consider for each option. Parametrix performed the scoring for the workshop as an initial effort to quantify some of the differences between the options, and to suggest an option that best met the values listed for each. Rating options this way is subjective and different viewpoints will yield different results. The scoring was not weighted – no one factor was more important than another factor. During the workshop, it was clear that some factors - such as cost - were much more important than other factors, such as permitting complexity. This is not reflected in the scoring matrix.

Three categories were used for the benefits scoring, which are environment, financial, and regulatory. Environmental elements included how well each option would meet environmental protection criteria, such as drinking water quality or nutrient reduction. Financial elements included costs for the option, long-term reliability of the system, ability of the system to respond to rising sea levels, and property values. Regulatory elements include how difficult it is to permit the option and if the option is compliant with the Growth Management Act.

This matrix was used to compare the options using a simplified approach. The scoring was from 1 to 4, where the options were considered against each other. An option with a score of 1 was the lowest rated option (“fair”) whereas an option scoring 4 was the “best” or highest rated option. Tied scores meant there was no substantial difference between the two options.

Benefits Scoring - Environment

- **Long Term Fecal Coliform Reduction:** How well does system potentially treat fecal coliform and will it do so for its lifetime
- **Long Term Nutrient Reduction:** How well does system potentially treat nutrients (nitrogen) and will it do so for its lifetime
- **Drinking Water Quality Protection:** Does system protect drinking water sources (aquifers)
- **Wetland Water Quality Protection :** Does alternative enhance or provide a benefit to the local wetlands

Benefits Scoring - Environment

FACTORS	INDIVIDUAL OSS	CLUSTERED SYSTEM	CENTRALIZED SYSTEM	CENTRALIZED SYSTEM TO SEQUIM
Long Term Fecal Coliform Reduction	1	2	4	4
Long Term Nutrient Reduction	1	2	4	4
Drinking Water Quality Protection	2	1	3	4
Wetland Water Quality Protection	2	1	3	4
TOTAL SCORE	6	6	14	16

Scoring Rating:

1 = Fair (lowest) to 4 = Best (highest)

Benefits Scoring - Financial

- **Capital Costs:** Cost of building the system
- **Operation and Maintenance Costs:** Ongoing cost of maintaining and operating the system
- **Grant/Load Eligibility:** How easy the alternative will likely be funded (low difficulty)
- **Long-Term Reliability of System:** How well does system respond to environmental stressors (high ground water), changing regulations, or risk of failing components
- **Susceptibility to Rising Sea Levels:** Is the system likely to be flooded or otherwise affected by higher groundwater
- **Positive Property Value Impact:** Does alternative increase the use and/or value of the property
- **Flexibility for Future Regionalization:** Can alternative be easily expanded or altered for a larger (regional) system

Benefits Scoring - Financial

FACTORS	INDIVIDUAL OSS	CLUSTERED SYSTEM	CENTRALIZED SYSTEM	CENTRALIZED SYSTEM TO SEQUIM
Capital Costs (20 Yr)	4	3	1	2
Operation and Maintenance Costs	4	3	2	1
Grant/Loan Eligibility	1	1	3	4
Long Term Reliability of System	1	2	3	4
Susceptibility to Rising Sea Levels	1	2	3	4
Positive Property Value Impact	2	3	3	3
Flexibility for Future Options	1	2	3	4
TOTAL SCORE	14	16	18	22

Scoring Rating:

1 = Fair (lowest) to 4 = Best (highest)

Benefits Scoring - Regulatory

- **Permitting Complexity:** Difficulty or issues that will hinder or slow the permitting process
- **Growth Management Act (GMA) Compliance:** Does alternative stay in compliance by not providing service to areas outside of a GMA boundary (state regulation)

Benefits Scoring - Regulatory

FACTORS	INDIVIDUAL OSS	CLUSTERED SYSTEM	CENTRALIZED SYSTEM	CENTRALIZED SYSTEM TO SEQUIM
Permitting Complexity	4	2	1	3
Growth Management Act (GMA) Compliance	4	3	2	0*
TOTAL SCORE	8	5	3	3

* Option is not in compliance with current GMA Regulations.

Scoring Rating:

1 = Fair (lowest) to 4 = Best (highest)

Benefits Scoring - Summary

Scores	INDIVIDUAL OSS	CLUSTERED SYSTEM	CENTRALIZED SYSTEM	CENTRALIZED SYSTEM TO SEQUIM
Environment	7	8	17	20
Financial	13	14	15	18
Regulatory	8	5	3	3
TOTAL SCORE	28	27	35	41

Scoring Rating:

1 = Fair (lowest) to 4 = Best (highest)

Appendix E

Public Comments from
March 2013 Workshop

MEETING NOTES

Project Name: Dungeness Wastewater Feasibility Study **Project No.:** 236-1578-005
Location: Old Dungeness School House **Meeting Date:** March 9, 2013 **Time:** 10:00 a.m. – 12:30 p.m.
Notes by: Jan Rosholt
Subject: **Public Workshop #2**

1. **Q: Why are there no red areas along the river and streams?**
A: On the map referred to, red indicates commercial shellfish closure areas for Dungeness Bay.
2. **Q: What is the nitrogen problem and is it connected to OSS?**
A: Unless special nitrogen-reducing technology is utilized for OSS (fairly uncommon), nitrogen compounds may accumulate in ground or surface waters from septic systems. Nitrogen in shallow marine waters is related to growth of macroalgae (such as ulvoids) in other areas of Puget Sound according to research from the past 20 years. Along the shoreline of the project area there are seasonal accumulations of macroalgae, which is a problem for residents and is displacing eelgrass habitat utilized by juvenile salmonids. Recent marine water sampling indicates that nitrogen concentrations are higher than normal at the sites tested; however, these data need to be verified and the research expanded upon to know if nitrogen loading from septic systems into marine waters is contributing to excess algae growth. Data from drinking water wells in much of the watershed show that nitrates are higher than background levels, indicating that it is accumulating.
3. **Q: If the 7% of problem attributed to septic tanks were fixed, would the shell fish industry be able to start up?**
A: The Washington State Department of Health classifies commercial shellfish growing areas based on long-term data sets for fecal coliform in marine water, and only for areas it is requested to do so. Fecal coliform concentrations have decreased at many sampling stations over the past decade, resulting in certain growing areas opening for the dry season. Several actions effectively reducing fecal contamination, including OSS management and repair, may have contributed to the water quality improvement. The so-called 7% problem refers to a 2009 study by Battelle that reported “Human-derived sources [of fecal coliform bacteria], primarily from on-site septic systems, were present at all freshwater and marine water stations and one sediment station. These sources represented about 7% of isolates on average....” There is no way to predict when or if the state will further open growing areas; as sources of fecal coliform to the marine environment have been eliminated or reduced, water quality has improved.
4. **Q: Why not go after the 93% of the problem?**
A: Battelle reports that while some contamination sources may be difficult or impossible to manage (e.g. birds account for appx. 42%, wild mammals 26%), the study provides evidence of sources that can be controlled or mitigated for (“approximately 24% of fecal coliform bacteria are from

Meeting Minutes (continued)

controllable sources (i.e. human-derived, domestic animals, farm animals, and game farm animals”).

5. Q: What is the cost of O&M for the OSS?

A: It is estimated that the annual O&M costs will be \$300 to \$400, including equipment replacement costs.

6. Q: Does the cost include the required inspection?

A: Yes it does.

7. Q: What are the current design requirements for OSS?

A: The sewage system design requirements are provided in WAC 246-272A (<http://www.doh.wa.gov/CommunityandEnvironment/WastewaterManagement/RulesandRegulations.aspx>). Generally, the design requirements are based on wastewater strength and volume, soil type, topography, depth to groundwater or impermeable soil layer, and distance (i.e. setbacks) to surface waters, water wells etc.

8. Q: Do the cluster system costs include land acquisition?

A: Yes it does.

9. Q: How many total lots in the project area and how many can be built on?

A: There are a total of 293 lots and it was assumed that all lots would be capable of being built upon. We understand that this may not be the case, but it is a more conservative approach.

10. Q: Is the project required by a regulatory agency?

A: No. The WRIA 18 Elwha-Dungeness Watershed Plan contains a recommendation to provide septic infrastructure and explore the feasibility of providing “small package” sewer treatment plants in unincorporated areas of concern (and lists the Golden Sands/Three Crabs area). The County took the initiative to obtain grant funding to prepare a feasibility study so that residents would have information on options as they think about the future and their investment.

11. Q: Need to take into account the age of the property owners and limited income.

A: Residents are being polled on the most important criteria they think the County should use in its recommendations. See project website for the Resident Questionnaire.

12. Q: The size (gpd) of Sunland not equivalent to 3-crabs.

A: That is correct

13. Q: How was the number of lots counted, because in Golden Sands it can take 3 lots for one residence plus OSS?

A: For simplicity and to be conservative, we assumed one resident per lot. We did not take into account that a single residence may be on several lots.

14. Q: Who and how were the alternatives scored?

A: The scoring of the alternatives was a collaborative effort by the County and the engineering consultant. The scoring was not weighted because this would have been considered subjective. The questionnaire that was handed out at the meeting and posted on the website encouraged the public to provide their input and preference to the alternatives presented.

15. Q: How was impact on property value determined?

A: This was determined by whether an alternative would enable the property owner to make improvements to their property and/or building structures. For example, if there was a centralized

Meeting Minutes (continued)

collection and treatment system, a property owner could possibly add a bedroom to their house and not be limited by the size of their drainfield. All the alternatives were assumed to have a positive impact to the property values.

16. Q: How do Dungeness Heights and other neighborhoods impact water quality?

A: The potential addition of nearby neighborhoods to the project area will be dealt with in a generic manner in the final feasibility study (i.e., the additional cost will be addressed very generally, not location specific). Investigating how these other neighborhoods impact WQ was not part of the study performed under the grant funding.

17. Q: How would you address expansion of the project area in future?

A: Expansion to serve areas outside of the project limits would be easier under either the Centralized System Alternative or the Centralized System to Sequim Alternative. During the first several years of operation, the actual wastewater flowrates from the project area would be measured. This would then allow the County to determine if there is excess capacity sewer available to expand the sewer collection system into neighboring areas. The expansion of the service area would also need to be approved by the County's Planning Department.

18. Q: Going too fast – public has not been informed.

A: Review: the project started with two community meetings in May and June of 2012; invitations were mailed to 224 property owners, in addition to announcements in the media.

19. Q: What is the regulatory requirement for nitrogen?

A: Drainfields larger than 3,500 gpd are required to determine the nitrogen loading impacts to surface waters and adjacent water wells, as part of the design and permitting process. This is regulated at the state level and not at the County. The effluent from a drainfield or other wastewater disposal facility cannot increase the nitrogen level of adjacent water wells or water bodies beyond a concentration of 10 mg/L.

20. Q: Do tribes play a role in the study?

A: The Jamestown S'Klallam Tribe is an active partner in the activities of the "Clean Water District," formed in 2000 after the closure of the shellfish growing area to coordinate monitoring and outreach aimed at improving water quality.

21. Q: Is there conclusive evidence that the problem of water quality is coming from the 3-Crabs area? Where is the proof?

A: The fecal coliform problem in the watershed is known as "non-point" contamination, meaning it comes from a variety of diffuse sources including OSS, stormwater runoff, pet waste, hobby farms, and others. See the answers to questions 3 and 4 for more information on potential sources of fecal coliform. Nitrogen contamination in the marine water is not well documented; in groundwater it is documented and pervasive, but is derived from animal or human waste or fertilizers and difficult or impossible to trace. In non-point contamination situations, the best remedy is to control as many sources as possible.

22. Q: Is the County going to go point by point along the "Bluff" to look at problems?

A: In 2011-2012, Environmental Health did contact many marine bluff homeowners requesting information about their septic system where the County had no records of the systems. The Clean

Meeting Minutes (continued)

Water District has monitored bluff discharges and the County is focusing efforts on OSS management in the lowest part of the watershed with the same grant this project is under.

23. Q: How assured is the County that the project will fix the water quality problem?

A: The water quality problem is not the County's only, or primary, concern. Long-term viability of property values and infrastructure are other important concerns of the County.

24. Q: What caused the recent improvements of water quality in the bay?

A: Several actions effectively reducing fecal contamination, including OSS management and repair, may have contributed to the water quality improvement.

25. Q: How does the County plan to address the fact that 60-70% of septic systems are not inspected?

A: The County has grant funding targeted to improve compliance through outreach but also is making changes to the County septic system ordinance, expanding its enforcement capability.

26. Comment: It seems as if non-compliance is the problem.

A: Comment noted.

27. Comments a resident voiced about the Report:

- Goals and objectives statement in the study states that the purpose is to open shellfish beds for harvesting
- 2002 study addressed the OSS problem
- Past studies reflect problem is caused by upstream areas, circulation in Bay is towards 3 Crabs
- No proof this area is contributing to WQ problem in the bay as there have not been samples taken and analyzed
- Irrigation ditches contribute to the problem

A: Comment noted.

28. Q: Why were the areas west of the river not included?

A: The grant for this feasibility study was for the Dungeness Area only; however, the ability to expand beyond the project limits will be briefly addressed in the final study.

29. Q: What was the specific notification process for the public meetings? Did mailings get distributed?

A: The County mailed out notification mailings, advertised in the Peninsula Daily News, and also posted the meeting dates on the County's website.

30. Comment: Inspections required are not being reported to the County; O&M contracts may not be working out. Need education program to get property owners to comply with regulations? Or we need another method.

A: noted. Also see answer to 25.

31. Comment: County's OSS program should put the responsibility of system reporting on the installers and not on the property owners. Installer must comply with the respective installation warranty.

A: Comment noted.

32. Q: How is the potential rise in sea level being addressed?

A: Susceptibility to rising sea levels was briefly discussed under each alternative. Climate impacts to the project area were also included in Section 2.3 of the study.

33. Comment: There are illegal activities going on in the lower reaches of the river including compost toilets and buildings with no connection to septic tank.

A: Comment noted.

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34. Comment: The County web site for this project should include the following: (also, can they be made available at the library?)

- FAQ
- Past and/or recent reports (annotated as much as possible)
- Project schedule
- Location of contributing sites

A: Suggestions noted.

35. Q: Has a water quality study of the bay been done since the ditches have been piped?

A: The Washington State Department of Health monitors fecal coliform in the Bay every month. Piped ditches may be another contributing factor to water quality improvements of the past decade.

Dungeness Wastewater Feasibility Study - Public Workshop
March 9, 2013
Participant Questionnaire

1. Please rank the presented alternatives, where your first choice is 1 and your least preferred choice is 4.

- a. Individual On-site Septic Systems _____
- b. Clustered (Neighborhood) System _____
- c. Centralized (Entire Project Area) System _____
- d. Centralized Collection System to Sequim _____

2. What is the most important factor to you in selecting your preferred alternative?

- a. Environmental (water quality, habitat, shellfish, etc.)
- b. Financial
- c. Other

3. If a clustered system or a centralized system is selected as the preferred alternative, would you be willing to connect to the new sewer system?

Yes No Not Sure (circle one)

4. For Question 3 above, would cost alone determine your decision to connect?

Yes No Not Sure (circle one)

5. If Individual On-Site Systems (currently used in project area) was selected as the preferred alternative, would you need financial assistance for improving your system (assuming your system needs improvements)?

Yes No Not Sure (circle one)

6. Have you made significant improvements to your on-site septic system within the last 10 years?

Yes No Not Sure (circle one)

7. If you answered "yes" to Question 6 above, are you willing to share the date and approximate cost of the improvement?

Date _____ Cost \$ _____

8. Please describe any other issues or concerns you may have regarding the alternatives:

Dungeness Wastewater Feasibility Study

Survey Summary for Workshop #2
Saturday, March 09, 2013

1) Preferred Option		
a) Individual OSS	18	
b) Clustered System	1	
c) Centralized	0	
d) Centralized to Sequim	2	
2) Important Factors		
a) Environmental	10	
b) Financial	9	
c) Other (continue with current progress, project unjustified/need more data, financial concerns, maintain private control over systems)	10	
3) Connect to clustered/centralized system?		
Yes	3	
No	8	
Not Sure	9	
4) Would cost be a factor for connection?		
Yes	13	
No	8	
Not Sure	0	
5) Need financial assistance for Individual OSS?		
Yes	5	
No	13	
Not Sure	3	
6) Made improvements lately?		
Yes	9	
No	11	
Not Sure	1	
7) Improvement Dates and Cost Ranges		
Within past 5 years (2008 to 2013)	5	\$1,600 to \$11,000 (median \$9,000)
2007 to 2000	3	\$10,000 to \$27,000
2000 to 1990	1	\$17,000

Appendix F

Draft General Implementation Plans

General Implementation Plan
Clustered (Neighborhood) Large Onsite Septic Systems
(LOSS)

Public	Financial (Funding)	Regulatory (Permitting)	Engineering (Studies and Design)
<ul style="list-style-type: none"> • Public outreach • Inform public of what is an OSS • WQ education outreach through flyers and public meetings • Coordinate with individual neighborhood residents 	<ul style="list-style-type: none"> • Produce narrow list of most likely funding sources <ul style="list-style-type: none"> ○ State grants ○ State loans ○ Federal grants ○ Federal loans 	<ul style="list-style-type: none"> • Approach major permitting agencies (DOH, Ecology, Fish & Wildlife, etc.) to determine if: <ul style="list-style-type: none"> a) Fatal flaws exist with proposed design b) Agency is generally receptive to proposed design c) Timeline and preliminary studies that will be required for permit approval 	<ul style="list-style-type: none"> • Investigation on condition of existing OSS to quantify LOSS scope • Property investigation for LOSS siting • Perform preliminary studies to support permitting and funding efforts <ul style="list-style-type: none"> ○ Geotechnical investigation ○ WQ sampling ○ Site Risk Assessment
<ul style="list-style-type: none"> • Obtain public support for proposed project 	<ul style="list-style-type: none"> • Approach state/federal funding sources to determine receptivity to proposed design and prospects for funding 	<ul style="list-style-type: none"> • DOH coordination for preliminary investigations and site approvals 	<ul style="list-style-type: none"> • Prepare preliminary engineering design report for proposed design
<ul style="list-style-type: none"> • Obtain public support for any funding mechanism 	<ul style="list-style-type: none"> • ULID Creation – develop legal and operational framework to present to public (how it works, what will be needed from them). 	<ul style="list-style-type: none"> • Apply for and obtain permits 	<ul style="list-style-type: none"> • Prepare final design report with plans, specifications and final cost estimates
	<ul style="list-style-type: none"> • Apply for and obtain funding 		

General Implementation Plan

Centralized Wastewater Treatment System

Public	Financial (Funding)	Regulatory (Permitting)	Engineering (Studies and Design)
<ul style="list-style-type: none"> • Public outreach • Inform public of what is an OSS • WQ education outreach through flyers and public meetings • Coordinate with individual neighborhood residents 	<ul style="list-style-type: none"> • Produce narrow list of most likely funding sources <ul style="list-style-type: none"> ○ State grants ○ State loans ○ Federal grants ○ Federal loans 	<ul style="list-style-type: none"> • Approach major permitting agencies (DOH, Ecology, Fish & Wildlife, etc.) to determine if: <ol style="list-style-type: none"> a) Fatal flaws exist with proposed design b) Agency is generally receptive to proposed design c) Timeline and preliminary studies that will be required for permit approval 	<ul style="list-style-type: none"> • Stream and wetland condition assessment • Property investigation for LOSS siting • Perform preliminary studies to support permitting and funding efforts <ul style="list-style-type: none"> ○ Geotechnical investigation ○ WQ sampling ○ Site Risk Assessment
<ul style="list-style-type: none"> • Obtain public support for proposed project 	<ul style="list-style-type: none"> • Approach state/federal funding sources to determine receptivity to proposed design and prospects for funding 	<ul style="list-style-type: none"> • Ecology approval process for surface water discharge • DOH coordination for preliminary investigations and site approvals 	<ul style="list-style-type: none"> • Prepare preliminary engineering report for proposed design
<ul style="list-style-type: none"> • Obtain public support for any funding mechanism 	<ul style="list-style-type: none"> • ULID Creation – develop legal and operational framework to present to public (how it works, what will be needed from them). 	<ul style="list-style-type: none"> • Update County Comp Plan and LAMIRD • Establish O&M strategy <ul style="list-style-type: none"> ○ County operated ○ Private party operated 	<ul style="list-style-type: none"> • Prepare final design report with plans, specifications and final cost estimates
<ul style="list-style-type: none"> • Develop billing strategy 	<ul style="list-style-type: none"> • Apply for and obtain funding 	<ul style="list-style-type: none"> • Apply for and obtain permits 	

General Implementation Plan

Centralized Collection and Conveyance to Sequim

Public	Financial (Funding)	Regulatory (Permitting)	Engineering (Studies and Design)
<ul style="list-style-type: none"> • Public outreach • Inform public of what is an OSS • WQ education outreach through flyers and public meetings • Coordinate with individual neighborhood residents 	<ul style="list-style-type: none"> • Produce narrow list of most likely funding sources <ul style="list-style-type: none"> ○ State grants ○ State loans ○ Federal grants ○ Federal loans 	<ul style="list-style-type: none"> • Coordination with Sequim • Approach major permitting agencies (DOH, Ecology, Fish & Wildlife, etc.) to determine if: <ul style="list-style-type: none"> d) Fatal flaws exist with proposed design e) Agency is generally receptive to proposed design f) Timeline and preliminary studies that will be required for permit approval 	<ul style="list-style-type: none"> • Site assessment for pump station • Perform preliminary studies to support permitting and funding efforts <ul style="list-style-type: none"> ○ Geotechnical investigation ○ WQ sampling ○ Site Risk Assessment
<ul style="list-style-type: none"> • Obtain public support for proposed project 	<ul style="list-style-type: none"> • Approach state/federal funding sources to determine receptivity to proposed design and prospects for funding 	<ul style="list-style-type: none"> • Outline ILA with Sequim • Begin County Comp Plan update process 	<ul style="list-style-type: none"> • Prepare preliminary engineering report for proposed design
<ul style="list-style-type: none"> • Obtain public support for any funding mechanism 	<ul style="list-style-type: none"> • ULID Creation – develop legal and operational framework to present to public (how it works, what will be needed from them). 	<ul style="list-style-type: none"> • Update County Comp Plan and LAMIRD • Finalize ILA with Sequim • Establish O&M strategy <ul style="list-style-type: none"> ○ County operated ○ Private party operated 	<ul style="list-style-type: none"> • Prepare final design report with plans, specifications and final cost estimates
<ul style="list-style-type: none"> • Develop billing strategy 	<ul style="list-style-type: none"> • Apply for and obtain funding 	<ul style="list-style-type: none"> • Apply for and obtain permits 	

Appendix G

EPA's Summary of Management Models

Table 1: Summary of Management Models

TYPICAL APPLICATIONS	PROGRAM DESCRIPTION	BENEFITS	LIMITATIONS
MODEL 1 - HOMEOWNER AWARENESS MODEL			
<ul style="list-style-type: none"> Areas of low environmental sensitivity where sites are suitable for conventional onsite systems. 	<ul style="list-style-type: none"> Systems properly sited and constructed based on prescribed criteria. Owners made aware of maintenance needs through reminders. Inventory of all systems 	<ul style="list-style-type: none"> Code-compliant system. Ease of implementation; based on existing, prescriptive system design and site criteria. Provides an inventory of systems that is useful in system tracking and area-wide planning. 	<ul style="list-style-type: none"> No compliance/problem identification mechanism. Sites must meet siting requirements. Cost to maintain database and owner education program.
MODEL 2 - MAINTENANCE CONTRACT MODEL			
<ul style="list-style-type: none"> Areas of low to moderate environmental sensitivity where sites are marginally suitable for conventional onsite systems due to small lots, shallow soils, or low-permeability soils. Small clustered systems. 	<ul style="list-style-type: none"> Systems properly sited and constructed. More complex treatment options, including mechanical components or small clusters of homes. Requires service contracts to be maintained. Inventory of all systems. Service contract tracking system. 	<ul style="list-style-type: none"> Reduces the risk of treatment system malfunctions. Protects homeowner investment. 	<ul style="list-style-type: none"> Difficulty in tracking and enforcing compliance because it must rely on the owner or contractor to report a lapse in a valid contract for services. No mechanism provided to assess effectiveness of maintenance program.
MODEL 3 - OPERATING PERMIT MODEL			
<ul style="list-style-type: none"> Areas of moderate environmental sensitivity such as wellhead or source water protection zones, shellfish growing waters, or bathing/water contact recreation. Systems treating high-strength wastes or large-capacity systems. 	<ul style="list-style-type: none"> Establishes system performance and monitoring requirements. Allows engineered designs but may provide prescriptive designs for specific receiving environments. Regulatory oversight by issuing renewable operating permits that may be revoked for noncompliance. Inventory of all systems. Tracking system for operating permit and compliance monitoring. Minimum for large-capacity systems. 	<ul style="list-style-type: none"> Allows systems in more environmentally sensitive areas. Operating permit requires regular compliance monitoring reports. Identifies noncompliant systems and initiates corrective actions. Decreases need for regulation of large systems. Protects homeowner investment. 	<ul style="list-style-type: none"> Higher level of expertise and resources for regulatory authority to implement. Requires permit tracking system. Regulatory authority needs enforcement powers.
MODEL 4 - RESPONSIBLE MANAGEMENT ENTITY (RME) OPERATION AND MAINTENANCE MODEL			
<ul style="list-style-type: none"> Areas of moderate to high environmental sensitivity where reliable and sustainable system operation and maintenance (O&M) is required, e.g., sole source aquifers, wellhead or source water protection zones, critical aquatic habitats, or outstanding value resource waters. Clustered systems. 	<ul style="list-style-type: none"> Establishes system performance and monitoring requirements. Professional O&M services through RME (either public or private). Provides regulatory oversight by issuing operating or NPDES permits directly to the RME. (System ownership remains with the property owner.) Inventory of all systems. Tracking system for operating permit and compliance monitoring. 	<ul style="list-style-type: none"> O&M responsibility transferred from the system owner to a professional RME that is the holder of the operating permit. Identifies problems needing attention before failures occur. Allows use of onsite treatment in more environmentally sensitive areas or for treatment of high-strength wastes. Can issue one permit for a group of systems. Protects homeowner investment. 	<ul style="list-style-type: none"> Enabling legislation may be necessary to allow RME to hold operating permit for an individual system owner. RME must have owner approval for repairs; may be conflict if performance problems are identified and not corrected. Need for easement/right of entry. Need for oversight of RME by regulatory authority.
MODEL 5 - RESPONSIBLE MANAGEMENT ENTITY (RME) OWNERSHIP MODEL			
<ul style="list-style-type: none"> Areas of greatest environmental sensitivity where reliable management is required. Includes sole source aquifers, wellhead or source water protection zones, critical aquatic habitats, or outstanding value resource waters. Preferred management program for clustered systems serving multiple properties under different ownership (e.g., subdivisions). 	<ul style="list-style-type: none"> Establishes system performance and monitoring requirements. Professional management of all aspects of decentralized systems through public/private RMEs that own or manage individual systems. Qualified, trained, owners and licensed professional owners/operators. Provides regulatory oversight by issuing operating or NPDES permit. Inventory of all systems. Tracking system for operating permit and compliance monitoring. 	<ul style="list-style-type: none"> High level of oversight if system performance problems occur. Simulates model of central sewerage, reducing the risk of noncompliance. Allows use of onsite treatment in more environmentally sensitive areas. Allows effective area-wide planning/watershed management. Removes potential conflicts between the user and RME. Greatest protection of environmental resources and owner investment. 	<ul style="list-style-type: none"> Enabling legislation and/or formation of special district may be required. May require greater financial investment by RME for installation and/or purchase of existing systems or components. Need for oversight of RME by regulatory authority. Private RMEs may limit competition. Homeowner associations may not have adequate authority.

Note: If applicable, NPDES requirements under the CWA or UIC requirements under the SDWA supercede any less stringent or inconsistent provision.