

Snohomish Conservation District:

Providing Special Benefits to Snohomish County Land and Land Owners

FINAL REPORT

August 3, 2007

Prepared for:
Snohomish Conservation District
528 91st Ave. NE
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in compliance with RCW 89.08.400

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1. EXECUTIVE SUMMARY

The Snohomish Conservation District, founded in 1941, provides natural resource improvement services to all Snohomish County residents within the District, regardless of location or land type. As human and animal populations in the county have expanded, the need for natural resource conservation services has increased.

The Snohomish Conservation District (SCD) seeks to levy an assessment on Snohomish County properties to cover the annual operating budget of the District, which is approximately 1.2 million dollars. RCW 89.08.400 authorizes Conservation Districts to create this assessment. As part of the process of obtaining the assessment the District must demonstrate that the special benefits received ‘by the land’ from CD activities and programs equal or exceed the amount of the proposed special assessment. The purpose of this document is objectively present the services and activities of the District and the benefits they provide to land and landowners in Snohomish County. These benefits are quantified and given a monetary value to the extent possible and compared to the cost of providing these benefits.

Results of this analysis show that the gross annual benefit derived from Snohomish Conservation District services ranges from a low estimate of \$1.4 million to a high estimate of \$2.3 million, while the annual cost of these services is approximately \$1.2 million. The net annual benefits - that is the gross benefits less the total cost - range from \$246,000 to \$1,169,000. Estimates of annual Return on Investment (ROI) in SCD services and activities range between 21% and 102%.

The analysis further shows that for every dollar of assessment funding received by the Snohomish Conservation District, between \$7 and \$34 dollars of long term conservation benefit is provided. Results also show that over the past 12 years the District has improved its efficiency, increasing the amount of services provided for every dollar spent. SCD activities are tightly coordinated with other agencies in order to leverage staff and financial resources and avoid duplication of work.

Tax payers receive an estimated cost savings of \$32,000 to \$54,000 dollars per year on installation of SCD resource protection projects. These savings are in the form of highly competitive project construction and reduced permit costs.

Summary valuation of annual and long term special benefits provided by the Snohomish Conservation District (US\$)

	Low Estimate (\$)	High Estimate (\$)
Estimate of Gross Annual Benefit	1,392,264	2,315,344
Total Annual Cost (actual)	1,146,191	1,146,191
Estimate of Net Annual Benefit	246,073	1,169,153
Annual Return on Investment (ROI)	21.5%	102%
Long Term value of net benefits (NPV @ 3%)	8,202,438	38,971,772
Long Term Benefit-Cost Ratio	\$7.16	\$34.00

Some of the accomplishments of the District to date include:

- Implementation of over 1,500 conservation practices on private lands since 1995
- Development of over 500 farm plans since 1995
- Planting of over 200 acres of stream bank since 1999 with over 94,000 native trees and shrubs, which has improved shade to over 19 miles of stream.
- Installation of over 37,000 lineal feet of fencing to exclude livestock from streams and wetlands.

The Snohomish Conservation District functions as a single point of contact for private landowners on natural resource issues and provides a wealth of natural resource education opportunities for Snohomish County citizens. Over one thousand citizens attend and purchase conservation trees, shrubs and plants at the District's annual plant sale.

The assessment will provide secure funding to continue the services of the SCD, which is a non-regulatory agency. Assessment funding will further allow the District greater flexibility to address the county's growing conservation needs than current grant-restricted funding. These monies will be used to obtain additional sources of funding from state and federal sources, which will add tangible benefits to Snohomish County's economy in terms of greater jobs and more conservation services. It is likely that as Snohomish County's population continues to grow, the value of the District's services will continue to increase.

2. INTRODUCTION

Brief history of the Snohomish Conservation District. The Snohomish Conservation District (SCD) was founded in 1941 as part of a nationwide movement to establish soil and water conservation Districts. The SCD works with all land owners, including rural, urban, residential, farm and forest land owners who have natural resource management issues and/or concerns on their property. Figure 1 is a map of the District showing the location of landowners who have requested and received assistance from the District since 1990. The geographic area of the proposed assessment is 296,638 acres, which includes 201,866 land parcels.

The changing landscape in Snohomish County. While the work of the Conservation District has always centered on natural resource stewardship, the Snohomish County landscape and clientele which the District serves have changed dramatically since it was established. The number of commercial farms and the amount of farmland have both declined rapidly since WWII as the suburban population of the county has exploded. Remaining farms face greater and greater regulatory compliance requirements for natural resources under their management. The burgeoning numbers of rural and urban residents in the county frequently require support and training in the best ways to avoid practices which threaten water quality, including management of livestock and pets. According to the Snohomish County Assessor's Office the number of parcels is increasing at a rate of 10,000 per year in the County. This new growth brings with it increasing conservation challenges.

Meeting new conservation challenges. The Snohomish Conservation District has attempted to meet these growing challenges by expanding its programming and services over the years. This expansion has been funded largely by grants from local, State and Federal agencies. To make funding of its programs more reliable the District now seeks to obtain an assessment, including a per-parcel fee plus a minimal per-acre fee, to cover the annual operating budget of the District, which is approximately 1.2 million dollars. Under RCW 89.08.400 which authorizes this process, the District must demonstrate that the special benefits received by 'the land' from SCD activities and programs equal or exceed the amount of the proposed special assessment.* The purpose of this document is to objectively present the services and activities of the District and the benefits they provide to land and landowners in Snohomish County. These benefits are quantified to the extent possible and compared to the cost of providing these benefits.

Analytical framework and scope. The analytical framework used to assess the value of the District's programs and services is a standard **Benefit-Cost Analysis**, which is commonly used to evaluate the value of services provided by governmental agencies.^{1,2} In a typical B-C analysis the agency's programming and services are quantified and then measured in monetary terms to the extent possible and compared to the cost of providing these services. Conclusions are drawn regarding the net benefit and economic efficiency of the Conservation District, as measured by the difference between benefits and costs. It should be noted that B-C analysis should not be viewed as the sole basis for public policy decisions about natural resource management. The viewpoint of the analysis is limited to that of the land and landowners in Snohomish County who receive services and will be assessed by the District.

* Actual language from RCW 89.08.400: "...the special assessments to be imposed on any land will not exceed the special benefit that the land receives or will receive from the activities of the conservation District."

3. DESCRIPTION OF SNOHOMISH CONSERVATION DISTRICT ACTIVITIES AND PROGRAMS

The Conservation District is primarily grant funded at the present time. Therefore, its programming is organized around the specific areas for which the grants have been awarded. With the assessment funding in place, SCD will continue its current programming and expand to new areas of need that are not currently being served by existing grants. The District provides natural resource conservation services to landowners through five programming areas including those shown in Figure 2 and summarized in the following paragraphs.

Sustainable Agriculture and Farm Preservation. The Natural Resource Conservation Service (NRCS), a subdivision of the USDA, has developed a set of standard national resource conservation practices, based on extensive research, and which are designed to protect soil, water, air, plants, animals and human resources. These standard conservation practices are collectively referred to as “best management practices” (BMPs). One of the main activities of the SCD is helping land owners implement these practices to improve the quality of natural resources on their lands.

These practices are implemented by all different kinds of landowners with direct assistance from the SCD. Most of the practices are implemented by suburban landowners who own horses and other smaller livestock, followed by rural commercial and non-commercial livestock owners, including beef and dairy animals. Owners of croplands and wildlife properties also implement BMPs with Conservation District assistance (Figure 3).

Farm Planning and Water Quality Improvement. The District works with commercial and non-commercial farms and other landowners to address a wide range of natural resource issues. The District helps landowners develop farm plans* and provides technical assistance, education and cost sharing to implement BMPs.

Plan development. Land owners contact the District and request assistance to implement a farm plan, on a strictly voluntary basis. Farm plans are developed after an initial site visit and follow-up discussions with the landowner. The farm plan consists of a series of management and infrastructure recommendations focused on improving the conditions of soil, water, air, plants and animals (wild, domestic and human) at the facility. Common recommendations at small farm facilities include installation of barn gutters to capture and control rain runoff, development of designated animal containment areas, fencing to exclude animals from environmentally sensitive areas, development of grazing strategies, manure management and storage, composting, etc.

Plan implementation. Once the farm plan is developed, District staff works with the land owner to implement the plan. Staff provides technical assistance for facilities installation including facilities design, as-builts, surveys, and permit assistance. SCD staff can also oversee contractor

* A farm plan is a comprehensive series of actions developed to meet a farm owner’s goals while protecting water quality and the natural resources. Some of the things considered in a farm plan are farm size, soils type, slope of the land, proximity to streams or water bodies, type of livestock or crops, the farmer’s goals, resources such as machinery or buildings and finances available.

work and coordinate funding sources for the implementation of the farm plan, including cost share funding from federal and state sources, when available. The landowner is required to provide a minimum amount of time, dollars or other resources to implement the plan.

Other technical assistance. Farm planning is one kind of technical assistance offered by the District. SCD staff, including two District engineers, provides BMP design, permits, construction assistance and inspection.

The District also plays an important role as a liaison between landowners and regulatory agencies in the event of a regulatory violation. SCD's status as a non-regulatory agency allows it to act as an advisor to the landowner and assist him or her in regaining compliance. SCD provides regulatory compliance assistance to landowners on a strictly voluntary basis, and only by request of the landowner. Examples of regulations that are complex and with which SCD has assisted landowners in the past include: the County Critical Areas Ordinance and the State Dairy Nutrient Management Act, and Federal Confined Animal Feeding Operation regulations.

Landowner relationships are built on trust and accessibility. The Conservation District functions as a single point of contact for private landowners on natural resource issues. Landowners can contact the District with their issues and concerns and the District will either help them directly or direct them to the appropriate source of help. The mission of the District is to provide technical assistance and education when requested by landowners; it has no regulatory enforcement-related responsibilities or relationships with regulating agencies. Landowners know that when they solicit the assistance of the District, their privacy and confidentiality are respected and protected. This has enabled the District to achieve a uniquely high level of trust and cooperation with landowners that has not been possible for other agencies involved in natural resource conservation.

Natural Resource Planning. The District has been implementing natural resource protection and restoration projects since 1999 in partnership with Federal, State, tribal and local entities. SCD restoration activities are tightly coordinated with other agencies doing similar work so as to leverage staff and financial resources and avoid duplication of work. SCD uses local watershed recovery plans, state water quality, wetland and habitat databases, and other locally developed restoration/recovery plans to guide identification of types and location of projects. Examples of projects completed by the District include: culvert replacements, bridge installations, riparian plantings, and large woody debris placement in streams.

Information and Education. The District's information and education program is the means through which most citizens come in contact with the District. Each year several tours of well managed properties, workshops, and hands-on training on various conservation practices and techniques are developed and implemented by the District. These events are open to the public and are always well attended. In addition, SCD hosts an annual awards ceremony where the year's best landowner cooperators are honored for their outstanding conservation activities and projects. Citizens, youth and business groups can volunteer throughout the year as part of SCD sponsored projects and events such as stream plantings and fencing projects.

The District publishes and mails out a quarterly newsletter to Snohomish County citizens. This newsletter is also available on the District's website, as are several Fact Sheets about common conservation practices implemented by the District. The website contains a host of other practical conservation information for landowners (<http://www.snohomishcd.org/>). Finally, District staff also provides information and education outreach through a variety of displays at local fairs and festivals throughout the year.

Teaching natural resource conservation to Snohomish County youth. SCD has an active youth outreach program. The District facilitates recruitment and participation of Snohomish County youth at the annual Natural Resources Youth Camp in Randle, WA. In addition, each year SCD participates in and regularly hosts the local "Envirothon", which is a high school competition focused on natural resource learning. Students who participate in this activity can progress to the State and National levels. Finally, SCD staff provides materials, training, and programming to local educators in area public and private schools. Conservation curriculum material is also available on the SCD website.

Urban Conservation. The District has set a goal to increase funding and activities under this programming area with the implementation of the assessment. Current funding is variable and insufficient due to lack of grant availability for urban conservation programs. Urban conservation activities include education and outreach as well as project implementation in the areas of managing pet waste, protecting backyard streams, establishing native plants, improving habitat, composting and urban forestry.

Urban liaison. With funding from the assessment SCD intends to create and hire an urban liaison position. This staff person will focus on conservation needs of cities including NPDES compliance, development of Transfer of Development Rights (TDR) programs, and numerous other urban conservation needs.

Plant sale. Each year the District hosts a three day Conservation Plant Sale at the Monroe Fair Grounds. Many urban and suburban residents attend and purchase reasonably priced trees and plants for erosion control, restoration, and conservation landscaping at this event. In addition to the mostly native plants sold, the District uses the sale as a venue to educate the public about conservation issues.

Monitoring and Quality Control of SCD Services. The District is funded primarily through grants, each with its own monitoring requirements. Rather than an overall monitoring policy, the District adheres to the specific monitoring requirements of each grant. In general, habitat restoration projects are carefully monitored for a period of 3 to 5 years after completion to make sure the installed practices are working. Farming BMPs are inspected for completeness before cost-sharing reimbursement is provided. BMPs are installed to Natural Resource Conservation Service specifications, which have been developed after extensive research to determine their benefits to the environment. Each year the District reviews the effectiveness of a portion of their installed practices. In addition, most staff also follow-up with landowner-cooperators on an informal basis when the opportunity arises.

4. COST OF PROVIDING SCD SERVICES AND ACTIVITIES

For the purpose of this analysis the cost of providing services is limited to be the amount of the special assessment, as guided by the language of the governing RCW, 89.08.400. The intended amount of the assessment is approximately \$1.2 million dollars, which is the current operating budget of the SCD.

Staff. To implement programs described in the previous section, the SCD has 11 full time staff, 1 part-time office assistant and 1 Americorps Intern. SCD technical staff is highly trained and skilled in the service areas provided by the District and includes 4 farm planners, 2 licensed engineers, 2 habitat specialists, and 1 Education and Outreach coordinator. Administrative staff includes the District's Manager, a grants administrator and 2 admin/office assistants.

Through regular continuing education, SCD staff keeps current on relevant topics and issues, new techniques, and technologies that will be beneficial to their clientele. SCD staff and the District's manager have received many state-wide awards and commendations from the Washington State Conservation Commission and the Washington Association of Conservation Districts for exemplary service and leadership. The District has also received state awards for the diversity of its workforce.

Budget growth. The SCD annual budget has grown steadily over the past two decades to its current level of \$1.2 million. The strongest growth in the District's budget has occurred over the last 12 years, during which the budget has grown at an average rate of 12% per year. In the past 5 years, growth in the District's annual budget has leveled off to a range between 1.1 and 1.4 million annually (Figure 4). The initial assessment, if approved, will provide approximately \$1.2 million in revenues, from which the County Assessor's Office will deduct a fee for collecting the assessment.

Snohomish County is currently growing, and this growth implies growth in the SCD budget as new parcels are assessed. SCD plans to distribute new revenues according to its proposed budget allocation, shown in Figure 5b. Key areas of program expansion will include increased services to urban residents, acceleration of farmland preservation activities, and services and outreach to previously un-funded geographic areas.

Improved efficiency at the Snohomish Conservation District. During the same time that budget resources have increased at the District, so have implementation of Conservation Practices and development of Farm Plans. Both these areas have expanded dramatically since 1995, increasing by an average 41% and 21% per year, respectively (Figure 5). The fact that SCD has increased the number of practices and plans at a rate faster than the growth of its budget speaks to increasing efficiency at the District - that is, over the past 12 years, the District has significantly increased the amount of services provided for every dollar spent.

Grant leveraging. The Snohomish Conservation District currently receives approximately \$500K of its funding from Snohomish County. These monies are used to obtain an additional \$640K from non-county grant sources. Once the assessment is in place it is the goal of the District to maintain this 1:1.2 ratio of assessment to grant funding. Other WA conservation

Districts that have obtained local assessments have been very successful in increasing their grant leveraging ratios over time.

Reallocating the SCD budget will increase benefits to land and landowners. The District's current budget allocation is directly tied to the types of grants awarded. In recent years, the majority of funding has been for farm planning, water quality, and salmon recovery (Figure 6a). The proposed budget is divided into five major program areas which are previously described, plus administrative and equipment costs (Figure 6b). On-the-ground projects, or 'deliverables', are concentrated in Natural Resource Planning, Sustainable Ag and Farmland Preservation, and Farm Planning and Water Quality. These three programs together currently comprise about ½ of the District's budget. Roughly the same amount would be allocated to these three programs under the proposed assessment-based budget, but with a greater emphasis on Sustainable Agriculture and Farmland Preservation. Urban Conservation programs are also expanded significantly under the new assessment-based budget allocation, as are Education and Outreach programs. Administrative costs as a percent of the budget decline slightly. The budget reallocation better addresses the conservation concerns of the County and provides more benefit to landowners by providing more urban conservation and farmland preservation programming. Finally, this redistribution of benefits more accurately reflects the priorities of the District's Board of Supervisors.

Fiscal and management audits and awards. The SCD, like all conservation districts in the state, is subject to an annual audit by the State Conservation Commission. In addition, SCD is audited on a three year cycle by the Washington State Auditor's Office. This is a standard, comprehensive audit covering a three year period. The Snohomish Conservation District has always been found in compliance with all state and federal standards for reporting and use of funds. In 1999, SCD won the coveted Goodyear Award, a national honor awarded to only one district each year by the National Association of Conservation Districts, for outstanding achievement of their annual work plan and exemplary financial management.

5. ESTIMATION OF BENEFITS PROVIDED BY SCD SERVICES AND ACTIVITIES

The purpose of valuation is to identify direct and indirect benefits, measure quantifiable values, assign monetary values, and describe non-quantifiable values to the extent possible. Not all benefits can be quantified, let alone given a monetary value, nor is this necessary; qualitative elements are also important factors for decision making. Benefits are described from the perspective of the land and landowners who receive services and who will be assessed by the District. This perspective was chosen in keeping with the requirements of RCW 89.08.400.

The benefits that accrue from SCD services and activities can be subdivided into categories including:

- direct and indirect,
- economic and non-economic,
- quantifiable and non-quantifiable,
- and private and public benefits.

These terms are used throughout the following benefits estimation section of this report, and a text box containing definitions and examples of each benefit type is included in Figure 7.

Valuation methods used in this analysis. Several valuation techniques are used in this analysis to estimate the benefits derived from SCD programs, depending on the type of benefit under evaluation and the availability of relevant data.

Market based valuation. Market values are used as much as possible to quantify benefits in monetary terms. This approach was used to quantify cost saving estimates for natural resource restoration projects, benefits derived from the conservation plant sale, and technical, engineering, educational and other services for which market based indicators exist.

Hedonic pricing method. Where market values did not exist, known related values were used as proxies for the benefit being evaluated. This approach was used to quantify the benefits of landowner cost sharing contributions to BMP implementation projects.

Ecosystem services valuation. This valuation approach takes the perspective that natural resources act similar to capital assets that provide environmental goods and services critical to existence such as water and air filtration. This method was used to estimate changes in ecosystem service values brought about by a limited portion of SCD natural resource restoration projects.

Non-quantified values. Many SCD services and benefits have no private sector equivalents, and therefore no market prices exist for directly estimating benefits. Various estimating and survey techniques like some of those described above exist for indirectly approximating value. Resulting monetary estimates vary widely and are subject to copious professional disagreement on methods. Estimating values using these techniques is also time consuming and costly. Because of these reasons, much of the value of SCD programs and services has been left un-

quantified, and benefits are described in narrative form only. For example, large portions of BMP implementation and farm planning benefits provided by the conservation District have been left un-quantified. Specific benefits are discussed below and are grouped by SCD program area. Figure 8 is a table summarizing the benefits that have been expressed in dollar terms, while Figures 9 and 10 summarize the complete list of benefits including non-quantified values.

Benefits from Sustainable Agriculture and Farmland Preservation programs. Since 1995, the first year for which there is consistent implementation data, the District has implemented over one thousand five hundred (1,500) conservation practices on private lands that reduce soil erosion; improve water, soil and air quality; and enhance wildlife habitat. The annual number of BMPs installed by the District has grown significantly in the last several years (Figure 11). On average, since 1995 SCD has increased its implementation of BMPs by 41% per year.

Nationwide, the success of these conservation practices is measured in terms of their positive and negative impacts on soil, water, air, plants and animals both at the project site and off-site. Once BMPs are installed, they continue to provide physical conservation benefits indefinitely, assuming they remain in place and are properly maintained.

Physical benefits to Snohomish County lands as a result of BMP implementation. The top 15 BMPs implemented by the District between 1995 and 2006 are listed in Figure 12. Practices such as Heavy Use Area Protection, Roof Runoff Structure, Runoff Management System, and Underground Outlet, are designed to reduce and control water run off from livestock areas that could pollute nearby surface and ground water.

Nutrient Management also prevents excess nitrogen and phosphorous as well as pathogens from contaminating soil and water. Use Exclusion and Fence practices keep livestock and household pets contained and away from environmentally sensitive areas such as wetlands and streams. This helps reduce soil erosion and keeps water free of animal waste. Prescribed Grazing and Pasture and Hay Planting improve soil and forage productivity and provide food for wildlife. Waste storage, Composting and Waste Utilization BMPs reduce air pollution and odors, as well as prevent excess nutrients and pathogens from reaching ground and surface water. Tree/Shrub Establishment, Critical Area Planting and Brush Management can significantly decrease soil erosion by helping reduce runoff and flooding.³ In addition, these practices improve water quality by creating shade and preventing nutrients from reaching water bodies. Further detail of the physical benefits to land of these practices can be found on the NRCS website at: <http://www.nrcs.usda.gov/technical/Standards/nhcp.html>.

Cost sharing. A number of county, state and federal government programs provide partial funding to assist landowners in covering the cost of implementing conservation practices. These programs are referred to as ‘cost sharing’ programs. The Conservation District assists landowners in obtaining Cost Sharing funds for implementation of BMPs and implementation of sustainable practices, as available. Depending on the program, SCD staff provides a variety of cost sharing services to clients, from ‘turnkey’ habitat restoration projects, to filling out paperwork and securing permit approval of smaller BMP projects.

In most cases, cost sharing on installation of BMPs covers only 50% of the project costs. The remaining project costs must be covered by the land owner, and can include use of on-site equipment, the landowner's time, cash, and other material resources. Between 1997 and 2006, Snohomish County landowners contributed over \$927,000 to implement conservation practices on private lands. In 2007 dollars, this contribution totaled over 1 million dollars or \$107,500 annually (Fig. 8). This is a conservative estimate of Landowner contributions, as it is a *minimum* required to receive cost sharing funds. In many cases landowners contribute more than 50% of the costs.

Benefits from locally grown food. By helping rural farms remain sustainable, SCD is supporting a local food production system that provides benefits to all Snohomish County residents. With increasing food contamination and communicable disease incidences, more people are demanding greater local food production, as evidenced by the growth of local farmers markets, farm stands and local purchasing by grocers and restaurants. According to public opinion research conducted by WSU in 2005, 42% of Snohomish County residents said buying locally-grown food was 'very important' and 36% said it was 'somewhat important – a total of 78% who believe it is important to buy locally grown food.'⁴

Greater local food production and sale can represent a direct economic benefit to local farms in terms of higher sales volumes and prices. It also provides a direct value to consumers in the form of decreased risk of food-borne illness⁵ and reduced global warming caused by fuel burned to deliver products to local consumers.

Partial valuation of BMPs. Engineering services provided by the SCD represent a small portion of direct BMP benefits. In 2006, SCD engineers provided over 4,000 hours of engineering services to Snohomish County landowners implementing BMPs. The value of these services is estimated using market values of comparable engineering services provided by private consultants and totals approximately \$250,000 per year (Fig. 8).

No attempt has been made to quantify the value of environmental benefits that result from BMP implementation beyond what has been quantified above. SCD staff is monitoring water quality over the next two years to measure physical benefits resulting from BMPs at several different locations in Snohomish County. Some of the BMPs included in the WQ monitoring project were installed as many as ten years ago. Results of this data collection may form the basis of future BMP valuation studies.

Benefits from Farm Planning and Water Quality Improvement programs. SCD currently has two full time NRCS-certified farm planners on staff. Typically, a farm plan can take 40-60 hours of the planner's time to complete, and there is typically a 1-6 month waiting list for farm plan development depending on staff work loads.

Since 1995, over 500 farm plans have been developed for both commercial and hobby farming facilities. The number of farm plans developed each year by the District has increased significantly in that period, from a rate of 21 plans per year in 1995 to 64 plans per year in 2006, representing an average annual growth rate of 21% (Fig. 13).

Partial value of SCD farm planning activities has been captured by estimating the market value of comparable technical assistance provided by private consultants. A range of low and high values between \$412,000 and \$680,000 are estimated for technical assistance, reflecting uncertainty caused by small quantities of private sector data with which to compare SCD technical assistance (Fig. 8).

Avoided water pollution and flood damage costs. One of the benefits of SCD water quality improvement activities includes the ‘avoided costs’ of having to clean up water pollution and repairing flood damage that would have occurred if SCD projects had not been implemented.

Benefits from Natural Resource Planning. Between 2000 and 2006, the Snohomish Conservation District planted over 230 acres of stream bank with over 94,000 trees and shrubs, bringing improved shade to over 19 miles of stream. In addition, almost 38,000 lineal feet of fencing was installed to exclude livestock from streams. 130 pieces of large woody debris (LWD) were placed in streams to enhance salmon habitat, four sub-standard culverts were replaced, 8 new bridge crossings established, and 12 weirs installed to control water flow around wetlands, bridges and culverts (Figure 14).

Riparian plantings increase the value of ecosystem services. Partial value for these accomplishments was estimated using ecosystem valuation data presented in the King Conservation District valuation study (2006) for riparian area planting. Using valuation techniques described in that report, the KCD consultant estimated a range of annual ecosystem benefits between \$5,000 and \$20,000 per acre for riparian planting projects.⁶ This per acre value was applied to an average of 34 acres per year of riparian plantings completed by SCD. Using this method, an annual value between \$180,000 and \$683,000 was estimated for SCD riparian restoration projects (Fig. 8).

Private and public cost savings. SCD engineers and contractors provide low-cost planning, engineering and implementation of natural resource improvement projects such as culvert replacements and bridge crossings. The public as well as private citizens benefit from this cost savings because most projects are completed with a large portion of government grant funding. SCD engineers and contractors complete bridge crossing projects at an installed cost of \$40 to \$100 per square foot depending on the difficulty of the site. Installed costs of comparable bridge projects recently completed by private sector engineer/contractors retained by NRCS and WSDOT ranged from \$64 to \$122 per square foot. This represents a cost savings between 18% and 37% for bridge installations. Similarly, SCD staff has installed culverts for approximately 49% of the install costs of private contractors.⁷ Unlike other comparable transportation projects, SCD bridge and culvert projects are undertaken because of their high environmental benefits to salmon and other aquatic habitat.

Furthermore, landowners save permit costs on SCD habitat restoration projects because SCD has access to the state streamlined permit process for fish habitat/passage projects. As a result, state and local permit approvals and exemptions are expedited within 45 days and no permit fees are charged. Permit costs without the fast-track process would range between \$6,000 and \$18,000 for typical SCD projects, depending on the location and particular site issues. Private sector

engineering firms do not have access to this fast-tracking, and private sector permit approvals can take at least 2-12 months, which can delay the project and increase construction costs.

The value of this cost savings is calculated by multiplying the installation cost savings per square foot of bridge and culvert work by the average annual square footage completed; then adding the annual permit cost savings for each project. All totaled, landowners and the public save an estimated \$32,000 to \$54,000 per year on installation and permit costs for SCD bridge and culvert installation projects (Fig 8).

Enhancement of recreation opportunities. Further benefits are created through SCD restoration projects including riparian plantings along county lakes and rivers, which enhance and increase fishing, birding, and wildlife viewing recreational opportunities on public as well as private lands near restoration sites.

Volunteers, comprised mainly of citizens, youth, service and business groups from urban and suburban areas, participate each year in SCD sponsored projects. These individuals receive hands on field experience in stream plantings, fencing and other habitat restoration projects. In the past three years volunteers have provided almost 2,200 hours of voluntary service valued at over \$39,000 dollars. The hourly rate of \$18.00/hour for valuation of volunteer services is set by the State Conservation Commission. The annual value of volunteer services is almost \$19,000 per year (Fig. 8), which also includes volunteers that assisted with the annual plant sale (see “Benefits from Urban Conservation programs” below).

Benefits from Information and Education programs. Over three thousand citizens in Snohomish County now receive the District’s quarterly newsletter, “The Nexus.” Readership has steadily grown and is expected to continue this trend as the county population of landowners increases. Over the past six years the District has mailed out over 60,000 copies of the newsletter.

Workshops valued using market comparisons. Since 2001, SCD Staff have hosted or assisted in hosting over 30 workshops and conservation project tours, which were attended by over 700 participants. An additional 15 events were hosted by the District at which SCD educational materials were presented. SCD does not charge a fee to attend its workshops or field tours. Therefore, market-based estimates of similar programs offered by fee-based organizations were used to estimate the value of SCD workshops and project tours. Based on an average annual attendance of 120 and a workshop fee range between \$45 and \$100 per day, annual values range between \$5,000 and almost \$12,000 per year (Fig. 8).

Youth education. Each year SCD’s intern provides K-12 teachers with a variety of dynamic, interactive presentations for their students. Each year 40+ presentations are given, reaching close to 1,200 students. Presentation topics include: the water cycle, forest ecosystems, salmon, soils, and wetlands.

Additional outreach. Between 2001 and 2006, District staff developed eight new displays which were exhibited at over 30 community fairs and annual events. In addition, since 2001 seventeen Fact Sheets and brochures have been published by the District for ongoing use by SCD clients.

As many as 16 presentations on various conservation topics were developed and delivered to schools and local community groups and over 20 media communications were composed and published.

Finally, between 2001 and 2006 District staff and supporters raised \$4,500 in contributions for youth camper-ships. In 2007 dollars this amounts to approximately \$830/year (Fig. 8). Between 2 and 7 young people from Snohomish County attend the Natural Resource summer camp in Randel, WA.

Partial valuation of information and education services. A partial value of information and outreach services provided by the SCD is estimated using the market value of comparable educational and outreach services provided by private consultants. SCD staff has provided almost 4,000 hours of educational and information services to clients, which is valued between \$110,000 and \$182,000 dollars per year (Fig. 8). This range of value reflects the uncertainty caused by relatively small quantities of private sector data with which to compare SCD information and outreach services.

It is not possible to fully monetize the physical benefits directly resulting from the District's Information and Education program because data on natural resource improvements caused strictly by the program is not available. Workshops and tours will not directly cause an increase in the amount of BMPs that are implemented in the future. However, citizens who have participated in SCD's O&E programs will be more able to make educated decisions about how they and others manage natural resources under their control, and are more likely to make better resource choices.

Benefits from Urban Conservation programs. In 2006, approximately 87,000 plants were sold during the District's three day plant sale, generating gross sales revenues of over \$106,000. Over one thousand citizens attended and purchased conservation trees, shrubs and plants at the 2006 sale. Over the past 10 years plant sales and volume of plants sold have both steadily increased by over 10% per year (Figure 15).

For the purpose of this valuation, the gross sales figure is used as a market indicator of the value that Snohomish County consumers place on the annual plant sale event (Fig. 8). In fact, this is a conservative measure of value, as it does not take into account the environmental benefits gained from consumers planting their purchases or consumers' use of conservation information gained from their interaction with SCD staff during their visit to the plant sale.

Every year SCD staff is assisted by volunteers who help prepare and sell plants before and during the plant sale. Approximately 40 individuals volunteer each year at the sale, providing over 300 hours of service valued at over \$4,000.

Enhancement of urban recreation areas. Every year SCD provides surplus plants from the plant sale to city and county parks and schools throughout Snohomish County at cost or reduced prices, thereby enhancing urban recreational areas.

Equity and fairness among assessed landowners. The vast majority of landowners in the assessment area will pay a \$4.995 per parcel fee plus a \$0.00001 per acre fee, regardless of land type. The assessment will not be collected on parcels less than \$500 in value, government parcels, or personal property. An important political issue is how benefits and costs of SCD programs and activities are distributed among the different individuals and groups affected by those activities, particularly rural and urban landowners. It is often perceived to be the case with conservation Districts in general that more of the direct benefits are provided in rural areas. This perception comes about because rural areas are where the majority of natural resources are located. In fact, the benefits provided to urban and rural land owners by SCD programs and staff are very comparable. The map in Figure 1 showing the location of SCD cooperators demonstrates the even distribution of assistance provided throughout the District by SCD staff since 1990. From a natural resource perspective, all lands are part of larger watershed, air shed and habitat systems; and beneficial activities that occur up and down these regions benefit all lands in that area, regardless of use classification. Figures 9 and 10 summarize the benefits to rural and urban lands. When the two tables are compared, rural landowners receive slightly more *direct* benefits related to farm planning, but most other benefits are the same. Urban landowners receive all the same indirect benefits of farm planning activities that rural lands do.

It should be noted that rural landowners bear more of the direct cost of conservation measures by virtue of the fact that land use restrictions frequently have greater impacts in rural areas than in urban areas, and rural landowners who cooperate with the District contribute their own resources and time to making conservation projects successful. In contrast, while fewer urban landowners may seek direct services from the CD, all citizens are beneficiaries of the many indirect benefits of CD programs and projects, including improved water and air quality, increased wildlife habitat, and locally grown products.

Impacts on assessed land values. An extensive review of valuation literature in 2005 showed a clear trend linking property value increases to proximity of open space. However, specific increases in property values vary by location and the methodology used to estimate the values.⁸ One study conducted in northern California showed that urban stream restoration efforts increased property values by \$4,500 to \$19,000 per parcel.⁹

6. NET BENEFITS OF CONSERVATION SERVICES AND CONCLUSIONS

Figure 8 summarizes the annual costs and benefits of providing SCD programs described in the previous two sections. The annual cost of Snohomish Conservation District services is approximately \$1.2 million. The gross annual benefit derived from these services ranges from a low estimate of \$1.4 million to a high estimate of \$2.3 million. Net annual benefits - that is the gross benefits less the total cost - range from \$246,000 to \$1,169,000.

Annual Return on Investment. If the assessment is viewed as an annual investment of \$1.2 million, these results imply an annual return on investment between 21% and 102% each year. However, the benefits of SCD services and activities are not all generated in the year the service is provided, but rather stretch into the long term, indefinite future in the form of better natural resource stewardship by Snohomish County urban and rural citizens, more sustainable farms, and improved quality of open space and wildlife habitat. These long term benefits are estimated by calculating the net present value (NPV) of annual benefits.

Measuring long term benefits. A real discount rate of 3% is used to estimate future long-term benefits of SCD programs and services, per guidance for Benefit-Cost analysis from OMB Circular No. A-94¹⁰. Using this discount rate, the long-term net present value of SCD goods and services ranges between \$8.2 and \$40 million. For every \$1.2 million invested in the Conservation District between \$8.2 and \$40 million dollars of long term benefit is generated.

Long term Benefit-Cost ratio. Again, assuming that \$1.2 million is the net revenue generated by the assessment, estimates of the long term benefit to cost ratio range between 1:7 on the low end and 1:34 on the high end. That is for every dollar of assessment, between \$7 and \$34 dollars of long term value is generated by Snohomish Conservation District activities. A summary of this valuation analysis is provided in table format in Figure 16.

Sensitivity Analysis. Using a range of benefits and estimating low and high values for these benefits takes into account the uncertainty of the estimating techniques as well as inherent uncertainty in the benefits themselves. Natural resource protection estimates were discounted over 75% between low and high estimates to account for the high uncertainty associated with this estimation method. More precise estimates for which market comparisons were available were discounted 40 to 50% depending on the quality of the data used to make the estimate. Discounting the benefits in this manner increases the probability that the actual benefits lie somewhere between the low and high estimates.

Using a higher discount rate to calculate long term benefits will decrease their net present value, while using a lower discount rate will increase the net present value. At a discount rate of 5% the long term benefit-cost ratio ranges between \$4 and \$20; at 7% this is reduced to \$3 - \$14 (Fig. 17).

Conclusions. The findings of this valuation analysis indicate that the special benefits to lands provided by the Snohomish Conservation District assessment will significantly exceed the amount to be assessed.

Older valuation techniques for assigning value to non-market services and benefits like some of those provided by the Conservation District have been controversial and left many unsatisfied that they adequately capture the value of natural resource protection services. This problem is not exclusive to valuations of Conservation Districts or natural resources. All agencies providing public services struggle with this valuation issue. Work continues to improve traditional non-market based valuation methods and reduce the uncertainty associated with their results. New valuation techniques based on the value of ecosystem services are only just being developed and with time and more basic research, the quality of these estimating techniques will improve.

In the meantime, it appears that even without complete estimates of value, the Snohomish Conservation District is providing ample benefit to the citizens of Snohomish County. It is likely that as Snohomish County's population continues to grow, the value of the District's services will continue to increase.

ABOUT THE AUTHOR

Dr. Carolyn J. Henri is a natural resource economist and owner of a private natural resource consulting firm, Resource Consulting Service, LLC, located in Everett, WA. In addition, she holds an adjunct research faculty position in the WSU Department of Natural Resource Sciences.

Figure 1: Map of the Snohomish Conservation District and location of landowners served between 1990 and 2007

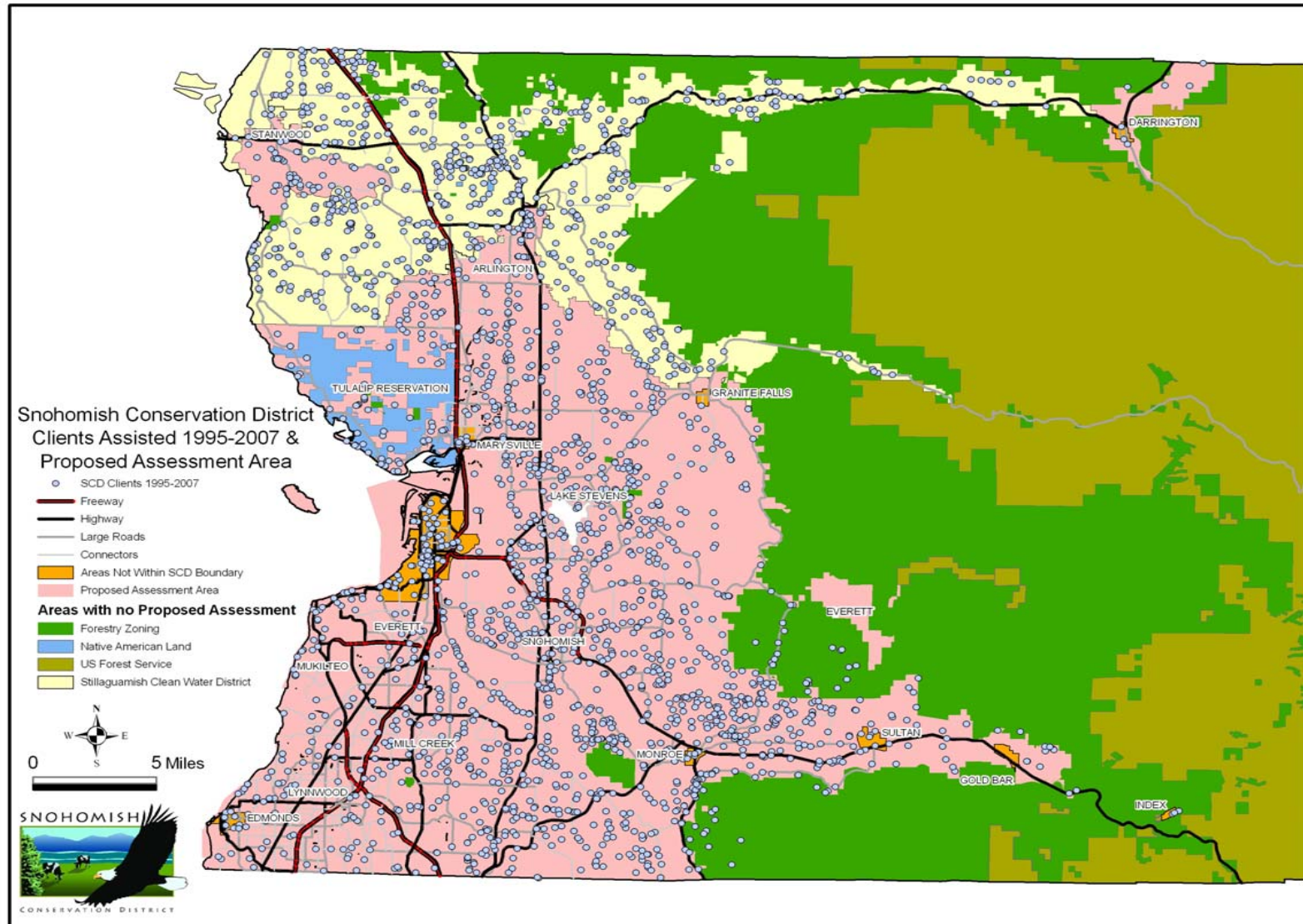


Figure 2: Snohomish Conservation District Program Areas

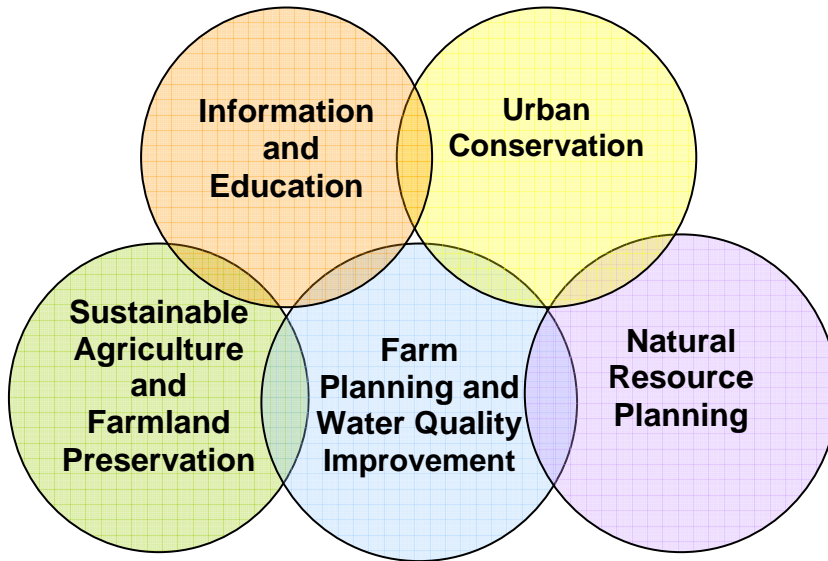


Figure 3: Location where Best Management Practices have been implemented

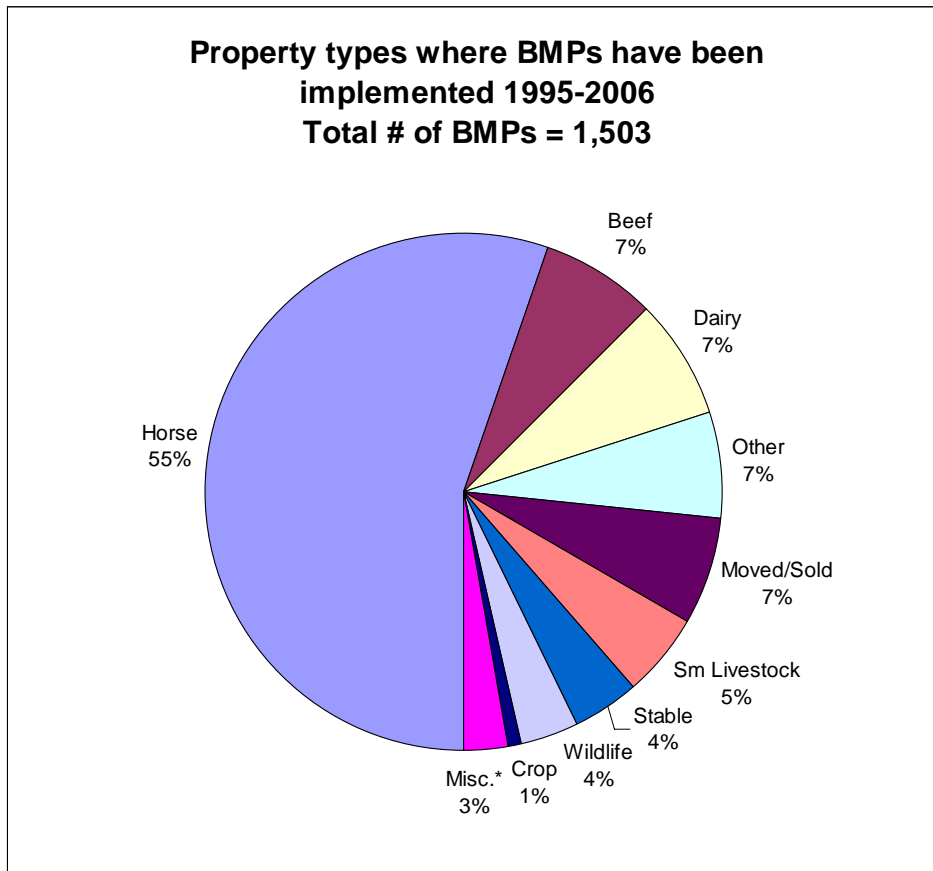


Figure 4: Growth of SCD Annual Budget

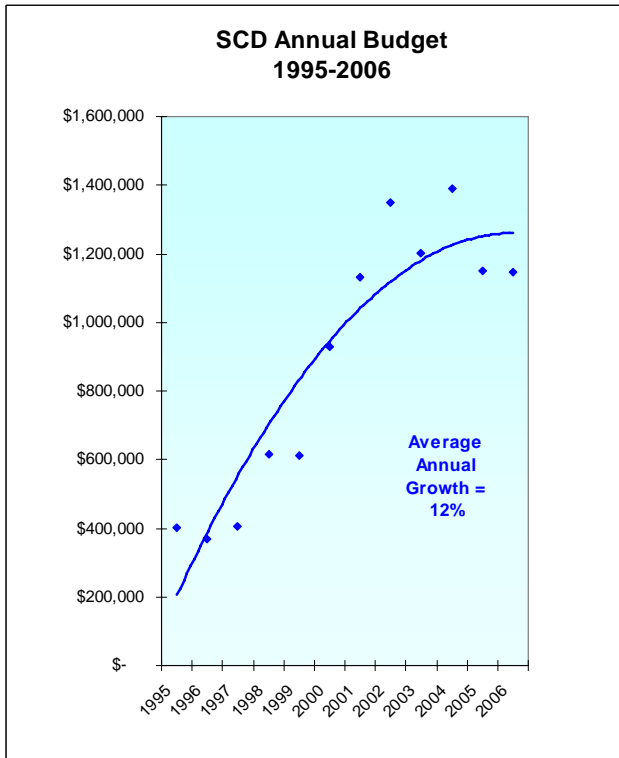


Figure 5: Growth in conservation practices and farm plans compared to annual budget

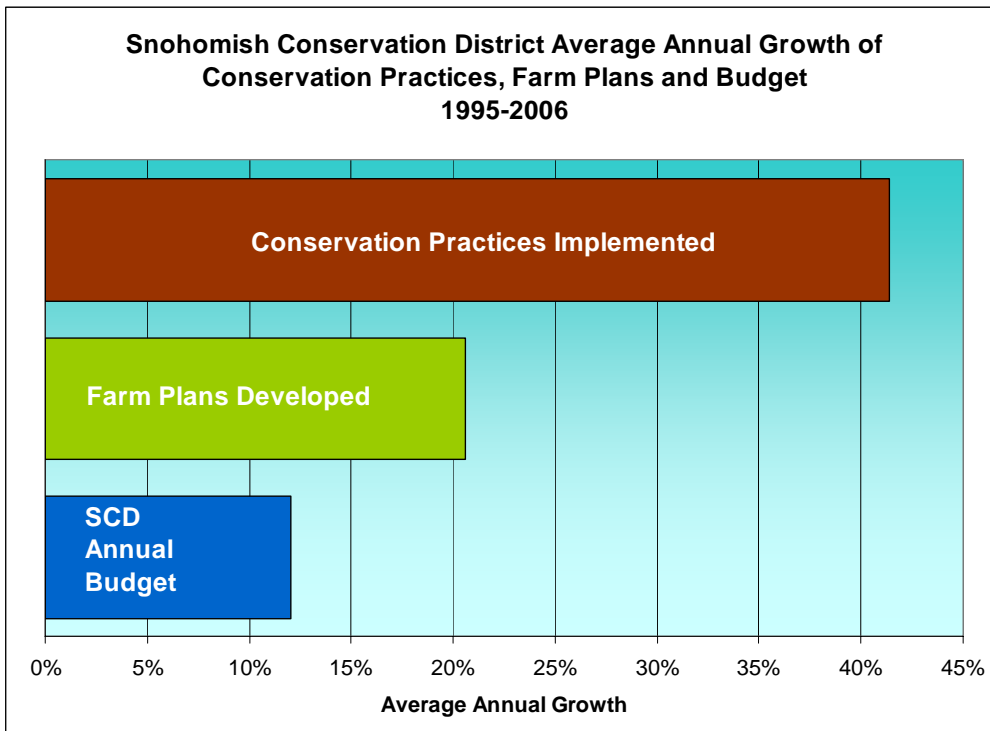


Figure 6a: Current SCD budget allocation

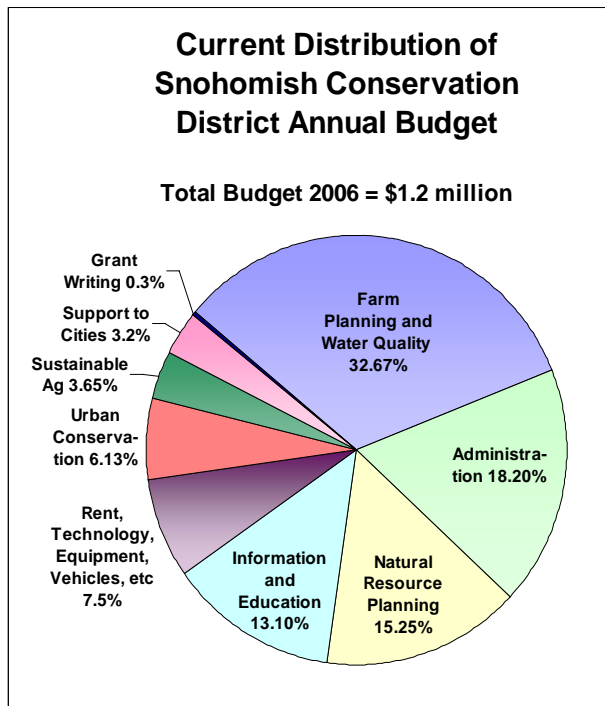


Figure 6b: Proposed SCD Budget Allocation

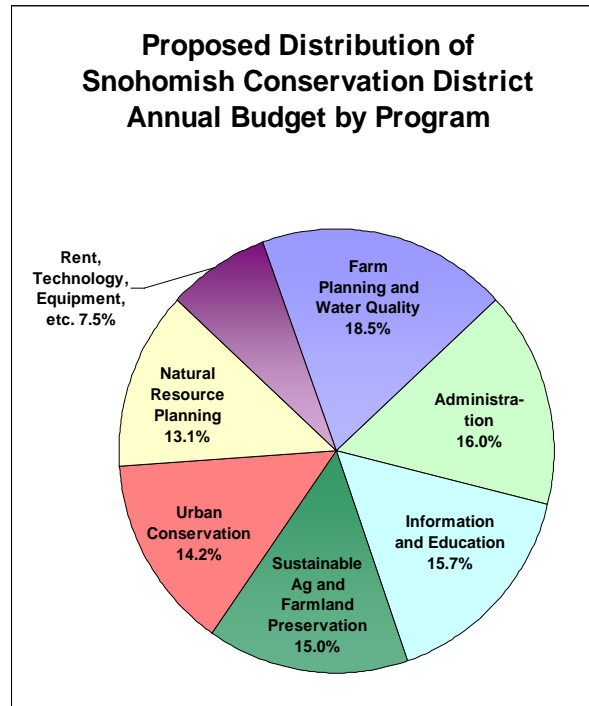


Figure 7: : Definitions and Examples of Benefits from SCD Programs and Services

Direct vs. Indirect Benefits

Direct benefits occur directly to the land or the landowner, while indirect benefits may occur directly to someone else, but the land or landowner also benefits. An example of a direct benefit is a suburban livestock owner who receives help from the District to install a composting process for livestock waste. An indirect benefit to a farm owner might be the improved neighbor relations that exist after his neighbors have taken a SCD workshop about farming practices.

Economic vs. Non-Economic Benefits

Economic benefits exist if a monetary value can be placed on the benefit, while non-economic benefits are not traditionally valued in terms of money. An example of an economic benefit is the services a landowner receives from SCD staff such as engineering design services for a culvert replacement project. An example of a non-economic benefit is the public access landowners have to SCD staff and information through the District's Single Point of Contact Service.

Quantifiable vs. Non-quantifiable Benefits

Quantifiable benefits can be counted, while non-quantifiable benefits cannot. The number of participants who receive practical training at a SCD workshop is a quantifiable benefit (the number of attendees). However, the value of the information they learned is a non-quantifiable benefit.

Private vs. Public Benefits

Private benefits exist when the benefit is enjoyed primarily by a private landowner, while public benefits are enjoyed by the general public or a subset of the public, such as park-goers. An example of a private benefit is the cost share assistance that a property owner might receive to install a conservation practice. That same practice can also have public benefits, for example, in the form of improved water quality.

Figure 8: Annual Cost and Special Benefits of SCD Programs

Annual Cost and Special Benefits of Snohomish Conservation District Programs and Services

ANNUAL COST OF SPECIAL BENEFITS

(Current Budget Allocation 2006)	Actual Costs
Farm Planning and Water Quality 32.67%	374,460
Administration 18.20%	208,607
Natural Resource Planning 15.25%	174,794
Information and Education 13.10%	150,151
Rent, Technology, Equipment, Vehicles, etc 7.5%	85,964
Urban Conservation 6.13%	70,261
Sustainable Ag 3.65%	41,836
Support to Cities 3.2%	36,678
Grant Writing 0.3%	3,439
Total Annual Cost	1,146,191

ANNUAL SPECIAL BENEFIT*

	Direct Annual Benefit (2007 \$)		Value Estimation Method:	Notes:		
	Low Estimate	High Estimate				
Natural resource restoration & protection projects	179,422	683,214	Ecosystem services valuation	~\$5,000 -20,000/acre benefit (estimate from KCD Assessment Valuation)		
Cost savings for natural resource restoration projects	31,890	53,861	Cost Comparison			
Best Management Practices	--	--				
Landowner in-kind contributions to BMP implementation	64,508	107,514	Hedonic Pricing	Min. requirement 50% of Cost-Share \$ received		
Conservation Plant Sale	109,559	109,559	Gross Sales	Actual 2006 sales data used (inflation adjusted)		
Workshops & Conservation Project Tours	5,445	11,798	Comparable workshop registration fees			
	Hours	Value/Hr.				
Technical Assistance	12,500	\$ 55.00	412,500	687,500	Comparable hourly consulting rate	
Engineering Services	4,128	\$ 60.00	247,680	247,680	Comparable hourly consulting rate	
Information and Education	3,800	\$ 48.00	109,440	182,400	Comp hourly consulting rate	In addition to workshop benefit line-item above
Administration	4,716	\$ 45.00	212,220	212,220	Comparable hourly consulting rate	
Volunteers	1,043	\$ 18.00	18,768	18,768	Hourly rate designated by State Conservation Commission	
Grant Leveraging			--	--		
Funds raised for Nat'l Res Youth Camp			830	830	Annual avg funds raised 2001-2006	
GROSS ANNUAL SPECIAL BENEFIT			1,392,264	2,315,344		
NET ANNUAL SPECIAL BENEFIT (Benefit - Cost)			246,073	1,169,153		
Annual Return On Investment (ROI)			21.5%	102.0%		

LONG TERM BENEFIT-COST RATIO

	Low Estimate	High Estimate
Present Value of Net Special Benefit (3%)	8,202,438	38,971,772
Benefit - Cost Ratio 3%	\$ 7.16	\$ 34.00

* only partial value has been monetized and included in this benefits list

Figure 9: Rural Benefits

Summary of Benefits provided to RURAL & RESOURCE lands and landowners by SCD programs and activities	Benefits						
	Direct Benefit	Indirect Benefit	DIRECT Physical Benefit to N Resources	Quantitative Aspects	Economic Benefit Aspects	Private Benefit	Public Benefit
Best Management Practice (BMP) implementation	●	●	●	●	●	●	●
Technical Assistance (design, as-builts, surveys, permit assistance, contractor supervision, construction, inspection)	●		●	●	●	●	
Site visits	●			●		●	
Cost sharing assistance for BMP Implementation	●			●	●	●	
Farm plan development	●	●		●	●	●	●
Farm plan implementation	●	●	●	●	●	●	●
Natural resource and backyard conservation planning	●	●		●		●	●
Natural resource plan and backyard conservation plan implementation	●	●	●	●	●	●	●
Single point of contact	●			●		●	●
Regulatory compliance assistance	●	●		●	●	●	●
Natural resource protection and restoration projects	●	●	●	●	●	●	●
Volunteer opportunities, hands on experience	●	●	●	●	●	●	●
Newsletter	●			●	●	●	●
Workshops	●	●		●	●	●	●
Farm & conservation project tours	●	●		●	●	●	●
Develop and distribute natural resource management education materials	●	●		●		●	●
Outreach at local fairs and events	●	●		●		●	●
Youth Camp programming	●	●			●	●	●
Youth Campership fundraising	●	●		●	●	●	●
Envirothon High School Youth Program	●	●				●	●
Teacher training and training materials		●		●			●
School-based natural resource conservation programming		●		●			●
Plant sale	●	●	●	●	●	●	●
Enhancement of public parks and resource lands through restoration projects and donation of plant materials	●	●	●	●		●	●
Coordination with other resource conservation organizations		●					●

Figure 10: Urban Benefits

Summary of Benefits provided to URBAN lands and landowners by SCD programs and activities	Benefits						
	Direct Benefit	Indirect Benefit	DIRECT Physical Benefit to N Resources	Quantitative Aspects	Economic Benefit Aspects	Private Benefit	Public Benefit
Best Management Practice (BMP) implementation	●	●	●	●	●	●	●
Technical Assistance (design, as-builts, surveys, permit assistance, contractor supervision, construction, inspection)	●		●	●	●	●	
Site visits	●			●		●	
Cost sharing assistance for BMP Implementation	●			●	●	●	
Farm plan development		●		●			●
Farm plan implementation	●	●	●	●	●		●
Natural resource and backyard conservation planning	●	●		●		●	●
Natural resource plan and backyard conservation plan implementation	●	●	●	●	●	●	●
Single point of contact	●			●		●	●
Regulatory compliance assistance	●	●		●	●	●	●
Natural resource protection and restoration projects		●	●	●	●	●	●
Volunteer opportunities, hands on experience	●	●	●	●	●	●	●
Newsletter	●			●	●	●	●
Workshops	●	●		●	●	●	●
Farm & conservation project tours	●	●		●	●	●	●
Develop and distribute natural resource management education materials	●	●		●		●	●
Outreach at local fairs and events	●	●		●		●	●
Youth Camp programming	●	●			●	●	●
Youth Campership fundraising	●	●		●	●	●	●
Envirothon High School Youth Program	●	●				●	●
Teacher training and training materials		●		●			●
School-based natural resource conservation programming		●		●			●
Plant sale	●	●	●	●	●	●	●
Enhancement of public parks and resource lands through restoration projects and donation of plant materials	●	●	●	●		●	●
Coordination with other resource conservation organizations		●					●

Figure 11: Annual BMPs Installed

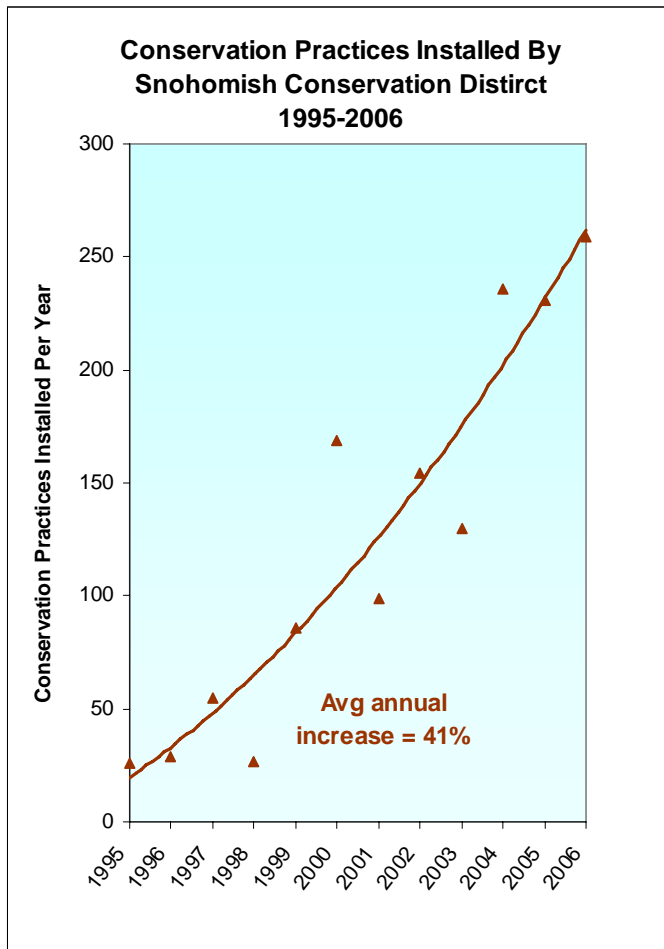


Figure 12: Top 15 BMPs Installed

TOP 15 Best Management Practices Installed by Snohomish County Landowners (listed from most to least commonly implemented)
Heavy Use Area Protection
Nutrient Management
Brush Management
Underground Outlet
Use Exclusion
Roof Runoff Structure
Prescribed Grazing
Pasture and Hay Planting
Waste Storage Facility
Composting Facility
Tree/Shrub Establishment
Fence
Waste Utilization
Critical Area Planting
Runoff Management System

Figure 13: Farm Plans Developed

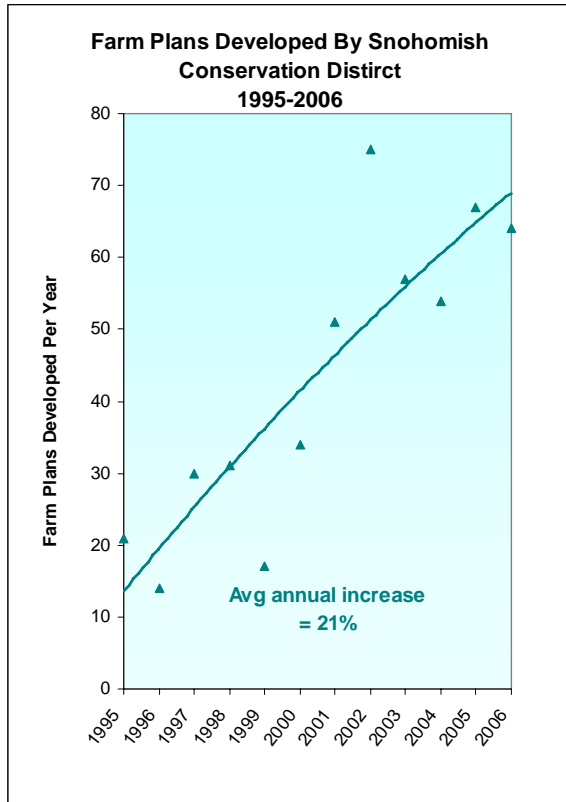


Figure 14: Natural Resource Protection Projects Completed by Snohomish Conservation District

SCD Natural Resource Planning Program Accomplishments 2000-2006		
	Total	Annual Average 2000-2006
Fencing (lineal ft.)	37,910	5,416
Culverts Replaced	4	0.6
New Bridges Installed	8	1.1
Number of Weirs	12	1.7
LWD* (Pieces)	130	19
Number of Plants Established	94,847	13,550
Riparian Acres Planted	237.5	33.9
Stream Edge Treated (mi.)	19.7	2.8

*Large Woody Debris

Figure 15: SCD Annual Conservation Plant Sale Volumes and Revenues

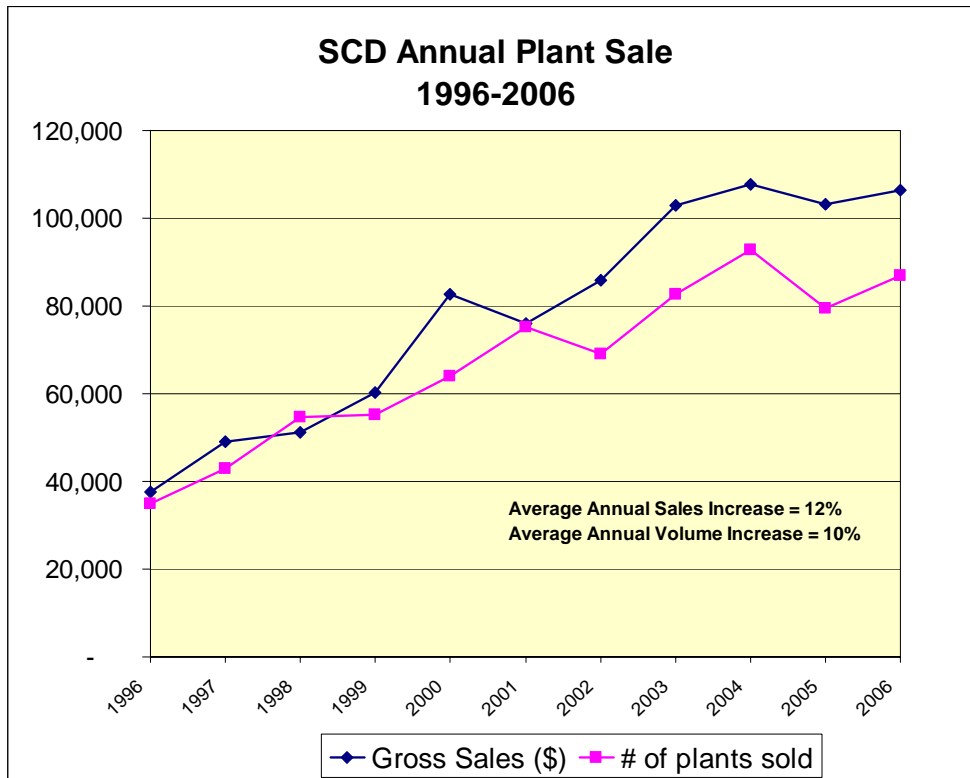


Figure 16: Summary Valuation of Annual and Long Term Special Benefits (US\$)

	Low Estimate (\$)	High Estimate (\$)
Estimate of Gross Annual Benefit	1,392,264	2,315,344
Total Annual Cost (actual)	1,146,191	1,146,191
Estimate of Net Annual Benefit	246,073	1,169,153
Annual Return on Investment (ROI)	21.5%	102%
Long Term value of net benefits (NPV @ 3%)	8,202,438	38,971,772
Long Term Benefit-Cost Ratio	\$7.16	\$34.00

Figure 17: Changes in Benefit-Cost Ratio at higher discount rates

SENSITIVITY ANALYSIS:	Low Estimate	High Estimate
Benefit - Cost Ratio (5%)	\$ 4.29	\$ 20.40
Benefit - Cost Ratio (7%)	\$ 3.07	\$ 14.57

ENDNOTES

¹Arrow, Kenneth J. et al, 1996. Is There a Role for Benefit-Cost Analysis in Environmental, Health, and Safety Regulation? *Science*, 12 April, 1996, Volume 272, pp. 221-222.

² Moore, John L., 1995. Cost Benefit Analysis: Issues in Its Use in Regulation, CRS Report for Congress, June 28, 1995.

³ Washington State farmland ranks twelfth in the nation for the amount of soil eroded by water each year, which amounts to approximately 26 million tons of soil statewide. The state is losing soil at a rate of over 4 tons per acre per year, ranking it 6th in the nation for rate of soil loss due to water erosion. Soil erosion impacts soil quality, health, and productivity as well as the environment. Delivery of sediment, nutrients, and chemicals to water resources is a primary environmental concern in Washington State. Understanding and managing these processes has important long term implications for cropland sustainability, natural resource condition and health, and environmental quality. <http://www.nrcs.usda.gov/technical/land/nri03/nri03eros-mrb.html>

⁴ WSU research cited by Good Food Strategies, "Agriculture in Snohomish County: A strategic approach to communications and messaging." Research report commissioned by Snohomish County, June, 2007.

⁵ Dr. Jeffery Duchin, Chief of Communicable Disease Control King County Public Health Department. Interviewed on NPR Radio, KUOW, "The Conversation", Monday, June 11, 2007.

⁶ Earth Economics, 2006. Special Benefit From Ecosystem Services, Economic Assessment of the King Conservation District, July 28, 2006. Seattle, WA.

⁷ Cost data sources: 1) SCD: Christian Hoffman, Engineer; 2) NRCS retained engineers: Gayle Mayer, NRCS Snohomish County office; 3) WSDOT (published information, provided by Christian Hoffmann).

⁸ McConnell, Virginia and Margaret Walls, *The Value of Open Space: Evidence From Studies of Nonmarket Benefits*, Resources For The Future, January, 2005.

⁹ Streiner, Carol F., and J. Loomis, 1995. Estimating the Benefits of Urban Stream Restoration Using the Hedonic Price Method. *Rivers*, pp 267-278.

¹⁰ http://www.whitehouse.gov/omb/circulars/a094/a94_appx-c.html