

The Salmon Creek TMDL Implementation Project

I. Project Overview

The Salmon Creek TMDL Implementation Project was designed to address human sources of fecal coliform bacteria loading in the Salmon Creek Watershed. This would be accomplished by focusing primarily on:

- Identifying and correcting failing on-site sewage systems (OSSs) in the watershed, and
- Promoting proper operation and maintenance of OSSs located in the watershed.

Of the more than 30,000 homes that exist within the boundaries of the Salmon Creek Watershed, at least 9000 utilize an individual OSS for sewage treatment and disposal. Hence, project implementation would help reduce bacterial contamination emanating from failing OSSs in the watershed. In turn, this reduction would help the Department of Ecology (Ecology) meet the targeted fecal coliform reductions identified in their Total Maximum Daily Load (TMDL) submittal report for the watershed (Howard, 2001)¹. Project implementation would also assure that Clark County Public Health (CCPH) meet the specific TMDL implementation provisions set forth in the Memorandum of Agreement between Ecology and CCPH², dated November 21, 2000.

This project was successful in identifying and correcting failing OSSs in the Salmon Creek Watershed, as well as promoting proper OSS operation and maintenance through educational materials and activities.

II. Project Outcomes

The agreement established between CCPH and Ecology for this TMDL implementation project details the tasks to be completed by CCPH. It divides these responsibilities into three major categories of tasks: "Project Administration and Management", "Public Involvement, Information, and Education", and "Conducting OSS Sanitary Surveys". Project outcomes for these categories are detailed below.

Project Administration and Management (Task 1)

- Task 1 duties were conducted by individuals from CCPH's Environmental Public Health Division (On-Site Sewage Treatment Program) and from CCPH's Administration Division. Primary staff included:
 - ✓ Randy Phillips, Resource Protection Manager, Environmental Public Health Division
~ Responsibility: project manager
 - ✓ Valerie Rullman, Environmental Health Specialist, Environmental Public Health Division
~ Responsibility: field data tracking, progress reports and final report, maintenance of non-financial project records, agreement amendment, tracking staff time spent per task, and miscellaneous assigned duties.
 - ✓ Alana McClain, Accountant, Administrative Division
~ Responsibility: maintenance of financial records, submittal of financial vouchers, financial tracking.
- *Table 1* details Task 1 performance requirements and project outcomes – those that were successfully accomplished (and how), as well as those that were *not* successfully accomplished (and why).

¹ Howard, D. 2001. *Salmon Creek Watershed Bacteria and Turbidity Total Maximum Daily Load: Submittal Report*. Washington State Department of Ecology. Olympia, WA.

² CCPH was known as Southwest Washington Health District in year 2000; it was subsequently re-named Clark County Health Department and then Clark County Public Health

Table 1: Performance Requirements and Project Outcomes for Task 1 (“Project Administration and Management”)

Performance Requirement #1: Effectively administer and manage the project.	
<ul style="list-style-type: none"> ▪ What was Accomplished and How: <ul style="list-style-type: none"> ▪ Project activities and quality control activities were conducted, coordinated, and scheduled in a timely manner. ▪ Effective communication was maintained with the recipient’s designees, Ecology, any other affected government jurisdictions, and any interested individual or group. These included Clark County Clean Water, Clark Conservation District (CCD), Washington State University’s (WSU’s) Stream Stewards Program, Clark Regional Wastewater District, individual citizens, and more. ▪ Project was carried out in accordance with completion dates outlined in the amended grant agreement between Ecology and CCPH. 	<ul style="list-style-type: none"> ▪ What Was NOT Accomplished and/or Barriers to Success: <ul style="list-style-type: none"> ▪ ▪ ▪
Performance Requirement #2: Maintain all project records.	
<ul style="list-style-type: none"> ▪ What was Accomplished and How: <ul style="list-style-type: none"> ▪ All non-financial project records were maintained by Valerie Rullman, in the form of electronic databases and/or “hard copy” files. All project maps, address lists, completed survey forms, protocol manuals, educational materials templates, OSS permits, grant agreements, staff reports, quarterly reports, and more are kept on file in the Environmental Public Health Division at CCPH. ▪ Records of equipment purchases were maintained by Randy Phillips, and are located in the Environmental Health Division. All other financial records were maintained by Alana McClain; these records are kept on file in the Administrative Division of CCPH. ▪ The status of OSS surveys was tracked closely to assure timely correction of failing OSSs, as well as timely completion of 450 surveys. 	<ul style="list-style-type: none"> ▪ What Was NOT Accomplished and/or Barriers to Success: <ul style="list-style-type: none"> ▪ ▪ ▪
Performance Requirement #3: Submittal of all required performance items, progress reports, and financial vouchers.	
<ul style="list-style-type: none"> ▪ What was Accomplished and How: <ul style="list-style-type: none"> ▪ All required performance items and progress reports were submitted in a timely manner. ▪ Most financial vouchers (with supportive documentation) were submitted in a timely manner. 	<ul style="list-style-type: none"> ▪ What Was NOT Accomplished and/or Barriers to Success: <p>Some financial vouchers were not submitted in a timely manner or in sufficient detail:</p> <ul style="list-style-type: none"> ▪ Mileage expenses -- reported late due to Clark County’s prolonged implementation of software for the county’s new (and mandatory) mileage reporting system. ▪ Advance payment requests -- CCPH had not anticipated the degree of detail regarding expenses/requisitions that would be required to be submitted. ▪ Financial quarterly reporting – delayed due to misunderstandings about how to revise budgeted allowances per task

Public Involvement, Information, and Education (Task 2)

- Task 2 duties were conducted primarily by Environmental Health Specialists from CCPH's On-Site Sewage Treatment Program: Carla Sowder, Steve Keirn, Reuel Emery, Valerie Rullman.
- *Table 2* details Task 2 performance requirements and project outcomes -- those that were successfully accomplished (and how), as well as those that were *not* successfully accomplished (and why).

Conducting On-Site Sewage System Sanitary Surveys (Task 3)

- Task 3 duties were conducted primarily by Environmental Health Specialists from CCPH's OSS Program: Carla Sowder, Steve Keirn, and Valerie Rullman.
- *Table 3* details Task 3 duties, including those that were successfully accomplished (and how), as well as those that were *not* successfully accomplished (and why).

III. Project Evaluation

What made the project successful?

- Amending the original grant contract in order to:
 - ✓ Reduce the number of OSSs to be surveyed from 950 to 450. (See section below for reasons for this revision).
 - ✓ Extend the completion date of the project. (See section below for details).
- Using a “softer touch” with participants rather than a harsher “enforcement” approach. This improved CCPH rapport in the community and helped build trust. Examples of this approach include:
 - ✓ Spending extra time with individuals (such as the elderly), as needed;
 - ✓ Tailoring the interview process to emphasize the particular OSS concerns/interests expressed by the interviewee;
 - ✓ Providing one-on-one guidance through the OSS repair process, as necessary;
 - ✓ Courteously offering to return at more convenient times;
 - ✓ Taking time to explain the contents of the educational materials handed out.
- Offering survey appointments in late afternoon and early evening hours, as well as on weekends, since many residents were unavailable during regular CCPH work hours.
- Acquiring approval from Clark County’s Board of Health to reduce CCPH’s standard repair fee from \$445 to \$200 for the duration of the project.
- Surveying a relatively large watershed with many septic systems. Once the agreement was amended to require fewer completed surveys, staff was able to complete surveys on a consistent basis, even though many residents weren’t home or weren’t interested in participating.

What hindered project success?

- Prior to amending the grant agreement:
 - ✓ Inadequate level of public participation in the project. Staff members were denied interviews and/or access to properties for field observations for a variety of reasons, including:
 - ~ Lack of interest;
 - ~ Lack of time;
 - ~ Distrust of government;
 - ~ “Property rights” issues (i.e. “No one can tell me what to do with my property”);
 - ~ Chronic illness;
 - ~ Excessive stress from simply trying to meet basic survival needs for the family;
 - ~ Non-participation was an option due to lack of local enforcement regulations.
 - ~ (Perhaps) fear of being forced into a costly OSS replacement or sewer connection;
 - ~ (Perhaps) fear that other substandard conditions (unrelated to OSS) may be found.

Table 2: Performance Requirements and Project Outcomes for Task 2 (“Public Involvement, Information, and Education”)

Performance Requirement #1: Notify Salmon Creek Watershed residents about planned public meetings, workshops/seminars, etc.	
<ul style="list-style-type: none"> ▪ What Was Accomplished and How: <ul style="list-style-type: none"> ▪ Sent <u>>1700</u> mailings to OSS owners in the watershed in order to introduce the project and announce dates of upcoming public notification meetings. Placed ads in <u>2</u> area newspapers announcing the meetings. ▪ Hosted <u>5</u> project notification meetings at central locations within the watershed. Displayed and provided educational materials, offered consultation, provided snacks, etc. Representatives of the following agencies were also present at these meetings: Clark Conservation District (CCD), Washington State University’s (WSU’s) Stream Stewards Program, Clark Regional Wastewater District, and Clark County Clean Water. ▪ Sent <u>>7000</u> mailings to OSS owners in the watershed announcing dates of upcoming free OSS Operation & Maintenance (O&M) workshops. Ads were printed in local newspapers through the efforts of WSU and CCD. ▪ Staffed informational booths at: the annual Clark County Fair, The Water Legacy Celebration, and Clark Public Utility’s Home & Garden Show. Distributed meeting/workshop notification flyers to citizens. ▪ Distributed notification flyers at WSU’s “Living on the Land” class series. 	<ul style="list-style-type: none"> ▪ What Was NOT Accomplished and Why:
Performance Requirement #2: Promote stewardship of the Salmon Creek Watershed and of On-Site Sewage Systems through frequent and informational education seminars.	
<ul style="list-style-type: none"> ▪ What Was Accomplished and How: <ul style="list-style-type: none"> ▪ Co-hosted (with WSU and CCD) <u>12</u> OSS O&M workshops held throughout the watershed. ▪ <u>>400</u> citizens attended these O&M workshops. Educational materials and technical assistance were provided, as well as information about the grant project. ▪ A website was set up to provide information to the public about this project, as well as O&M. 	<ul style="list-style-type: none"> ▪ What Was NOT Accomplished and Why:
Performance Requirement #3: Coordinate public educational activities with Ecology and the Clark Conservation District (CCD).	
<ul style="list-style-type: none"> ▪ What Was Accomplished and How: <ul style="list-style-type: none"> ▪ Coordinated public meetings with Clark Conservation District, Ecology, and Washington State University (“Stream Stewards” program). 	<ul style="list-style-type: none"> ▪ What Was NOT Accomplished and Why:
Performance Requirement #4: Educate the public about proper O&M; increase public awareness of the significance of the impacts that failing OSSs have on the environment and public health.	
<ul style="list-style-type: none"> ▪ What Was Accomplished and How: <ul style="list-style-type: none"> ▪ Mailed O&M brochures and project info sheets (as well as maintenance reminders) to <u>>7000</u> households. ▪ Hosted <u>12</u> O&M workshops held throughout the watershed. <u>>400</u> citizens attended these O&M workshops. Educational materials and technical assistance were provided, as well as information about the grant project. ▪ Directly educated homeowners and provided technical assistance about their OSSs through one-on-one conversations and/or by providing written educational materials during the process of conducting 584 surveys. ▪ Distributed O&M materials, door hangers, etc. 	<ul style="list-style-type: none"> ▪ What Was NOT Accomplished and Why:

Table 3: Performance Requirements and Project Outcomes for Task 3 (“Conduct OSS Sanitary Surveys”)

Performance Requirement #1: Complete inspections/sanitary surveys of 450 OSSs in the watershed.	
<ul style="list-style-type: none"> ▪ What Was Accomplished and How: <ul style="list-style-type: none"> ▪ Verified usage and functional status of 584 OSSs via survey process. ▪ Provided technical assistance to hundreds of homeowners. ▪ Added estimated GPS coordinates for >95% of surveyed OSSs to CCPH Envision database. 	<ul style="list-style-type: none"> ▪ What Was NOT Accomplished and Why: <ul style="list-style-type: none"> ▪ No data was transferred into Clark County’s Geographic Information System (GIS) database since CCPH was unable to gain more than a “read only” status for this database from Clark County’s GIS Department. CCPH will continue to gather data so that it can, eventually, be entered into the county GIS database. In the meantime, the GPS entries added into CCPH’s Envision database are equally useful to CCPH.
Performance Requirement #2: Identify failing OSSs and oversee their correction.	
<ul style="list-style-type: none"> ▪ What Was Accomplished and How: <ul style="list-style-type: none"> ▪ Ensured the correction of <u>36</u> failing OSSs; municipal sewer was not available to any of these parcels. ▪ Performed dye testing and/or water sampling on <u>12</u> sites with suspected water quality violations. ▪ Referred <u>2</u> of the 36 failures to CCPH Compliance Program for enforcement action. ▪ Consulted with municipal sewer providers regarding necessity and viability of extending sewer services. ▪ Assured proper abandonment of septic tanks connected to failing OSSs, as appropriate. 	<ul style="list-style-type: none"> ▪ What Was NOT Accomplished and Why:
Performance Requirement #3: Maintain an accurate OSS O&M database.	
<ul style="list-style-type: none"> ▪ What Was Accomplished and How: <ul style="list-style-type: none"> ▪ Reviewed thousands of maintenance reports. ▪ Maintained our existing O&M database (which includes OSS locations, conditions, and ownership, etc). ▪ Expanded our existing O&M database by adding <u>>4000</u> OSSs that weren’t previously being tracked. ▪ Mailed O&M notices to <u>>7000</u> owners of OSSs located in the watershed. 	<ul style="list-style-type: none"> ▪ What Was NOT Accomplished and Why:
Performance Requirement #4: Coordinate suspect water quality violations with Ecology.	
<ul style="list-style-type: none"> ▪ What Was Accomplished and How: 	<ul style="list-style-type: none"> ▪ What Was NOT Accomplished and Why: <ul style="list-style-type: none"> ▪ The 4 confirmed water quality violations were not formally reported because: <ul style="list-style-type: none"> a) correction of the 4 corresponding failing OSSs was proceeding adequately, and b) confusion existed among staff regarding reporting procedure. Note: discussions of the violations took place between CCPH staff and Ecology’s Dave Howard (Watershed Coordinator, Vancouver Field Office).

- ✓ Lack of time and dedicated staff assigned or available to work on the project due to:
 - ~ Significant delay in the signing of grant agreement by Clark County Board of Health and Prosecuting Attorney;
 - ~ Southwest Washington Health District being absorbed by Clark County on 1/1/03, causing some disruption in services;
 - ~ Resignation of CCPH's former On-Site Program Supervisor (the original force behind this grant project) in 2003;
 - ~ CCPH's physical move to a new building in 2005/2006, causing temporary (though significant) disorganization;
 - ~ Budget issues at the county level which preempted hiring of extra individuals to staff the project.
- Computer issues:
 - ✓ Problems in 2005 (and continuing) with incomplete transfer of O&M data from an outdated database system into a newly-acquired Envision database system;
 - ✓ Difficulties with address list issued for the project by Clark County GIS Department for the watershed's many parcels. Specifically: database formatting conflicts with Clark Regional Wastewater District's computer system caused significant difficulties in differentiating between parcels served by municipal sewer and parcels served by individual OSSs.
- Inefficiencies within the survey process, itself:
 - ✓ More time than expected was spent on driving, particularly to the more distant areas of the watershed;
 - ✓ In some areas of the watershed, staff had to work in pairs due to personal safety issues;
 - ✓ Staff inability, in certain circumstances, to determine if an OSS suspected to be contaminating groundwater is, in fact, failing since groundwater monitoring was not part of this project's protocol. (Note, too, that if groundwater monitoring was part of the protocol, project participation would undoubtedly have been much lower!).

What is the significance of the outcomes?

- The project outcomes listed in the previous tables are significant. For example:
 - ✓ The correction of 36 failing OSSs helps protect both the watershed's water quality and public health;
 - ✓ Educating hundreds of watershed residents should have a lasting positive impact on the watershed, on public health, and on the attitudes of the populations living there. By providing friendly one-on-one technical assistance to so many residents in the watershed, and by educating hundreds of citizens at O&M workshops, residents of the Salmon Creek Watershed are more likely to:
 - ~ Remember what they learned,
 - ~ Maintain their OSSs (for financial, environmental, and public health reasons),
 - ~ Understand the impact that failing OSSs have on the watershed and on public health,
 - ~ Know the signs of a struggling or failing OSS and report failures to CCPH,
 - ~ Know the importance of keeping maintenance records on their OSS,
 - ~ Be more cognizant of how well their neighbors' OSSs are functioning,
 - ~ Be more frugal in their use of water,
 - ~ Be more aware of the negative impacts that some long-term medications can have on the health of their OSSs, and
 - ~ Feel that CCPH is a useful resource and working partner (i.e. improved public relations).
 - ✓ By adding >4000 OSSs to the CCPH O&M database, many more OSSs will be tracked for compliance, hence many future OSS failures should be avoided.

What are the water quality benefits?

- Direct water quality benefits:
 - ✓ The correction of 36 failing OSSs. Theoretically, this improvement should correspond with a reduction in the watershed's fecal coliform load. However, one must also consider the fact that the water quality gains that may be attributable to the completion of this project may

have relatively little significance when looking at the “bigger picture”. This is because the fecal contribution of failing OSSs to the watershed’s excessive bacteria load is very small in comparison to the total contribution of other sources, such as livestock, wild fowl, leaking municipal sewer pipes, etc. Testing environmental surface water samples for *E. coli* levels would at least better pinpoint mammalian sources of bacterial contamination.

- Indirect water quality benefits (i.e. outcomes that are expected to have a positive impact on water quality over time):
 - ✓ Educating hundreds of watershed residents should have a lasting positive impact on the watershed, on public health, and on the attitudes of the populations living there. See “Significance of Outcomes” section above for details.
 - ✓ The addition of >4000 to the CCPH O&M database means that many more OSSs will be tracked for compliance, hence many future OSS failures should be avoided.
 - ✓ The project helped bring more CCPH focus on the need for local enforcement regulations to help achieve greater O&M compliance. Increased compliance will ultimately translate into better watershed water quality.
 - ✓ The project has increased the frequency and quality of CCPH interactions with local municipal sewer districts; such collaborations will likely, over time, result in increased availability of municipal sewer services in areas of particular concern.

IV. Follow-Up

What remains to be done and how will it be accomplished?

- Approximately 5% of the 585 completed survey sites still need to have their GPS locations logged into our Envision database. This will be completed by current CCPH staff over the next several months.
- Due to computer formatting problems mentioned above, an address list that was added to CCPH’s O&M database unintentionally included a number of sewer parcels. Hence, these sewer parcels must be culled from the database. This work will be completed by CCPH staff within the next several months.

Will the project be continued with or without grant funding?

Some aspects of the project will be continued, all without grant funding:

- CCPH will continue to expand its O&M database for parcels within the Salmon Creek Watershed, send O&M notification letters, and pursue compliance with O&M requirements. Also, CCPH’s O&M educational workshops will continue to be offered at least quarterly.
- The incidence of OSS failures and corrections will continue to be tracked.
- CCPH’s Strategic Plan for the next two years strongly emphasizes public education and outreach. This will result in easier public access to more user-friendly materials that address: proper OSS functioning and maintenance, how failing OSSs negatively impact the environment (including groundwater, surface water, watersheds) and public health, and more. CCPH website will be vastly expanded and improved, OSS maintenance folders will be more widely available, etc.
- CCPH’s Strategic Plan also addresses the need for more loan programs for low income owners of failing OSSs. This, ultimately, should result in the improvement of water quality in Clark County’s watersheds since more failing OSSs will be reported and properly corrected.