King County On-Site Septic System Management Plan
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Executive Summary

Introduction

In July 2005, the Washington State Board of Health adopted Chapter 246-272A WAC, which requires local health departments to develop plans for the management of on-site septic systems (OSS) within their jurisdictions. In 2006, the Legislature enacted RCW 70.118A, which requires local health jurisdictions that border Puget Sound to identify Marine Recovery Areas (MRA) where OSS contribute to marine water quality problems, and to develop management strategies to find and repair all failing OSS within the MRA.

To help develop the plan recommendations, King County Environmental Health (King County EH) elected to form a Marine Recovery Work Group composed of people who live on Vashon/Maury Islands (VMI). The VMI were volunteers comprised of individuals representing a spectrum of local interests. This Work Group began meeting in February 2007, and provided recommendations to identify a Marine Recovery Area (MRA), recommendations for a communications strategy, and educational outreach in the MRA. A list of Work Group members can be found on page 2 of this plan.

Concurrent with the writing of the plan a Technical Advisory Committee (TAC) was formed to revise the King County On-Site Sewage Code Title 13, Code of the King County Board of Health to include supportive requirements for operation and maintenance of on-site septic systems and marine recovery areas. A list of the TAC members can be found on page 3 of this plan.

King County Environmental Health (EH) Recommendations

King County EH recommends the following actions to fulfill the requirements of Chapter 246-272A WAC and RCW 70.118A.

OSS Inspections

- Generally, King County EH believes the frequency of the state's OSS inspection requirement is adequate: conventional gravity systems should be inspected at least once every three years, and all other systems should be inspected at least once every year.
- For any properties that do not have an as-built diagram for their property, a professional inspection that includes documentation of system location, type and function should be required prior to the sale of the property.
- For community and commercial OSS, annual professional inspections should be required for high risk locations (Critical Aquifer Recharge Areas) or when the business generate liquid wastes that are incompatible with discharge through an onsite system.

Marine Recovery Areas

- King County EH should review its siting and design requirements for OSS in the MRA and revise them if necessary to address the specific environmental concerns in the MRA.
- OSS owners within the Marine Recovery Area should be required to get a professional inspection that includes documentation of system location, type and function, within 5 years of a MRA designation and annually thereafter irrespective of system type.

Areas Where OSS May Pose an Increased Threat to Public Health

- The following areas are listed in order of priority for addressing sensitive areas in the OSS Management Plan
  - ✓ Shellfish growing areas
  - ✓ Sole source aquifers
  - ✓ Critical Aquifer Recharge Areas (CARA) with a critical recharging effect on aquifers used for potable water per RCW 36.70A.030b
  - ✓ OSS' located in areas zoned for industrial or commercial land use

- King County EH should review its siting and design requirements for OSS in sensitive areas and revise them if necessary to address the specific environmental concerns in each sensitive area.
- The plan should be flexible enough to allow the County to identify new priority sensitive areas as outlined in WAC 246-272A-0015 if data show that OSS' are posing increased public health risks in those areas.

Compliance

- The County's compliance program should include four basic elements
  1. Use social marketing to learn more about the target audience and engage OSS users to better understand the benefits of maintaining and inspecting their OSS.
  2. Simplify reporting requirements, by providing an electronic method for submitting O&M reports.
  3. Risk-based prioritization for compliance actions. King County EH should prioritize its efforts based on risk to public health and the environment. Thus, the County's highest priorities are systems located along shorelines (MRA), OSS near wells that could contaminate drinking water (CARA), etc.
  4. Penalties as a last resort to achieve compliance. Penalties should only be issued after warnings have been given and after education and other compliance actions have failed.
- The County should not issue permits if a property is not in compliance, including:
  - ✓ Building Remodels, Additions, or Replacement of Residential Structures
  - ✓ Food Establishment Annual OSS Permits
  - ✓ Change of Use for Facilities on OSS
- The County should require a seller to submit proof of a successful professional OSS inspection including an as-built, prior to the transfer of property sale.

Financing

- The County should be funded to do the following tasks, in accordance with the new state law:
  - ✓ Developing and maintaining a database of records for all known OSS in the County;
  - ✓ Ensuring compliance with state inspection and repair requirements;
  - ✓ Providing ongoing education for OSS owners regarding proper OSS operation and maintenance;
  - ✓ Identifying areas where OSS could pose an increased public health risk, and developing risk-based operations and maintenance (O&M) requirements;
  - ✓ Designating a Marine Recovery Area (MRA) in land areas where OSS contribute to marine water quality problems, and developing a strategy for OSS management in the MRA;
  - ✓ Identifying existing failing systems in the MRA, and ensuring that the owner completes the necessary repairs; and
  - ✓ Identifying all unknown OSS within the MRA by July 2012.
- Funding should also be provided for:

- ✓ Financial assistance to low-income OSS owners to offset increased inspection costs;
- ✓ Low-interest loans for OSS owners to pay for OSS repair and replacement;

- Funding options to consider for long term activities include:
  - Shell fish protection district to fund MRA activities
  - Storm water/surface water management fees
  - Groundwater protection districts

Implementation Plan

Based upon these recommendations, King County EH proposed to implement an OSS Management Strategy in two phases.

Phase 1: Start-Up Programs

Phase 1 will focus on developing the systems necessary for effective implementation. In particular, King County EH will undertake the following categories of activities:

- Make regulatory changes necessary to support the OSS Management Plan
- Notify the public in the MRA
- Create a detailed work plan
- Create financial systems to fund the Plan's provisions
- Lay the groundwork for identifying all OSS in the Marine Recovery Area
- Ensure that notification and tracking systems are sufficient
- Develop a new compliance program
- Develop outreach and education materials and trainings

More detail about these categories of activities, and specific activities in each category, can be found in Part 6 of this plan.

PHASE 2: Program Implementation

In Phase 2, King County EH will begin implementing the provisions of this Management Plan if and when sufficient funding is available. King County EH plans to conduct the following types of activities in Phase 2:

- Ensure adequate inspection capacity
- Implement new O&M requirements for MRAs
- Conduct community development and education program
- Track inspection activity
- Identify all OSS in the Marine Recovery Area and ensure proper function
- Conduct compliance program in MRA
- Identify all OSS in the Marine Recovery Area
- Explore "Responsible Management Entity"
- Identify all OSS in areas where systems may pose an increased threat to public health
- Measure the effectiveness of new programs

More detail about these categories of activities, and specific activities in each category, can be found in Part 6 of this plan.

Introduction

Development of the OSS Management Plan

Legal Authority for this Plan

In July 2005, the Washington State Board of Health adopted Chapter 246-272A WAC, which requires local health departments to develop plans for the management of on-site septic systems (OSS) within their jurisdictions. This OSS Management Plan fulfills this requirement for King County Environmental Health (King County EH).

In March 2006, the Legislature enacted Third Substitute House Bill (3SHB) 1458, which requires local health jurisdictions that border Puget Sound to identify Marine Recovery Areas (MRA) where OSS contribute to marine water quality problems, and to develop management strategies to find and repair all failing OSS within the MRA. Parts 4 and 6 of this plan fulfill this requirement for King County EH.

Process Used to Develop this Plan

To help develop the plan recommendations, King County EH elected to form a Vashon/Maury Islands Work Group composed of local residents who would be helpful in directing attention to local challenges, interests and concerns. This Work Group began meeting in February 2007, and provided recommendations to the County regarding identifying a Marine Recovery Area, communications strategy, and educational outreach. A list of OSS Work Group members can be found on page 2 of this plan.

Concurrent with the writing of the plan a Technical Advisory Committee (TAC) was formed to revise the King County On-Site Sewage Code Title 13, Code of the King County Board of Health to include supportive requirements for operation and maintenance of on-site septic systems and marine recovery areas. A list of the TAC members can be found on page 9 of the plan.

A Guide to the OSS Management Plan

In June 2006, the Washington State Department of Health released a document called On-Site Sewage System Management Plan Guidance for the Twelve Puget Sound Counties. This document created an outline for OSS Management Plans to follow. Therefore, this OSS Management Plan is laid out largely in accordance with that outline, as follows:

- Part 1 describes King County EH OSS database and activities the County plans to take to enhance it.
- Part 2 provides information about a variety of environmental and demographic trends in King County, and describes how King County identifies sensitive areas.
- Part 3 describes the King County EHs' current OSS operations and maintenance (O&M) program, and the changes the King County recommends to comply with the new state law both County-wide and in sensitive areas.
- Part 4 describes how the VMI Work Group identified a Marine Recovery Area in King County, recommendations for actions in that Marine Recovery Area, and current activities in the Marine Recovery Area. (Please note that Part 4 differs from the State's guidance document.)
- Part 5 describes the King County EH current and planned OSS education efforts.
- Part 6 differs from the State's guidance document. It is an implementation chapter that shows how King County EHS plans to implement recommendations, given available

resources. This Part also includes information about the resources needed and timelines for implementation.

Vision for OSS Management in King County

To guide its implementation of the On-Site Septic Management Plan, King County EH created the following vision and program goals for effective OSS management in the county:

Vision Statement

On-site sewage systems are a viable, sustainable, permanent, and appropriate means for treating and disposing of residential sewage outside the urban growth area when on-site septic systems receive appropriate maintenance that is in-line with the complexity of the system and the public health risks of the location where they are used.

Overall Program Goals:

1. To establish a county-wide database system for the identification, inventory, and correction of badly maintained, malfunctioning, and/or failing home sewage treatment systems, particularly in the marine shoreline areas where OSSs impact shellfish harvesting/protection areas.
2. To progressively identify OSSs located in areas where they could pose an increased public health risk in the order of priority set forth in WAC 246-272A-0015(b)i-x.
3. To outline a long-term plan for on-going inspection, corrective action, tracking progress, and success for improved operation and maintenance of OSSs.
4. To designate marine recovery areas (MRAs) including demonstrating a progressive inventory of on-site sewage systems; and additional OSS operation and maintenance requirements.

King County Environmental Health ensures the safety and quality of on-site septic systems by:

- Reviewing all site evaluations and system designs, performing final inspections of installations reviewing all as-built submittals;
- Providing ongoing public education and outreach programs, including meetings with and OSS professionals and realtors;
- Identifying all septic systems and investigating complaints;
- Licensing OSS installers and pumpers, monitoring the workmanship of State-licensed designers, ensuring that King County staff maintain technical certifications;
- Developing rules and policies as necessary; and
- Ensuring that known failing septic systems are repaired.

Part 1: Database Enhancement

Introduction

The new WAC 246-272-0015 sets a number of requirements for jurisdictions to develop and maintain an electronic inventory of OSS. This part of the Plan shows how King County Environmental Health (EH) will comply with the following elements of WAC 246-272A-0015(1):

(a) Progressively develop and maintain an inventory of all known OSS in operation within the jurisdiction.

(f) Maintain records required under chapter 246-272AWAC, including of all operation and maintenance activities as identified.

(h) Describe the capacity of the local health jurisdiction to adequately fund the local OSS plan, including the ability to find failing and unknown systems.

Activities

Inventory

Current OSS Database

Description

The original database, called the Sierra system was in use from 1990-1999. This data was transferred to the current database, Envision in 1999. When OSS data were transferred, not all information contained in the Sierra system transferred to Envision. For instance, system age did not transfer. The data post-conversion is slightly different from the original data. Consequently, old data and newer envision data can not always be compared.

Public Health's data management system has the capability of maintaining a reliable OSS system inventory and maintenance database and passing system performance information on to buyers of property served by OSS. The inventory of **Known** OSSs is maintained by two data management systems:

1. Envision Data Base -- Onsite applications are entered into an Envision database. The parameters are limited to site owner, address, parcel number, as-built date, and type of system.
2. Acorde Data Base -- All new hardcopy as-builts and as-builts from microfiche are scanned and digitized into a database which is then merged with Envision.

OSS records are stored in a permitted Envision database. This software manages data for all environmental health programs and is not specific to OSS.

- Envision can be downloaded to Access. Data is downloaded to MSExcel or comma-delimited-text format. Envision currently uses Adaptive Server Anywhere 8.0 (Sybase) as a backend; Public Health is planning on migrating to a SQL Server backend sometime in late 2006 or early 2007. As-built images scanned into the Acorde system are not currently available for batch export.
- The Envision data base can be converted to an excel data spread sheet, allowing it to be used by other jurisdictions.
- OSS as-builts will be available on-line through the King County GIS site, 2007 or early 2008.

Calculating OSS Age and Location

Calculating the OSS age of older systems through the database is not accurate prior to 1999 because either the data are not accurate as a result of system conversion as indicated earlier or the data are not in a data base. Rather they are in paper records. The accuracy of system age is most reliable after the Envision database tool was in place, 1999.

The property on which an OSS is located be established by either parcel number or address when system information is contained in the Envision data base. However, most records older than 1990 are microfiche. Most of these are identified by address, however many older site locations can not be identified because addresses changed over time. The earliest OSS installation recorded in the database is from the 1950's. All the existing onsite records have been digitized and work is ongoing to link the digital records to the database. There are an undetermined number of systems that were constructed prior to permitting requirements and remain in use.

Number of Recorded OSS and Total OSS

Of the 120,000 scanned micofiche records, 20,000 have been indexed or 17% of the total available as-built records located at public health. Indexing is a process where information in the scanned document is labeled into categories of information. Indexing includes the following steps: 1. Review digitized scanned documents; 2. Find either a parcel number or address and then type it in. If there is only an address, it is researched to identify a parcel number. In many cases this is not possible because addresses may change frequently. 3. Once we have an address the scanned information is reviewed and the information is indexed (labeled) accordingly. The types of information found in a scanned document may include: complaints, building applications, permits, operational checks, and OSS related information. At the current rate of indexing the remaining ~100,000 documents will take ~ 20 + years.

Adding and Updating Records in the OSS Database and Identifying Unknown OSS

King County EH learns of undocumented OSS through repair permit applications. Periodically, the County receives an application for a repair permit for a system that was never permitted at the time of installation. While information related to the repair is entered into the database, however information about the old system are typically entered.

OSS records may also be updated during a property transfer, building application, or complaint of a failing system.

Additional or Planned Changes to Inventory OSS

The following on-site program enhancements are proposed to demonstrate progressive on-site system inventory:

1. Require property transfer inspections (operational check) by a certified O&M provider. The Inspection includes: providing an as-built (if Public Health does not have an as-built record), system type identified, and report on function provided to Public Health.
    a. Approximately 5,000 homes on OSS sold per year.
2. Identify unknown OSSs through building applications.
    a. Approximately 968 building applications processed, in 2006.
3. Identify Unknown OSSs through system repairs
    a. ~241 permitted repairs/year.
4. Identify Unknown systems through failing system complaints
    a. ~ 427 complaints per year.

Table 1 demonstrates an approximate time frame for completing the indexing inventory by correcting OSS records as applications or complaints are processed. Additional staffs are required to facilitate these record corrections.

Table 1: Estimate Years to Complete Indexing

OSS Un-indexed Asbuilts	**100,000**	**1st year**	**5th yr**	**10yr**	**15th yr**
Remaining Unknown OSS - Property Transfer (5,000) - Building Applications (968 - System Repairs and Complaints (668)		93,364	33,180	33,640	460

Operation & Monitoring – Record Maintenance

King County's Current O&M Requirements

Currently, King County EH requires all OSS system types to file O&M reports except for gravity and pump to gravity. Commercial systems may require a yearly minimum inspection depending on the type and use of the facility using the OSS. The minimum information required from O&M providers when submitting a service report includes: name, address, system type, date of inspection, provider's name, condition, adequate reserve area, failure or pre-failure, levels of sludge & scum, timers, dose rate, tank type & gallons, ponding, etc.

O&M providers send hardcopy reports to the O&M Program Manager, which are than manually entered into a database. The Envision database is capable of producing a maintenance history report and generating service reminders. O&M providers identify failures and report them immediately to Public Health which is followed-up by OSS inspector staff.

The Current Database System for Maintaining O&M Records and its Uses

O&M Inspection Reports are entered manually into Envision. This includes date of inspection, operational status e.g. satisfactory, failing; date of next inspection, and O&M provider.

King County EH makes O&M data and OSS as-built data in general, available for use by realtors and designers/installers of OSS. OSS information is frequently requested by realtors, and OSS professionals. Individual packets and invitations to attend an OSS preventive maintenance workshop are mailed to new OSS owners and owners of failing septic systems.

O&M reports are used when the septic system in not in compliance e.g. failing system. The reports are sent to an inspector for follow-up action. Envision has the capability of creating notifications and producing information to remind owners of maintenance requirements. Notifications are sent to new systems owners; however staffing is limited to track expired O&M agreements.

Additional or Planned Changes to the Data Systems

The Envision database has the capability of implementing the new OSS requirements. King County EH plans on enhancing its database in the following ways if funding is available:

1. Allow OSS industry, and internal users to input inspection reports over the internet. (Following implementation of a new web-based Envision program)
2. Make as-built records accessible over the internet to homeowners, realtors, and the OSS

industry. (Maybe available 2007)
3. Clean-up records of abandoned OSSs and areas converted to sewers.
4. Automate database ability to support the following:
    a. Identify OSSs in sensitive areas/MRAs;
    b. Target areas with educational information;
    c. Identify parcels in the county with OSS;
    d. Identify how many systems are inspected;
    e. Identify which systems are not inspected;
    f. Identify the capacity to apply risk based parameters to the location, construction, operation and maintenance of on-site systems.
5. Automate notification and reminder letters based on inspection status.
6. Create reports and GIS maps of OSS in King County, and their type.
7. Increase OSS data management support staff
   "Data Base Coordinator" staff provides licensing support between the software contractor and Public Health and is available to design simple queries given adequate time to do so. The data base coordinator would also oversee management of OSS data including the following activities:
    a. Correcting errors; such as resolving duplicate records, researching parcel addresses, updating parcel numbers, correcting indexed file errors, etc.
    b. Enter into the Envision data base specific design criteria. (currently data entry is limited to as-built date, system type, owner, address, and parcel number)
    c. Develop and manage digital records e.g. electronic reports, scanning new documents, indexing (labeling) documents.

An estimation of the costs of these activities is discussed in Part 6 of this document. King County EH also plans to use its database to assist with identifying all OSS in the Marine Recovery Area (please see Part 4) for more information about the Marine Recovery Area proposed for King County). Using information gained from inspection reports, a survey of OSS owners in the Marine Recovery Area (MRA), and site visits, King County will create a map showing known and unknown OSS in the MRA. This map also will indicate whether OSS owners are in compliance with new inspection requirements.

Summary of Database Activities

King County EH plans to enhance its existing database in a variety of ways to simplify implementation of the new requirements and to improve King County's ability to measure the effectiveness of new programs.

King County EH plans to upgrade the database:
1. Provide a digital process and form template for O&M maintainers to send reports electronically.
2. Develop online access to asbuilts.
3. Develop GIS map layers to show all known and unknown OSS in the Marine Recovery Area.

Electronic submission of O&M records sets the stage for the future:
1. Applications can be better tracked and monitored.
2. Provides ability to conduct studies and generate reports, providing the tool to conduct risk assessments, identify growth patterns of newly installed septic systems, etc.
3. Tracks system types, design and location features.
4. Identifies the number of systems repaired, soil type, and in what period of time.
5. It is adaptable to GIS, and allows data to be readily available to others.

Please see Part 6 for an estimate of resources needed and timelines to implement these activities. The timeline in Part 6 also prioritizes among activities proposed under this Plan.

Part 2: Identification of Sensitive Areas

Introduction

This section describes how King County EH identifies sensitive areas where OSS could pose an increased public health risk. It also describes environmental and demographic characteristics of King County and how King County EH coordinates with other jurisdictions and agencies when making decisions about sensitive areas.

This part of the Plan satisfies the following elements of WAC 246-272A-0015(1):

b) Identify any areas where OSS could pose an increased public health risk. The following areas shall be given priority in this activity:

i) Shellfish protection districts or shellfish growing areas;

ii) Sole source aquifers designated by the USEPA;

iii) Areas in which aquifers used for potable water as designated under the Washington State Growth Management Act, chapter 36.70A RCW are critically impacted by recharge;

iv) Designated wellhead protection areas for Group A public water systems;

v) Up-gradient areas directly influencing water recreation facilities designated for swimming in natural waters with artificial boundaries within the waters as described by the Water Recreation Facilities Act, chapter 70.90 RCW;

vi) Areas designated by the department of ecology as special protection areas under WAC 173-200-090, Water quality standards for ground waters of the state of Washington;

vii) Wetland areas under production of crops for human consumption;

viii) Frequently flooded areas including areas delineated by the Federal Emergency Management Agency and or as designated under the Washington State Growth Management Act, chapter 36.70A RCW;

ix) Areas where nitrogen has been identified as a contaminant of concern; and

x) Other areas designated by the local health officer.

i) Assure that the Plan was developed to coordinate with the [King County] comprehensive land use plan.

Activities

Description of King County Environment

Jurisdictional boundary

King County covers 2,130 square miles, and is the size of the state of Delaware. It extends from Puget Sound in the west to 8,000 foot Mt. Daniel at the Cascade crest to the east. King County's various landforms include saltwater coastline, river floodplains, plateaus, slopes and mountains, punctuated with lakes and salmon streams. Lake Washington, covering 35 square miles, and Lake Sammamish with 8 square miles are the two largest bodies of fresh water. Vashon-Maury Island in Puget Sound and Mercer Island in Lake Washington provide different island environments.

As of 2004, 39 cities ranging in size from Seattle with 572,000 people to Skykomish and Beaux Arts with less than 350 each. Since December 1994, five new cities incorporated, shifting

120,000 people into city limits. King County's 39 cities cover 383 square miles, or 18% of the county's total land area. The incorporated population has increased by a total of 327,000 since 1994, primarily due to new cities and large annexations as well as growth within existing boundaries.

Unincorporated King County, the territory outside any city, now has about 352,000 people or 20% of the county's population, on 82% of its land area.

Demographics & Population Density

In 2004, with more than 1,779,000 people, King County is the most populated county in Washington State and the 13th largest in the nation. King County exhibits growing diversity: 73% of the population is non-Hispanic white, 11% Asian or Pacific Islander, 5.5% Latino, 5% African-American, 1% and Native American.

King County's population has grown by 11% since 1994. The population is forecasted to grow by an additional 270,000 persons (15%) to about 2,049,000 by 2022. The (current or forecasted) number of housing units is estimated at 775,000.

Land Uses

The Growth Management Act (GMA), adopted by the state legislature in 1990, requires urban counties to develop comprehensive land use plans addressing growth. The Comprehensive Plan Land Use Map is adopted as part of the plan, which depicts the urban growth area, rural area, natural resource lands and other land uses. *http://www.metrokc.gov/gis/mapportal/mapsets.htm*

In accordance with the GMA, King County and its cities have developed a Review and Evaluation Program in order to collect and review information relating to a variety of critical land use planning issues. This includes: Urban densities; buildable lands; growth and development; residential, commercial, and industrial development; transportation; affordable housing; economic development; and environmental quality.
http://www.metrokc.gov/gis/mapportal/mapsets.htm

Policy in the King County Comprehensive Plan describes Urban Growth Area development; "all new development shall be served by public sewers unless application of policy F-245 to a proposal for a single-family residence on an individual lot would deny all reasonable use of the property." See the Department of Development and Environmental Services link: http://www.metrokc.gov/ddes/compplan/ .

- In the Urban Growth Area, King County and sewer utilities should jointly prioritize the replacement of on-site systems that serve existing development with public sewers, based on the risk of potential failure.
- The existing public sewer system in the Town of Vashon cannot be expanded to serve land beyond the boundaries of the town, except under specific policy conditions (policy F-249).
- Public sewer expansions will not occur in the Rural Area and on Natural Resource Lands except where needed to address specific health and safety problems threatening the existing uses of structures or the needs of public schools & facilities.

Topography & Drainage

The topography of the King County Area ranges from nearly level to very steep. Depressions

occur in places. Soils in depressions show characteristics associated with wetness, namely gray and bluish mottles. Examples are soils of the Bellingham and Puget series. Soils formed on the highest mounds of the valley bottoms are well drained. Sloping soils on the upland terraces and in very steep mountainous areas are well drained and moderately well drained. The hazard of erosion generally increases with increasing steepness of topography. Four major river basins with salmon-bearing streams are separated by step sided plateaus whose slopes are subject to landslides and erosion.

Geology and Soils

The soils and land type of the King County Area formed largely in deposits of glacial drift laid down during the Vashon period of the Fraser glaciation. The major kinds of material left by the glacier are till, recessional outwash, and pre-glacial, lacustrine and outwash sediments. Following deglaciation, alluvium accumulated in the valleys, and a mudflow from Mount Rainer covered a large area in the vicinity of Enumclaw.

Water Quantity and Water Quality

Water supply in King County comes from a combination of public utilities and private wells. For more information on Group A and B water-supply systems in King County, please see the Washington Department of Health's Drinking Water System Data page at http://www.doh.wa.gov/ehp/dw/our_main_pages/data.htm. For information about private wells in King County please see the Washington Department of Ecology's Water Well Log website at http://apps.ecy.wa.gov/welllog/.

Groundwater quality varies from degraded to pristine. Repeat sampling of area wells suggests that nitrate concentrations have increased in the region's ground water since 1980. However, King County has not identified any specific areas of concern. Current land-use activities that may lead to increased groundwater nitrate concentrations include agronomic and livestock farming, turf management (golf courses) and suburban residences with septic systems.

Surface water quality in King County varies from critically impaired to healthy and is described in the Department of Ecology's 2004 State Water Quality Assessment report.
Coliform impairments include 160 locations including creeks, lakes, and rivers. Additional waters having Department of Ecology TMDLs for fecal coliform bacteria, includes 20 locations. TMDLs currently underway include: Piper's Creek, Swamp Creek, North Creek, Little Bear Creak, Issaquah and Tibbetts Creeks. Other locations may be started in the near future. (Status as of 4/06)

In the Green/Duwamish "watershed water resource inventory area" (WRIA 9) alone, 47 different water bodies are listed as failing to meet water quality standards, including 41 water bodies listed for Dissolved Oxygen or fecal coliform, such as Puget Sound, Elliott Bay, the Duwamish and Green Rivers, Mill, and Des Moines, Big and Little Soos, Newaukum Creek, and Crisp Creek. Please see DOE's Lists & Water Quality Assessment at:
www.ecy.wa.gov/programs/wq/303d/index.html
For WRIA information please follow the link to: WRIA (Watershed Resource Inventory Area) using the Simple Query Tool available at http://apps.ecy.wa.gov/wats/WATSQBEHome.asp
Or Ecology page: http://www.ecy.wa.gov/watershed/ws_update.html

Although OSS are frequently cited as potential contaminant sources in various reports there are little data that specifically link impairment to inadequate septic systems.

Critical Aquifers and Ground Water Management Areas

Critical Aquifer Recharge Areas (CARA) are designated under Washington State Growth Management Act, Chapter 36.70A RCW. These designated areas provide adequate recharge and water quality protection to aquifers used as sources of potable (drinking) water. http://www.metrokc.gov/gis/Mapportal/iMAP_main.htm

King County Groundwater Management Areas with adopted groundwater management plans include; Vashon-Maury Island, Redmond-Bear Creek Valley, Issaquah Creek Valley, and East King County. A draft groundwater management plan was prepared for South King County and is currently under review by water purveyors in that area. EPA designated three "*Sole Source Aquifers"* in King County: Cedar Valley (Renton Aquifer), Vashon-Maury Island Aquifer, and a portion of the Cross Valley Aquifer which is mainly located in Snoqualmie County. The City of Issaquah is currently in the process of seeking EPA "sole source" designation for the aquifer under their City.

Wetland Areas for Food Production

King County does not have any known wetland areas used for the production of crops for human consumption e.g. cranberry farms.

Flood Management Plan

The King County Flood Management Plan includes areas delineated by the Federal Emergency Management Agency or as designated under the Critical Areas Ordinance. The 2006 King County Flood Hazard Management Plan in available on-line through the DNRP website. Please see GIS Flood Management Plan - http://www.metrokc.gov/gis/mapportal/mapsets.htm

Designating Sensitive Areas

Areas Where OSS May Pose an Increased Threat to Public Health

King County EH has identified several areas where OSS may pose an increased threat to public health.

- Shellfish Growing/Protection Areas
- Sole Source Aquifer Areas
- Critical Aquifer Recharge Areas
- Industrial, Commercial Land Use Areas on a septic system.

Currently, there are no special public health OSS regulations for existing OSS' located in sensitive areas. However, the King County Critical Area Ordinance (CAO) requires that all new OSS' located in Type I and Type II Critical Aquifer Recharge Areas are required to meet advanced nitrogen standards.

The Vashon/Maury Island Work Group recommended that King County EH designate one Marine Recovery Area (MRA), Quartermaster Harbor. For more information about this MRA see Part 4.

King County EH is committed to adding to this list if new data shows OSS are posing increased public-health risks in any area of the county including the full list of priority areas outlined in WAC 246-272A-0015(1).

Coordination with Planning Entities within King County

The Department of Development and Environmental Services (DDES) issues the building permits. DDES also verifies that the project shall not have biophysical limitations to development

such as floodplains, steep slopes, slide hazard areas, bogs, swamps, forest management practices, or limited by other zoning and planning restrictions including, those under the Growth Management Act (GMA), Shoreline Management Plan, etc. Public Health also reviews plans that may impact setbacks, slopes, distance to water bodies, and other land development issues within their prerogative. Generally CARA regulations are enforced by the jurisdiction having building and planning authority. Each city has its own administrative details and the CARA rules may vary considerably.

In 2006 and 2007 a **temporary** arrangement allowed for an OSS senior inspector staff to co-locate with DDES 2 days per week to assure coordination with land use issues and provide on-going dialog. The future of this coordination remains uncertain dependant upon funding..

The DDES building applications and the OSS permitting process allows for cross agency checks and balances. Building applications or plans are submitted to DDES and are reviewed for ordinances and compliance to related to critical & flood areas, and other sensitive area issues.

State Environmental Policy Act Review

King County EH is submitting the SEPA Checklist for this OSS Management Plan with the Title 13 code revisions which are being finalized for a September 30, 2007 deadline.

Summary & Prioritization of Activities

Priority Areas

- The top priority in WAC 246-272A-0015 (1), protection of shellfish growing areas, is a high priority for protection at the State and regional level. Full implementation of 246-272A WAC in the shellfish protection districts is also consistent with requirements for protection of Marine Recovery Areas as established in Chapter 70.118A RCW.
- As resources become available to *actively* inventory areas beyond priority MRAs, completion of the inventory for the balance of the Vashon-Maury Island sole source aquifer area may be the next priority. Sole source aquifers, generally have no practical alternative supply of water. Consequently, full implementation of 246-272A WAC in the sole source aquifer areas is the second priority for the protection of these water sources.
- The third priority, Critical Aquifer Recharge Areas (CARA) with a critical recharging effect on aquifers used for potable water as designated under the Washington State Growth Management Act, chapter 36.70A.030b RCW. The King County groundwater program would advocate for the full implementation of 246-272A WAC in the CARA's to optimally protect the drinking water resource. In some cases the CARA's will also fall into the first or second priority areas. (Note: As mentioned earlier all new onsite sewage system on lots less than one acre located in Type I or Type II CARA must include nitrogen reduction processes.)
- Finally, within the top three priority areas, full implementation of WAC 246-272A should start with the lands zoned for industrial or commercial land use and sites with impacts greater than a single family residence such as schools.

Focusing the implementation of 246-272A WAC in the order suggested above should help meet the highest water quality protection needs at the earliest possible time.

Other considerations

- Environmental/Development implications
- Development density

- Age of house
- Intensity of development
- Historic sanitary surveys indicate problematic areas
- Application of the "Precautionary Principle"

> "When an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically."

Resources Required

Please see Part 6 moderate for a summary of resources needed and timelines to implement these activities.

Part 3: Operation and Maintenance in Sensitive Areas

Introduction

This section describes the Operations, Monitoring, and Maintenance (O&M) requirements that King County EH had in place county-wide prior to the development of this Plan. It also lists the recommendations for inspection requirements and enforcement activities both county-wide and in sensitive areas to fulfill the requirements of the new state law. Information about O&M requirements for Marine Recovery Areas can be found in Part 4.

This part of the Plan fulfills the following elements of WAC 246-272A-0015 (note: the citation below excerpts the applicable portions of the code):

1) By July 1, 2007, the written plan must specify how (King County EH) will:

> c) Identify operation, maintenance, and monitoring requirements commensurate with risks posed by OSS within the geographic areas identified in element (b) areas where OSS may pose an increased public health risk).
>
> g) Enforce OSS owner permit application, operation, monitoring, and maintenance and failure repair requirements defined in WAC 246-272A-0200(1), 265-272A-0270, 246-272A-0275, and 246-272A-0280 (1) and (2).

7) In order to implement the Plan, the local health officer may require the owner of the OSS to:

> a) Ensure additional maintenance and monitoring of the OSS;
>
> b) Provide dedicated easements for inspections, maintenance, and potential future expansion of the OSS;
>
> c) Place a notice to title identifying any additional requirements for OSS operation, maintenance, and monitoring; and
>
> d) Have an inspection of the OSS at the time of property transfer including the preparation of a "record drawing" if necessary.

Operation & Maintenance (O&M) Requirements Common to All Areas in King County

O&M Requirements in Place Prior to the Adoption of WAC 246-272A

In July 2005, the State Board of Health adopted Chapter 246-272A WAC, which establishes new O&M requirements for all OSS. Prior to adoption of Chapter 246-272A WAC, King County EH had a number of O&M program requirements in place that applied to all OSS.

First, King County EH requires owners of gravity systems with garbage disposals to perform or have performed maintenance inspections yearly; and if no garbage disposal exists, every three years. Pressure distribution systems are the same as required for a gravity system; however the maintenance inspection must be performed by licensed Maintainer. The inspection schedules for other systems include:

- Upflow Sandfilters – Inspected every 6 months by a Maintainer
- Sandfilters – Inspected yearly by a Maintainer
- Mound – Inspected yearly by a Maintainer
- ATU's – Inspected every three months by a Maintainer

Prior to the adoption of WAC 246-272A, King County EH O&M requirements for areas where OSS may pose an increased health risk were the same as its requirements for the rest of the county. The exception to this rule was the nitrogen reduction requirement in type I and 2 Critical Aquifer Recharge Areas. Because any nitrogen reduction technology by its nature is already subject to ramped up O&M requirements, additional requirements have not been justified.

King County Industry Professional Qualifications

An On-site System Maintainer (OSM) is authorized to perform septic inspections and/or preventive maintenance service (including limited repairs) on septic systems. Operation/Performance Monitoring Report forms are submitted to King County EH.

Qualifications required for On-site System Maintainers include the following:

- Two years of relevant septic system experience such as a license for 2 years as a designer, installer or pumper or written proof of employment on company letterhead explaining experience and competency.
- Proof of successful completion within the previous 12 months of a health officer recognized course of instruction in the operation, monitoring and maintenance of septic systems. Recognized courses are offered by:
    - Washington On-site Sewage System Association (WOSSA)
    - Washington State Environmental Health Association
    - Other as approved by PHSKC

NEW Requirements for O&M Pursuant to WAC 246-272A

The new Chapter 246-272A-0270, adopted by the Washington State Board of Health in July 2005, specifies that in all cases, OSS owners are responsible for maintaining their OSS and obtaining proper inspections. Furthermore, the WAC requires OSS owners to obtain a complete evaluation of their OSS components and/or property to determine functionality, maintenance needs, and compliance with regulations and any permits according to the following schedule:

- At least once every three years for all systems consisting solely of a septic tank and gravity OSS; and
- Annually for all other systems unless more frequent inspections are specified by the local health officer.

The King County Technical Advisory Committee (TAC) believes that the state's new inspection frequency requirements are adequate, and does not recommend more frequent inspections (unless the system's manufacturer requires more frequent inspections).

O&M Contracts

O&M contracts will remain the primary tool for assuring ongoing monitoring and maintenance.

O&M contracts are be required for ATU's, Pak Bed Filters (AdvanTex) Upflow Sand Filters (Glendon) and all other Sand Filters as a condition of a stub release. Sand Filters will require a Covenant per Title 13; this requirement can be satisfied by modifying the language on the Notice on Title.

With the exception of gravity systems all repairs which are classified as non-conforming are to have a Notice on Title (NOT) filed on the deed of records. The NOT shall indicate that the repair does not conform to the requirements of Title 13. Specifically,

- How the repair does not conform to Title 13
- Indicate that future building permits for expansions (increased wastewater production, increased wastewater strength or alterations to the building or drainage that will have a likely impact on the functioning of the system) will not be approved
- Indicate that the repaired system is an approved septic system for the current use of the property.

Staff are encouraged to have a NOT on all repairs using a PD or higher technology. All new systems are to have a NOT.

The division should consider placing a condition on non-conforming repairs requiring and annual inspection and report conducted by a licensed O&M provider.

Sufficiency of King County's O&M Program

Currently, a lack of data makes it difficult to determine whether King County's pre-WAC 246-272A O&M Program is sufficient in protecting public health county-wide or in areas where OSS may pose an increased health risk. However, King County EH staffs believe that O&M requirements could be strengthened country-wide, and have identified the following areas where improvements in the O&M program could help protect public health and the environment:

- Older OSSs inventoried (indexed) in order to identify additional O&M monitoring sites;
- Inventory expedited to track data, run queries, send out mailings;
- Greater specificity in O&M requirements (standardized inspections and reporting systems);
- Additional capacity to follow up with OSS owners after the permitting process is complete;
- Better evaluation of OSS functioning;
- Better assessment of the effectiveness of existing programs;
- Social Marketing O&M program to ensure that EH understands how to better target audiences with educational information;
- Ability to track general OSS risk impacts:
  - Design criteria e.g. location, system type and components, tank size & type, drain field location/capacity, soil type/conditions; and
  - Potential siting impacts e.g. garage, sheds, decks, driveway, landscaping, distance to water source

Enforcement Activities

Currently, enforcement occurs when a septic system fails and King County EH uses enforcement measures to ensure that the property owner repairs or replaces it. King County EH discovers failing systems through one of several mechanisms:

- An O&M report indicates a failing system;
- Homeowners may notify the County that their system is failing;

- OSS professionals may notify the County; or
- A neighbor or other third party may complain to the County that a system is failing.

Enforcement also can occur when a homeowner applies for a development permit, such as a building permit for an addition to a home. At that time, King County checks OSS records and can withhold the permit until repairs or O&M occur if required.

1. Current caseload is supported by adequate staff levels; however, when MRA/sensitive areas are identified and inventory processes are implemented additional staff will be required for anticipated enforcement actions. Please see part 6 staffing needs.

When an Inspector is alerted to a failing system, and the OSS owner is not responding to initiating a repair, the inspector takes the following enforcement action:

- "Notice of Violation" is mailed to the OSS owner;
- A "Notice & Order", if substantial compliance has not been made and does not appear forthcoming;
- A "civil penalties" is applied. A violation by persons engaged in non-commercial ventures is $25.00 per violation and for commercial ventures $250.00 per violation.
- Injunctive Relief – A superior court judge may require owner to repair the system.
- Failing systems are repaired and signed off by the inspector and enforcement action is taken if required.

The Envision database is monitored by the EH attorney as well as staff to track compliance.

Revised Compliance Requirements

King County EH recommends that the new compliance program include the following basic elements:

1. Use social marketing to learn more about the target audience and engage OSS users to better understand the benefits of maintaining and inspecting their OSS.
2. Simplify reporting requirements, by providing an electronic method for submitting O&M reports.
3. Risk-based prioritization for compliance actions. The top priority in WAC 246-272A-0015 (1), is the protection of shellfish growing areas. The second priorities, sole source aquifers, generally have no practical alternative supply of water. Consequently, full implementation of 246-272A WAC in the sole source aquifer areas is the second priority for the protection of these water sources. The third priority, Critical Aquifer Recharge Areas (CARA) with a critical recharging effect on aquifers used for potable water per RCW 36.70A.030b, for protection of the potable groundwater supply. Finally, within the top three priority areas, full implementation of WAC 246-272A should start with the lands zoned for industrial or commercial land use and sites with impacts greater than a single family residence such as schools.
4. Penalties as a last resort to achieve compliance. Penalties should only be issued after warnings have been given and after education and other compliance actions have failed.

Furthermore, King County EH should require proof of compliance with OSS inspections maintenance requirements as follows:

- The County will require a seller to submit proof of a successful professional OSS inspection including an as-built, prior to the transfer of property sale.
- The County will require proof of O&M compliance when County permits are issued, including: building permits for remodels, additions or replacement of residential

structures;
- The County will require a restaurant annual operational OSS permit;
- Require jurisdictional building departments to obtain King County EH approval for commercial "change of use", for facilities on OSS.

Summary and Prioritization of Activities

O&M activities will be enhanced for MRA and sensitive areas. This includes: all on-site systems following an operation and monitoring maintenance schedule; additional system design, and location parameters entered into the envision database; and risk assessments and tracking O&M in sensitive areas conducted when the OSS inventory is sufficient to support these activities.

Recommended Actions:
King County EH recommends the following activities:
- Provide capability for the electronic submission of O&M reports.
- King County EH should follow the state's schedule of required inspections or more frequently, if suggested by the manufacture's instructions.
- King County EH should review siting and design requirements for OSS in areas where systems may pose an increased health risk, and monitor water quality in these areas.
- King County EH should require sellers to provide proof of professional inspection at the time of property transfer and sale, and require proof of inspection before issuing a variety of permits.
- Annual inspection required for non-conforming OSS.

Please see Part 6 for a summary of resources needed and timelines to implement these recommendations.

Part 4: Marine Recovery Area (MRA)

Introduction

In March 2006, the Washington State Legislature enacted Third Substitute House Bill 1458, which became RCW 70.118A. This new law created a new type of management area called a Marine Recovery Area (MRA). The law requires local health jurisdictions to establish MRAs in places where OSS are "a significant factor contributing to concerns associated with" the following areas:

• Shellfish growing areas that have been threatened or downgraded under chapter 69.30 RCW;
• Marine waters that are listed on the 303(d) list for exceeding federal Clean Water Act standards for low-dissolved oxygen or fecal coliform bacteria; or
• Marine waters where King County EH has identified nitrogen as a contaminant of concern.

The new law requires King County EH to adopt an MRA OSS Strategy for each MRA identified. This strategy must describe how King County EH will accomplish the following tasks by July 1, 2012, and thereafter:

• Find existing failing OSS and ensure that their owners make necessary repairs;
• Find unknown[1] systems and ensure that they are inspected and repaired as necessary;
• Require O&M professionals to submit reports or inspection results to King County EH; and
• Develop and maintain an electronic database of all OSS within the MRA.

This section describes how King County EH worked with the Vashon/Maury Island Work Group to identify one MRA in King County. The recommendations for inspection requirements in the MRA, current activities occurring in the MRA, and data system requirements for the MRA are also described in this section. Part 6 describes King County EHS' OSS Management Strategy in the MRA and outlines King County EHs' needs for a contract with the Washington Department of Health.

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[1] RCW 70.118A defines "unknown system" as an OSS that was installed without the knowledge or approval of the local health jurisdiction, including those that were installed before such approval was required.

Work Group Recommendations for the MRA

Identification of the MRA

To determine which areas might be considered an MRA on Vashon/Maury Islands, King County GIS created map overlays showing the locations of the applicable sensitive areas. The available links for these over lays are included.

- "Approved"[1], "Prohibited"[2], "Unclassified"[3], Conditionally Approved[3] - marine shoreline areas; DOH site http://ww4.doh.wa.gov/gis/gisdata.htm
- Well Head Protection; Ecology site: http://apps.ecy.wa.gov/website/facsite/viewer.htm
- Sole source aquifers designated by the US EPA; King County IMAP http://www.metrokc.gov/gis/Mapportal/iMAP_main.htm
- 303d Department of Ecology list; http://www.ecy.wa.gov/services/gis/data/data.htm WIRA maps: http://www.ecy.wa.gov/services/gis/maps/wria/303d/303d.htm. The maps for WRIA 8 and 9 (encompasses King County).
- Critical Aquifer Recharge Areas; KC DNR site: www.metrokc.gov/ddes/cao/PDFs/mapKC-CARA-15051AttachB.pdf - 2004-09-17
- Recreational areas;
- Drainage, wetland, floodplain http://www.metrokc.gov/gis/mapportal/PViewer_main.htm
- The *Greenprint for King County* http://dnr.metrokc.gov/wlr/greenprint/index.htm
- Age of house
- Number of OSS repairs
- Development density

Definitions:

Approved[1] means a classification used to identify a growing area where harvest for direct marketing is allowed.

Prohibited[2] means a classification used to identify a growing area where the harvest of shell stock for any purpose, except depletion or gathering of seed for aquaculture, is not permitted.

Conditionally approved[3] means a classification used to identify a growing area which meets the criteria for the approved classification except under certain conditions described in a management plan.

Unclassified[4] No DOH definition, described in the Model Ordinance which says a Marine Shoreline area has to be classified in order for it to be a harvestable area. If an area has not been classified by DOH, than harvesting is not allowed.

The majority of the Vashon/Maury Islands (VMI) MRA Work Group recommended that King

County EH designate Quartermaster Harbor as a MRA. The Work Group's selection of the MRA was heavily driven by DOH survey reports indicating OSS failures along the western shoreline of Quartermaster Harbor (QMH). The parameters described above were also discussed among the Work Group.

The MRA boundaries were set through a facilitated meeting process. The MRA boundary is mainly located on the Eastside of the Vashon Hwy along the shoreline and extends from Burton Acres to Harbor Heights and South to a point near Neal Point. WA Department of Health GPS coordinates for "prohibited" areas were also applied to identify the boundary. The VMI Work Group recommended keeping the MRA area small and manageable. The number of available professional island O&M and septic system designers who could be called upon for making OSS repairs and doing operational and maintenance work is a limiting factor. The VWI Work Group expressed concern that if the MRA was too large, there would not be sufficient resources to keep up with the demand for doing operational checks, repairs, etc. There are other septic system professionals located outside Vashon-Maury Island; however most do not work on Vashon-Maury Island.

Once the Quartermaster Harbor boundary (MRA) was identified, the Work Group divided the MRA up into "zones" or areas where work could begin incrementally.
The "Zones" include

- First: North end, Governor's row area
- Second: South end
- Third: Middle area - Harbor Heights

A list has been generated identifying specific parcels located in the MRA boundary and zones 1-3.

Since completion of the work group activities PHSKC has learned that there are several areas along East Passage that are unclassified for shellfish harvest. The areas were evaluated as part of the East Passage Shoreline survey conducted by the Washington Department of Health in ????. WADOH identified a number of "suspect" onsite systems in each of these areas, recommended further assessment and did not classify the areas because of the septic system concerns. WADOH has indicated in verbal communication that these area must be identified as MRA's if the PHSKC plan is to be determined to be compliant with RCW 70.118A and WAC 246-272A.

Based on the committee recommendations and the comments from WADOH, the final report recommendation for MRA designation is a single Vashon Island MRA with non-contiguous boundaries made up of the west side of Quartermaster Harbor as referenced above and 4 small areas along East Passage the coordinates for which are:

- Lat. 47.50276 Long -122.45103 to Lat 47.49974 Long -122.45627
- Lat 47.47869 Long -122.44837 to Lat 47.47195 Long -122.44413
- Lat 47.46839 Long -122.43702 to Lat 47.46648 Long -122.43393
- Lat 47.43113 Long -122.43608 to Lat 47.42894 Long -122.43572

In addition the WA State Department of Health has finalized their marine area survey report for Colvos Passage (Westside of VMI). New data shows that the fecal coliform bacteria are elevated in areas and DOH has identified additional "prohibited" areas. King County EH needs to review this new data and work with the VMI work group to determine if additional locations should be designated as an MRA.

King County EH is also working with the State Department of Natural Resources to survey an

area of Redondo Beach, Dumas Bay and Dash Point. If the survey results indicate elevated fecal counts from failing septic systems, this area may also be designated as an MRA.

Additional VMI Work Group Discussion Points

During lively VMI Work Group discussions a MRA boundary was identified. However, some concerns are noted:

- Vashon has only a few OSS professionals who work on the Island. This is a limiting factor when choosing an area with boundaries and timeline deadlines. The MRA can not exceed local resources for conducting operational checks, repairing septic systems, etc.
- A recent door to door meeting invitation indicated absentee owners is greater than 25% along the marine area, the island-wide rate is 12%. It was reported that many of these absentee owners have not visited the QMH property for years.
- Residents with fixed income may incur costly repairs.
- There is a perception that innovative repair options are unavailable.
- Proper operation sustainability – How can OSS be maintained so repeated surveys, repairs, etc are not required?
- Success sells success! The north end area requires additional water quality testing and evaluation of septic systems which may remove these sites from a failing system suspect list. This would demonstrate immediate success for resolving a "prohibited" area label. Public Health has approved several successful repairs in Harbor Heights. This is self promotion for success which will help those skeptics see that progress is being made.
- What guarantee is there that after costly repairs the County won't require connection to a sewer system? No plans are in the works for a sewer system expansion. However, the County is costing the sewer connection option for a section of the QMH to connect to sewer for review by community members. This will provide the option to compare sewer connection costs vs. individual system repair costs.

Inspection Requirements in the MRA

As described above, RCW 70.11A requires King County EH to ensure that all OSS within an MRA are functioning properly. Additional inspection requirements for the MRA include:

- OSS owners, including owners of gravity systems, will require a professional inspection within 5 years after a MRA designation. Where there is no system record the inspection must include identification of the system type, location and functionality with a report that includes an "as-built" drawing.
- As-built drawings will be submitted to King County EH within 5 years of a MRA designation.
- Owners of all systems within an MRA must inspect their OSS annually unless the manufacturer requires more frequent inspections.

Additional New Requirements within the MRAs

King County EH also recommends the following actions in the MRA:

- Under specific circumstances conduct sanitary surveys (grant funded).
- Water front property building remodels may be allowed under specific conditions:
    - Septic systems are upgraded to meet treatment standards and performance testing levels per WAC 246-272A-0110 Proprietary treatment products--Certification and registration section, (4) (b) Table II; and
    - Existing plumbing is retrofitted to meet low flush, low water usage standards.

These actions are an advantage for VMI, as groundwater maybe limited. It also benefits OSS owners in two ways:

1. reduces hydraulic loading and;
2. raises the treatment standard to the highest level possible, thereby reducing organic loading. So we get a two fold benefit, hydraulic and organic load reductions.

Additional Educational Outreach within the MRA

King County EH recommends a strong community outreach approach for identifying OSS and engaging the public with alternative OSS solutions. Approaches are described in Part 5, and are summarized:

- Social Marketing/Behavioral Change Strategy – Engage and partner with communities in MRAs to develop the capability to address homeowner's specific needs e.g. alternative technologies, community vs. individual solutions; and outreach strategies to ensure that OSSs are functioning properly.
- Use a "Charrette" process for complex options and where community interests support the process. Usually, it is an intensely focused multiday session that uses a collaborative approach to create realistic and achievable designs that work. The Charrette process uses strategic planning to overcome conflict. Part of the strategy is to focus on both the big picture and details of a project to produce collaborative agreement on specific goals, strategies, and project priorities. Charrettes establish trust, build consensus, and help to obtain project approval more quickly by allowing participants to be a part of the decision-making process.

Responsible Management Entity (RME) Operation and Maintenance

Explore RMEs where there are a large number of onsite and cluster systems or in Marine Recovery Areas. This is useful in areas where there are needs for specific water quality requirements because the sensitivity of the environment is high, e.g. wellhead protection areas, shellfish waters. Frequent and highly reliable operation and maintenance is required to ensure water resource protection. Issuing the operating permit to a responsible management entity (RME) verses a property owner provides greater assurance of control over performance compliance. This allows the use of performance-based systems in more sensitive environments.

Current Activities in the MRA

Identification of all Known, Assumed, and Unknown OSS in the MRA

RCW 70.118A requires King County EH to identify all OSS in the MRA by July 1, 2012.
To begin with, OSS and Assessor's data were merged. This allows selection of all parcels within the MRA and querying the relevant OSS permitting data for those parcel numbers. A comparison of assessor reported sewer service areas with unsewered areas helped identify parcels with unknown septic systems.

- Unknown[1] OSS systems located in the Quartermaster Harbor area ~ 154.
- Assumed[2] OSS in the Quartermaster Harbor project area: assessor records (developed properties) show approximately 176 developed properties homes in the MRA.
- Known[3] OSS in the Quartermaster Harbor area from the department database: the County's permit database shows 12 residential homes in the MRA. (Accorde data merge with Envision database is incomplete, this figure may change).

An initial estimate of the number of parcels in the proposed MRA boundaries along East Passage suggests there potential about 100 additional developed properties meaning within the entire proposed MRA there are between 250 and 300 systems that will need to be inventoried by 2012.

Part 6 of this Plan describes in more detail how King County EH plans to improve the OSS

inventory.

Determination and Repair of Failing Systems

Currently, King County uses three methods to determine whether OSS is functioning appropriately:

- Inspect permitted repairs;
- O&M reports submitted by professional inspectors; and
- Complaints from citizens about failing systems.

Definitions:

[1] "Unknown system" (from 3SHB 1458) as an OSS that was installed without the knowledge or approval of the local health jurisdiction, including those that were installed before such approval was required.

[2] Assumed OSS (for the purposes of inventorying OSS) – "An assumed OSS has no records but through GIS analysis an OSS can be assumed to exist on a parcel".

[3] Known OSS (from 3SHB 1458) – "Known system means an OSS that was installed with the knowledge or approval of the local health jurisdiction. Known OSS include; conforming and nonconforming systems.

Electronic Data System of OSS in an MRA

O&M providers performing inspections or pumping OSS currently submit reports to the O&M Program Manager. The Manager is working on developing an interface that will allow O&M providers to submit reports online. A pilot project with interested O&M professionals will be initiated in the near future.

O&M providers report OSS failures to King County EH immediately. In turn, King County EH responds immediately to an OSS failure.

Ensuring Electronic OSS Data Systems for Each MRA are Compatible with Other Data Systems

One of the intents of 3SHB 1458 is for the jurisdiction to develop electronic data systems capable of sharing information regarding OSS within MRAs. Currently, indexed as-builts will be web accessed (2007 yr end); and Public Health ITS staff indicate the proposed data management enhancements will allow for data transfer to various standard data base tools.

DOH Contracts with King County for Marine Recovery Area

Under RCW 70.118A, the Washington State Department of Health must enter into a contract with each local health jurisdiction, including King County EH, to implement its OSS Plan. The contract will include state funding. To be eligible for the contract and funding King County EH must show how it will meet the goals listed in Table 4.1 below. King County EH has limited to inadequate resources to implement prioritized activities.

Table 4.1: Activities for Contract with the Washington State Department of Health

Goal	Prioritized Activity to Meet Goal	Current Capacity
Show progressive improvement in finding	1. Develop and conduct trainings for O&M Providers 2. Research database & files for OSS records	Limited Capacity

failing systems	3. Index scanned microfiche data 4. GIS coordination with OSS data 5. Database support for running queries, merging data, coordinating data requests	
Show progressive improvement in working with OSS owners to make needed system repairs	1. Implement "community engagement" strategy 2. Partner with local community groups 3. Public Health Web-site enhanced with MRA educational information. 4. Educational information developed for MRAs 5. Inform owner of potential "out of compliance" action 6. Take out of compliance action as required 7. Draft reports, letter prep, and oversee mailings	Limited Capacity
Take steps to find previously unknown systems and ensure that they are inspected as required and repaired as necessary	1. Review OSSs on file 2. Send a survey to owners of OSS within the MRA, asking for information about their OSS 3. Require all OSS owners in the MRA to have a professional inspection as the first inspection required under this plan 4. Develop O&M Provider training program 5. Develop and distribute general education materials about new inspection requirements 6. Index scanned OSSs (~100,000 docs); 7. Take enforcement action regarding failing systems in MRAs 8. Update OSS data as applications, permits, etc. are processed.	Limited Capacity
Show progressive improvement in the percentage of OSS that is included in an electronic database	1. Send a survey to owners of OSS within the MRA, asking for information about their OSS. 2. Enter this information into the database. 3. O&M professionals will submit inspection reports to the County in MRAs, causing a need for additional staff to track, monitor, and take enforcement actions. 4. Require inspection at the time of property transfer. 5. Update database with new records. 6. Index scanned microfiche. 7. Coordinate with industry to develop a report form and ability to submit & receive applications & reports electronically. 8. Continue to identify sensitive and MRA areas and apply new reporting requirements. 9. Monitor and track program progress.	Limited Capacity
Show progressive improvement in the percentage of OSS that has had required inspections	1. Require all OSS owners in the MRA to have a professional inspection as the first inspection required under this plan. 2. Develop O&M training program for professionals 3. Develop and distribute general education materials about new inspection requirements. 4. Should an OSS owner not comply with providing OSS documentation or operational check; record an "out of compliance" document.	Limited Capacity

Summary

King County EH has the following recommendations concerning the MRA:

- One MRA designated, and divided into three "zones" for phasing in work areas per the VMI Work Group recommendation. In addition four more small non-contiguous areas along East Passage are proposed to be included in the initial MRA designation.
- Require OSS owners within the MRA to get a professional inspection as the first inspection required under this plan within 5 years of an MRA designation
- Revise Title 13 to include the ability to remodel water front property if certain conditions are met.
- An O&M inspection schedule is required on all OSS.

- Keep the MRA a small manageable area due to lack of O&M professionals and King County EH staff resources.

Several Quartermaster Harbor meetings have been held with community member to describe program efforts in the MRA. Several meetings are being planned for the near future.

Please see Part 6 for information about the MRA implementation strategy, resources needed, and timelines.

Part 5: Education

Introduction

This part of the Plan describes the OSS education activities that King County EH currently conducts and the activities that EH plans to conduct to support the provisions of this plan. This section relates to the following elements of WAC 246-272A-0015(1):
(d) Facilitate education of homeowners regarding their responsibilities under this chapter and provide O&M information for all types of systems in use,
(e) Remind and encourage homeowners to complete their O&M inspections.

Activities

Current Education Program

Checking and inspecting their systems is an ongoing challenge for owners. It is the OSS owner who is responsible for mitigating the risk of their OSS and recent state rule revisions clarify the homeowner responsibility to maintain their OSS. An educated general public can help identify issues if they know the warning signs of a failing OSS.

An electronic data system is instrumental in developing the ability to remind homeowners when it is necessary to attend to the needs of their OSS. Reminder notifications can be helpful in prompting a resident to inspect their OSS and potentially resolve issues before the OSS fails.

At the time of writing this plan OSS education takes place through a variety of methods:

- Attending community events with an OSS display and provide technical assistance (1-3 events per year).
- Targeting OSS area community newsletters with informative OSS information.
- Attending real estate meetings to explain OSS Notice on Title requirements and provide OSS educational information.
- Developing bus cards with OSS O&M messages. Targeted bus routes in OSS dense areas.
- Implemented a public access to GIS and indexed asbuilts. (Implementation stage, ~ 20,000 asbuilts available; and ~80,000 requires indexing)

Planned Education Outreach

PHSKC plans to continue the following education and outreach efforts to inform and educate public on the need to care properly for OSS:

- Developing educational information related to new O&M inspection requirements.
- Inviting OSS owners with failing systems to attend an O&M workshop emphasizing the proper use, care, and benefits of their system.

- Mailing new owners on septic systems, informational packets and invite to O&M work shops to remind and encourage OSS owners about proper care and preventive maintenance.
- Using bus cards to target OSS users in septic system areas with educational messages.
- Educating owners regarding hiring certified and licensed professionals authorized to perform septic inspections and/or preventive maintenance service (including limited repairs) on septic systems.

Additional MRA Education Outreach

PHSKC plans to engage in additional education and outreach activities including the following:
- Producing specific educational information targeted at MRA's.
- Enhancing the wastewater program website with MRA information.
- Providing industry training/meetings related to MRA requirements, and the industry and Public Health's role in implementing new requirements.
- Engaging the community in problem-solving meetings, workshops, or OSS Technology fairs.

Community Engagement in Decision-Making in MRAs
Charrettes, Social Marketing, and Passive Education are three methods that may be used for implementing an MRA.

The Charrette approach requires an up front time commitment from Public Health, the community, and with experts to look at all options. The Charrette process is useful for complex options and where community and agency interests support commitment to this process. A Charrette is a creative burst of energy that builds momentum for a project and sets it on a course to meet project goals. It can transform a project from a static, complex problem to a successful, buildable plan. Usually, it is an intensely focused multiday session that uses a collaborative approach to create realistic and achievable designs.

The Charrette process uses strategic planning to overcome conflict. Part of the strategy is to focus on both the big picture and details of a project to produce collaborative agreement on specific goals, strategies, and project priorities. Charrettes establish trust, build consensus, and help to obtain project approval more quickly by allowing participants to be a part of the decision-making process.

The social marketing/behavioral change approach includes identifying interests, perceived threats, and "cues to action"; through focus groups, surveys, or holding public meetings. Specific models have been developed for planning and implementing social marketing programs. These models have developed useful techniques for facilitating community involvement in, and even control of, change efforts, including focus group discussions, preference ranking, etc.

The Passive Educational approach is agency "business as usual" which is simply public education and awareness campaigns e.g. bus cards, mass mailings, news paper articles, etc. With the Passive approach there is limited public engagement for program planning and implementation in which program goals are determined beforehand and communicated to "beneficiaries" via mass media campaigns using print-media, posters, leaflets, radio or television. This approach is an option if resources are too limited.

Current Reminders

Description of the current program to remind and encourage homeowners to complete O&M on their OSS as required.

King County EH holds free workshops for owners of new homes on septic and systems that have been reported as failing. Participants are evaluated on their OSS knowledge before and after the class in order to establish a baseline for understanding users' understanding of septic systems.

Septic designers must submit an as-built drawing of a newly installed OSS, and the drawing becomes part of the County's records. These drawings are mailed to the homeowner along with O&M packets of information to remind homeowners and/or contractors of the O&M and inspection requirements associated with their systems.

Certain permits require an O&M contract. For example, the manufacturer requires that OSS owners sign an O&M contract if they have a Glendon Biofilter.

During the final inspection King County EH inspectors encourage homeowners to complete O&M.

Currently, signed O & M contracts are required on all new systems types accept for gravity systems and repair permits. Depending on the type of home remodel project O&M contracts may also be required. This varies with the age of the system, scope of the project and how the system is currently functioning.

Planned Reminders

Description of planned or additional ways of notifying homeowners to complete required O&M on their OSS

As described in Part 6 King County EH plans to implement the following methods of notifying landowners that inspections are due:

- Develop an automated inspection notification function.
- Develop a process to individual notify property owners/users on inspection requirements.

Before this plan can move further, King County EH will need to obtain funding for mass mailings, developing notice cards, and overseeing the process in general.

Measured Effectiveness

The effectiveness of educational outreach activities may be measured for success in several ways.

1. O&M reports -- an increase of reports received by Public Health demonstrating operational status e.g. pre-failing, failing, satisfactory
2. Public Health Website -- O&M hits increase.
3. OSS System complaints and enforcement -- tracked efficiently for MRAs.
4. Behavioral Change/Charrettes -- The overall evaluation indicator is whether or not the MRA project was successful. On a smaller scale the evaluation may focus intently on plan development, implementation; improvements in the number of systems no longer failing; increase in O&M monitoring reports, re-designating shoreline areas from a "prohibited" to "approved" status, community participation in the decision-making processes, etc.

Please see following for a summary of Education Activities, Measured Effectiveness, and FTEs.

Education Activities, Evaluation, and FTEs
(Part 5)

TASK	Measured Effectiveness	FTE
A. Public Education		
1. Design Bus Cards or Posters and educational materials	Document population reached per Metro marketing department.	O&M Program, New FTE
2. Target designated MRA areas with educational materials	Document population reached per Metro marketing department.	New FTE
3. Promote OSS system maintenance by providing access to as-built records	Summarize # of hits to web site	O&M Program
4. Promote proper O&M through multi-media public outreach methods. May include mailing inserts, newsletters, newspapers, etc	Summarize # residents reached per quarter and method of contact. Describe additional O&M requirements for MRAs and economic benefits. Educate owners regarding hiring certified and licensed professionals.	O&M Program, New FTE
5. Arrange & conduct community presentations regarding HB1458 and MRAs.	Summarize feedback, and attendance, and public response.	New FTE
6. Provide OSS information at various community events	Report quarterly, name, location, contact person(s), and total Kits distributed. At least 4-10 seminars, conventions, community events or fairs as requested.	O&M Program, New FTE
7. Revise Public Health home page.	Summarize # of hits to site.	New FTE
B. Workshops - Consultant, Promotion & Evaluation		
1. Oversee and conduct public education OSS workshops for homeowners and the real estate industry.	Provide Homeowner OSS Kits. Minimum of Three workshops per year. Target MRA.	O&M Program, New FTE
2. Research locations and time of workshop.		O&M Program
3. Identify & hire consultant to implement workshop.	Summarize dates, place, time, etc.	O&M Program
4. Provide Homeowner OSS Kits to Workshop participants, and new OSS owners.	Workshops - Provide info on # attended, # invited. Summarize # of kits distributed. Approx. 2,500 per yr/total county	O&M Program
5. Summarize Pre & Post Workshop Evaluations & Social Marketing Indicators	Annual report, summary of course corrections if required; and evaluation results.	O&M Program, New FTE
6. Prepare a final report -- Workshop Evaluations	Summarize score avg. for behavioral indicators.	O&M Program, New FTE
C. Community & Agency Partnerships		
1. Data Base enhancement, digital submission of applications & reports.	Industry feedback. % Industry choosing digital submission.	O&M Program, New FTE

2. MRA/Sensitive Areas Community Work	Engage community in solution-based process.	New FTE
3. Interagency Coordination e.g. local Ground Water Advisory Committee. And others as identified.	Summarize meeting info (if applicable); 2. Identify watershed area concerns & OSS.	New FTE
D. Marine Recovery/Sensitive Areas – Community Engagement		
1. Target MRAs with Public outreach strategies	Include description of additional MRA O&M requirements. Progress may be demonstrated by progressive improvements through educational awareness, behavioral change campaigns, OSS workshops, MRA project successes.	New FTE
2. Empower individuals with understanding, skills and active engagement in project design, implementation, and evaluation.	Project success	New FTE, or consultant
3. Revise the Public Health Waste Water Program Web Site to include MRA information, DOE OSS Loan Program, etc.	Summarize # of hits to site.	New FTE
4. Mass mailing notification - Informational Packets & Introduce MRA concepts; community presentations. Liaison with community for responses and coordination	Summarize community concerns, liaison challenges, etc.	New FTE
5. Mail OSS Kits to new OSS owners, occupants with failing systems, and all occupants in the MRA.	Provide data on total mailings. Summarize feedback. Send individual OSS workshop invitations and OSS Kits to new OSS owners & owners ID'ed as having a failing OSS. Include specific MRA information, and targeted messages.	New FTE
6. Incorporate Behavioral Change strategies or Charrette's in project design e.g. Focus on attitudes & beliefs -- Perceived: threat, susceptibility, severity, benefits; barriers; Cues to Action	Engage community in identifying motivational strategies to overcome perceived barriers, etc. Community participates in monitoring progress and in the evaluation process.	New FTE or consultant

Summary and Prioritization of Activities

Public Health's database must be fully populated to have the ability to manage MRA and other onsite data and conduct mass mailings. Part 1 describes database constraints to efficiently accomplish this task.

Proposed educational activities are dependent upon a fee package and funding level which will be proposed to the Board of Health. At a minimum King County EH plans the following educational activities:

- Develop general outreach materials to explain new OSS inspection requirements.
- Develop a training program for O&M Maintenance Professionals to ensure that septic systems are inspected properly, and adequate as-built documentation is submitted to King County EH.

- Mass mailing or door hangers with informational packets addressed to MRA OSS owners.
- Community meetings held in MRAs.
- Vashon/Maury Island OSS Technology Demonstration.

Part 6: Implementation Plan and Summary Timeline

This part contains three major sections. It reiterates King County EH recommendations, describes the activities that King County EH currently undertakes, and sets forth a plan based on implementing the OSS Technical Advisory Committee (TAC) and EH recommendations related to Title 13 revisions to support the Plan.

King County Environmental Health Recommendations

King County EH recommends that the County take the following actions to fulfill the requirements of Chapter 246-272A WAC and RCW 70.118A.

OSS Inspections

- King County EH believes the frequency of the state's OSS inspection requirement is adequate: conventional gravity systems must be inspected at least once every three years, and all other systems must be inspected at least once every year.
- For properties that do not have an as-built diagram, a professional inspection should be required prior to the sale of the property, including; an as-built drawing, identifying components of the system, location, and other design parameters.
- For community and commercial OSS, annual professional inspections should be required for high risk locations such as Critical Aquifer Recharge Areas or when the business generate liquid wastes that are incompatible with discharge through an onsite system. The inspections should be completed using proscribed procedures and standardized forms, submitted to PHSKC for review and any necessary follow up action.

Marine Recovery Areas

- King County should review its siting and design requirements for OSS in the MRA and revise them if necessary to address the specific environmental concerns in the MRA.
- OSS owners within the Marine Recovery Area should be required to get a professional inspection that includes documentation of system location, type and function, within 5 years of a MRA designation and annually thereafter irrespective of system type.
- PHSKC should work with property owners with inadequate septic systems to effect necessary upgrades in a timely way.

Areas Where OSS May Pose an Increased Threat to Public Health

- The following are areas should be listed as sensitive areas in order of priority in the OSS Management Plan
  - ✓ Protection of shellfish growing areas
  - ✓ Sole source aquifers
  - ✓ Critical Aquifer Recharge Areas (CARA) with a critical recharging effect on aquifers used for potable water per RCW 36.70.030b

✓ OSS' located in areas zoned for industrial or commercial land use

- King County should review its siting and design requirements for OSS in sensitive areas and revise them if necessary to address the specific environmental concerns in each sensitive area.
- The plan should be flexible enough to allow the County to identify new sensitive areas if data show that OSS are posing increased public health risks.

Compliance

- The County's compliance program should include four basic elements
  1. Use social marketing to learn more about the target audience and engage OSS users to better understand the benefits of maintaining and inspecting their OSS.
  2. Simplify reporting requirements, by providing an electronic method for submitting O&M reports.
  3. Risk-based prioritization for compliance actions. King County EH should prioritize its efforts based on risk to public health and the environment. Thus, the County's highest priorities are systems located along shorelines, OSS near wells that could contaminate drinking water, etc.
  4. Penalties as a last resort to achieve compliance. Penalties should only be issued after warnings have been given and after education and other compliance actions have failed.
- The County should coordinate with other agencies (as appropriate) and not issue permits if a property is not in compliance, including:
  - ✓ Building Remodels, Additions, or Replacement of Residential Structures
  - ✓ Food Establishment Annual OSS Permits
  - ✓ Change of Use for Facilities on OSS
- The County should require a seller to submit proof of a successful professional OSS inspection including an as-built, location of system and system components prior to the transfer of property sale.

Financing

- The County should be funded to do the following tasks, in accordance with the new state law:
  - ✓ Developing and maintaining a database of records for all known OSS in the County;
  - ✓ Ensuring compliance with state inspection and repair requirements;
  - ✓ Providing ongoing education for OSS owners regarding proper OSS operation and maintenance;
  - ✓ Identifying areas where OSS could pose an increased public health risk, and developing risk-based operations and maintenance (O&M) requirements;
  - ✓ Designating a Marine Recovery Area (MRA) in land areas where OSS contribute to marine water quality problems, and developing a strategy for OSS management in the MRA;
  - ✓ Identifying existing failing systems in the MRA, and ensuring that the owner completes the necessary repairs; and
  - ✓ Identifying all unknown OSS within the MRA by July 2012.
- Funding should also be provided for:
  - ✓ Financial assistance to low-income OSS owners to offset increased inspection costs;
  - ✓ Low-interest loans for OSS owners to pay for OSS repair and replacement;

Current Programs

The implementation plan described below should be considered in light of the County's on-going efforts to ensure proper management of septic systems. The County employs both permitting/compliance strategies and outreach/education strategies, as described below.

Permitting

The County's permitting process ensures that septic systems are designed, installed and operated in a manner which will protect the health of the public and the environment. Washington State Licensed Septic System Designers or Engineers submit plans for each proposed system to the Environmental Health Division. The designer and a County Environmental Health Specialist evaluate the soil and site conditions and determine what type(s) of septic systems the site can support. The Specialist reviews the OSS plan and works with the Designer to ensure all requirements are met. Both the Designer and the Specialist are informed of the initiation of installation, and the Designer and/or the Specialist inspect the system at certain stages of installation. In cases where proprietary devices or commercial/community systems are proposed, the owner and an approved Operation and Maintenance professional will make a formal agreement of their roles in ensuring that the system will be regularly inspected and maintained.

King County EH ensures that sewage disposal in proposed subdivisions will comply with environmental health site feasibility standards. Applications for subdivisions which propose on-site sewage disposal must be accompanied by an on-site soil evaluation; land may not be divided unless it can be shown that each lot will have sufficient setback area water supply features such as water lines, wells, well source protection radius [for a well] and each water supply feature [well's source] will be safe from septic tank drain fields; and the County Health Officer must approve that each subdivision plan meets County requirements for sewage disposal.

Compliance

King County EH ensures compliance with septic system installation and operation codes through a number of methods. Citizens may submit complaints to EH about improperly functioning septic systems, or OSS professionals may notify the County that a system is failing. The County then conducts an investigation, which usually involves visiting the site, assessing the problem, and working with the owner to correct the problem and prevent future problems. In some cases, King County EH uses enforcement measures to ensure that the property owner repairs or replaces a failing system. During building application submittals EH can withhold permits until repairs or O&M occur. It is anticipated that the additional oversight that will be required to assure that septic systems will receive necessary upgrades in MRA's will overtax existing staff and funding.

Currently, King County EH lacks capacity to conduct additional enforcement that may be needed in a MRA. Although a strong community outreach is proposed, enforcement is a last resort to fulfilling the requirements of RCW 70.118A

Education/Outreach

King County EH conducts outreach and education activities to new septic system owners and owners of failing systems through a mass mailing of Septic System Educational packets and an invitation to attend an OSS workshop. These activities were funded through a DOE grant which ended in 2006.

The County presents OSS information to the local realtors association, the building association and various others. An OSS display and technical assistance is offered at large community events and fairs such as Salmon Days, Home Repair Convention, etc. In locations where there is a large number of OSS located, the local community newsletters' run informative OSS articles.

In addition to the in-person outreach and education described above, King County EH offers information and educational materials through their website, http://www.wa.metrokc.gov/health/wastewater. These resources include a number of

downloadable brochures, and information on basic OSS operation and maintenance. In the near future the public may access their OSS as-built through GIS.

Currently, King County EH implements an educational program. A strong community outreach is proposed for MRAs and additional funding is required to support this effort.

Implementation Plan

This section describes the County's plan for implementing the plan based on available funding.

Phase 1: Start-Up Programs (July through December 2009)

Before King County EH can implement "new" activities and the requirements of Chapter 246-272A WAC and RCW 70/188A, it must ensure that regulatory, programmatic, administrative, financial, and public-outreach systems are in place for effective implementation. In particular, successful implementation of the "Plan" will depend on three key factors:

1. **Secure an adequate, stable funding source** to build King County EH capacity to address the increased need for administrative support, database management, regulatory, educational, and field activities.
2. **Create a detailed work plan** for new programs. The details of the activities remain unresolved. The funding drives the level of effort for activities to fulfill the new state requirements. Therefore, an important activity in Phase I will be a detailed scoping and strategic planning for proposed activities commensurate with the staffing level.
3. **Using a phased-in implementation approach** that begins with sufficient notice, information, and community development to homeowners about their O&M responsibilities.

King County EH will make establishing a stable funding source, developing the details of new programs, and educating the public its priorities in the initial stages of plan implementation.

The remainder of this section details the implementation activities that King County EH plans to conduct between July 2007 and December 2009. Please note that *activities that will need to continue on an ongoing basis are in italics.*

Make Regulatory Amendments

Implementing the provisions of Chapter 246-272A WAC and RCW 70.188A will require a number of updates to King County Code Title 13, the On-site Septic System Ordinance. In particular, Title 13 would need to be amended to include at least the following elements:

- Inspection requirements in the MRA and county-wide
- Professional Maintenance Providers inspection requirements
- Requirement for OSS inspection at time of property transfer
- Submission of digital reports from Industry

In addition, King County EH will coordinate with DDES to incorporate MRA activities in the County's next Comprehensive Land Use Plan update.

As part of its regulatory amendment process, King County EH also will review its siting and design requirements for OSS in sensitive areas and the MRA, and update them as necessary to address environmental and public health concerns specific to each area.

Develop Inspection Program

Many details of the inspection programs remain to be finalized. During Phase I, King County EH will work with the Technical Advisory Committee (TAC) members and other

partners as necessary to establish the parameters of the inspection programs for MRAs.

Specific activities that King County EH will undertake in Phase 1 will include the following:

- Work with partners to establish the parameters of an inspection programs.
- Determine a means to evaluate the success of this effort.
- Audit a certain percentage of O&M Maintainer inspected OSS.
- Work with O&M professionals to establish an electronic reporting system.
- Work with ITS (computer support) to coordinate Envision Data Base with receiving digital reports.
- Set up tracking system with ITS to monitor reports.
- Update the Public Health Web site with new reporting process and inspection program information.

Develop Compliance Program

During Phase 1, King County EH will begin to implement a compliance program. Depending upon available funding, the compliance program will include the following elements:

1. A strong community development approach that engages OSS owners in solution based options for community and individual OSS repairs where necessary.
2. An educational program that identifies OSS owners' behaviors, concerns, understanding, and applies behavioral change strategies to encourage the benefits of properly maintaining on-site septic systems and inform OSS owners of the new requirements for OSS maintenance.
3. Digital OSS reporting process to simplify OSS inventory record keeping, O&M monitoring, sending out notices, etc.
4. Risk-based prioritization for compliance actions. King County EH should prioritize its efforts based on risk to public health and the environment. Thus, the County's highest priorities should be systems that are on shorelines, OSS near wells that could contaminate drinking water, etc.
5. Penalties as a last resort to achieve compliance. Penalties should only be issued after warnings have been given and after education, and other compliance actions have failed.

The County also should require proof of inspection when issuing County permits, and prior to the transfer or sale of property.

Additional discussion items requiring follow-up include:

- Whether the compliance program will include penalties for fraudulent inspection reports;
- Staff dedication to verify that repairs are made; and
- Setting up a process King County EH will use to monitor program effectiveness.

Specific activities that King County EH will undertake in Phase I will include the following:

- Work with partners to finalize the details of the compliance program.
- As appropriate, make changes to permitting requirements to require proof of OSS inspection when issuing County permits.
- Determine measures to evaluate the success of the program. Such easures should focus on desired outcomes rather than outputs..
- *If funding allows, begin to implement the compliance program, particularly elements such as community and education.*

Establish Financial Systems

As noted above, implementation of this plan depends upon the development of an adequate, stable funding source that will help King County EH build the necessary capacity. During Phase 1, King County EH will conduct the following activities to establish a funding source and develop and administer grant and loan programs:

- Establish an O&M report processing fee that reflects the cost of receiving, analyzing, data entry and follow up actions.
- An estimated 6,000 houses on septic are sold per year in King County, representing a revenue potential of approximately $445,500 per year if 75% of the transfers actually have an O&M inspection..
- Establish a reduced rate for O&M report submittal electronically in or topromote the practice. This can be justified because it reduces data entry and handling by the department. The projections for 2007 are 1,500 O&M reports related to contracts will be submitted to King County EH representing a potential $150,000 in revenue..
- Continue to work with the Department of Ecology to develop and implement a grants and loans program for OSS repair/replacement.
- Enter into a contract with the Washington Department of Health to implement aspects of this implementation plan related to the Marine Recovery Area (see Part 4 for additional detail).
- Administer grant/loan program for OSS repair/replacement.

King County EH will continue to evaluate other potential funding support, per the VMI Workgroup's suggestions

- Grants – Unlikely source where matching dollars are required by King County, due too high over head costs.
- DOH enhancement dollars
- Ground Water Protection Districts
- Shell Fish Protection District
- Promote a "Geoduck Reserve Account" modeled after the oyster reserve account to provide an ongoing funding source for financial assistance to homeowners-requires state legislation.

Enhance Notification and Records Tracking and Retention

The existing Envision database is capable of meeting many needs. However, to best implement the new OSS requirements, PHSKC envisions enhancing its database in the following ways if funding is available:

- Allow O&M Maintenance providers to submit inspection reports over the internet.
- Automate generation of lists of the following:
    - Which parcels in the county have OSS;
    - How many systems are being inspected on the necessary frequency; and
    - Which systems are not being inspected?
    - Marine Shoreline Area parcels, system type, system operational status, and O&M requirements are being met.
- Automate notification and reminder letters based on inspection status.
- Maintain lists of homeowners and OSS professionals who have been certified to conduct OSS inspections.
- Automate notification and reminder letters for certification renewal based on certification status.

- Create reports and maps of OSS in King County, and identify their type, and status.
- Notify OSS owners of the need to inspect systems.
- Track decommissioning of OSS and sewer line extensions with Sewer Districts.

As part of its efforts to enhance the database, King County EH also plans to develop ways to use the database to measure the effectiveness of new programs.

On-going activities associated with these database enhancements

- *Make as-built records accessible over the internet to homeowners, realtors, and the OSS industry.*
- *Create reports and maps as needed.*
- *Track compliance actions.*
- *Track reported and repaired OSS failures.*
- *Verify that OSS systems have been installed (during application processes) and update the database accordingly. The goal is to have a database that is as accurate as possible.*
- *File and maintain OSS inspection, repair, and compliance records.*

Conduct General Outreach and Education

As noted in Part 5, King County EH believes that the success of this program depends on landowners' willingness to accept responsibility for their OSS. An effective outreach and education program will increase the likelihood that landowners know about and understand the new inspection requirements and why they are beneficial to the community. To that end, King County EH plans to pursue the following activities during Phase 1:

- Hire a consultant to conduct a Charrette with OSS owners located in the MRA;
- Develop general public information/outreach on OSS management requirements.
- *Continue general education on OSS management requirements.*

Begin to Identify all OSS in the MRA

RCW 70.118A requires King County EH to identify all OSS in the MRA by July 1, 2012. (Please see Part 4 or the current activities section above for more detail on this program.)

To begin to comply with the new state requirement, King County EH will adopt the following risk-based and community development approach to the MRA.

- Using GIS capabilities, create map overlays that show the following features within the MRA:
  1. Properties along marine shoreline;
  2. Rivers/creeks/tributaries;
  3. Swimming areas;
  4. Septic system permitted repair history;
  5. Approved, Prohibited, Unclassified shoreline areas per DOH designations.
- Identify all parcels in the MRA, and invite occupied residents to a community meeting via door hangers. Septic Solutions, a local VMI community group hosted a QMH community meeting to discuss new OSS laws.
- Develop specific public information/outreach on OSS management requirements within the MRA.
- Send a survey to the owner of each septic system of concern asking for information about the OSS.

- Identify septic systems of concern in the priority areas via OSS owner surveys, and microfiche and paper file search to prioritize household to contact.
- Develop a work plan for continued site visits, based on information received from the survey and available funding.
- Using its GIS capabilities and building on information gleaned from the survey, site visits and inspection reports, King County will create a map that identifies known and unknown systems in the MRA. This map also will indicate whether OSS owners are in compliance with inspection requirements and identify systems that may be failing.
- King County EH will produce a color coded map as a tool to track progress toward identifying all OSS in the MRA.
- Implement outreach and education within the MRA.
- Conduct work plan if funding is available.

King County EH will consider this program successful if noticeable progress is made toward identifying unknown OSS in the MRA, and outreach to OSS owners in the MRA demonstrates success.

PHASE 2: Program Implementation (January 2009 and Beyond)

Once all regulatory changes are made, funding is secure, O&M Providers are up to speed on the new inspection and reporting requirements, and the public is informed about their responsibilities for periodic septic system inspections and reporting, on-the-ground implementation can commence. This section describes activities that King County EH will conduct to work toward full implementation of the state-required OSS inventory within the Marine Recovery Area.

Phase 2 will overlap with Phase 1 for one year. PHSKC intends to implement all of the activities described below, although actual implementation will depend upon program funding.

Notify the Public

Using all media tools such as direct mailings, newspaper articles, paid advertising, and public service announcements through newspaper, radio, and cable TV, King County EH will announce the OSS inspection and reporting requirements and provide information on timelines for inspections to begin.

Ensure Adequate Inspection Capacity

King County EH will work with O&M Providers and provide training regarding operational & maintenance inspections for OSS' located in MRAs. This training will ensure that O&M Providers are prepared to perform the required inspections, as-built drawings, and digital processing.

Track Inspection Activity

If adequately funded, King County EH will hire additional staff to perform administrative duties such as scanning new applications (digitize reports), index (inventory) OSS as-builts, update envision with OSS information as applications are processed, track inspection activities, and generate reports. These activities are necessary to administer the inspection program properly.

Identify All OSS in the MRA and Ensure Proper Function

If adequately funded, King County EH will hire additional staff to expand the OSS inventory work begun in Phase 1. Operational checks will help to identify all OSS in the MRA and ensure that they are functioning properly. Staff will engage landowners regarding OSS maintenance and

inspection requirements and collect information regarding unknown systems. Staff will work with landowners to fix systems that are found to be failing. This program, coupled with information gathered from other sources – such as inspections at the time of property sale or transfer, inspections required before building permits are issued, and citizen compliance with the new regulations – should result in identification of all OSS in the MRA by July 1, 2012.

Identify All OSS in Areas Where OSS May Pose an Increased Health Risk

Once all OSS in the MRA(s) have been identified and evaluated, King County EH will expand program activities to reach sensitive areas where OSS's are located.

- ✓ The City of Woodinville has shown interest in designating a sensitive area around Lake Leota. As progress is made in the OSS inventory, and resources become available, further discussions are required.
- ✓ If on-going sanitary survey work in Redondo Beach, Dumas Bay and Dash Point area indicates elevated fecal counts from failing septic systems, this area may also be designated as an MRA.

King County EH also will consider sole source and critical recharge aquifer areas, and industrial/ commercial land use areas on a septic system. As part of this program, King County EH also will continue to review water-quality monitoring data collected by various entities in the county and add to this list of sensitive areas if new data show that OSS are contributing to water quality declines in other areas.

Conduct Public Outreach

Public Outreach activities will be expanded to focus on MRAs and county-wide O&M. These activities may include:

1. Develop educational information related to additional O&M requirements.
2. Engage the community in problem-solving meetings, workshops, or OSS Technology fairs.
3. Invite OSS owners with failing systems to attend an O&M workshop emphasizing the proper use, care, and benefits of their system.
4. Mail new owners on septic systems, informational packets and invite to O&M work shops to remind and encourage OSS owners about proper care and preventive maintenance.
5. Use bus cards to target OSS users in septic system areas with educational messages.
6. Educate owners regarding hiring certified and licensed professionals authorized to perform septic inspections and/or preventive maintenance service (including limited repairs) on septic systems.
7. Enhance the wastewater program website with MRA information.
8. Industry training/meetings related to MRA requirements, Industry and Public Health's role in implementing new requirements.

Measure Effectiveness

The County will determine metrics to evaluate the effectiveness of its efforts. These may include: measures of public acceptance, such as the number of people submitting septic system O&M inspection reports; measures of database completeness, such as the number of unknown systems identified; processing OSS applications and time of property transfer demonstrates a progressive OSS inventory; and through OSS system improvements shoreline areas re-designated from "prohibited" or "unclassified" to "approved" status.

Resources Needed to Implement this Plan

PHSKC currently does not have sufficient staff and monies to implement all of the activities outlined in this chapter. Community EH estimates staff necessary to fully implement the new legislative regulatory requirements includes 3.5 environmental health/GIS specialists, three Administrative Assistants, and a program manager costing approximately $935,000 annually for personnel and about $10,000 per year for operating costs

King County EH expects to refine this estimate as it develops a funding mechanism during Phase I of this implementation plan.

Plan Checklist

C	R	P	IC	C=Complete, R=Lack of Resources, P=Completed prior to Plan, IC=Incomplete
✓				**Part 1 – Database Enhancement** **OSS Inventory** • Describe current software and hardware • Age of database, schedule of maintenance • What percentage of OSS in jurisdiction is recorded? • What fields are recorded: Age, location, technology, etc? • Ensure MRA records' compatibility with other OSS records
✓				**Operation, Monitoring and Maintenance – Record Maintenance** • Ensure timely reports of failures within MRAs • Describe current O&M reporting requirements • Current data management • How are data used now? Maps, permit tracking, etc • What changes will be made to the hardware and software? • How will data be managed? **Summarize and prioritize activities with timeline**
			✓	**Part 2 – Coordination with planning on sensitive areas** **Describe:** • Jurisdictional environment • Each sensitive area with maps • Methodology for determining MRAs • Coordination with all Planning Entities within the Jurisdiction • Resources necessary for these activities
			✓	**Conduct a SEPA review (scheduled Sept, BOH agenda item)** **Summarize and prioritize activities with a timeline**
✓				**Part 3 Operation, monitoring and maintenance in sensitive areas** **Describe** • Current O&M requirements county-wide • Current O&M requirements in sensitive areas • O&M Enforcement Activities • Resources necessary for these activities Summarize and prioritize activities with a timeline
✓				**Part 4 – Marine Recovery Area Strategy** **Describe** • How failing OSS within MRAs will be found and repairs ensured • How all OSS within MRAs will be located • How OSS data in MRAs will be managed • Resources needed implement the MRA strategy **Contract with DOH** **Summarize and prioritize activities with a timeline**
✓				**Part 5 Education** **Describe** • Current and planned education efforts • Current and planned OSS reminders system

	• Resources needed to implement these activities Summarize and prioritize activities with a timeline
✓	**Part 6 – Plan Summary - For each Part 1-5:**
	Summarize • Current practices • Agency goals and objectives • Strategies for meeting agency goals and objectives • Resources necessary, including those needed to write the management plan • Resources available
	Include with the Plan Summary
✓	• Completed checklist with detailed answers to questions
✓	• Measurable program objectives
✓	• Timeline - Gantt chart or equivalent

Timeline

The graph below shows the timeline for implementation of this OSS Management Plan, assuming that adequate funding is available. It also prioritizes activities during Phase I and 2. The current Programs are funded for the current level of activities. With the addition of "new" OSS program activities, additional funding would be required. King County EH current programs will continue throughout implementation of the plan.

King County OSS Management Plan Proposed Implementation Schedule	Priority	Current Capacity	2007	2008	2009	2010	2012	>2013
CURRENT PROGRAMS:								
O&M (not incl MRA)		Funded	X					
Develop OSS Inventory		NSF	X	X	X	X	X	X
Compliance		Funded	X					
Education & Outreach		NSF	X					
Coordination		Funded	X					
Permitting		Funded	X	X	X	X	X	X
Submit OSS Management Plan to WA Dept of Health		Funded	X					
PHASE 1: START UP PROGRAMS								
Make Regulatory Amendments	1	Funded	X					
Notify Public in MRA	2	NSF	X	X				
Create a Detailed Work Plan	3	NSF	X	X				
Establish Financial Systems	4	Funded	X	X	X			
Begin to Identify All OSS in the MRA	5	NSF	X	X	X	X	X	X
Enhance Notification and Records Tracking and Retention	6	NSF	X	X	X	X	X	X
Develop Inspection Training Programs	7	NSF	X	X				
Begin Outreach & Education	8	NSF	X	X				
PHASE II: PROGRAM IMPLEMENTATION								
Ensure Adequate Inspection Capacity	1	NSF	X	X	X	X	X	
O&M (MRAs)	2	NSF	X	X	X	X	X	X
Conduct Community Development and Education Program	3	NSF	X	X	X	X	X	X
Track Inspection Activity	4	NSF	X	X	X	X	X	X
Identify all OSS in MRA and Ensure Proper Function	5	NSF	X	X	X	X	X	X
Conduct Compliance Program in MRA	6	NSF		X	X	X	X	X
Explore "Responsible Mgmt Entity	7	NSF		X	X			
Identify all OSS in Areas Where They May Pose additional Risk	8	NSF						X