HB 123

<TARGET><BILL>HB 123</BILL><SUBJECT>HB 123</SUBJECT><COMM>HRES27</COMM></TARGET>

Alaska State Legislature

State Capitol, Room 102
Juneau, AK 99802
Phone: 465-2689
Fax: 465-3472
Toll Free (800) 665-2689
Representative_Paul_Seaton@legis.state.ak.us

345 W. Sterling Highway
Suite 102B
Homer, AK 99603
Phone: 235-2921
Fax: 235-4008

REPRESENTATIVE Paul Seaton

District 35

HB123 – Establishing a Linked Deposit Program for the Clean Water Fund

HB123 provides a market incentive to promote healthy water systems by expanding access to the Alaska Clean Water Revolving Loan Fund. It does this by allowing banks to establish low-interest financing for nonpoint source pollution control projects through a linked deposit program.

The Clean Water Fund is a federal program administered by the Alaska Department of Environmental Conservation (DEC) established to fund projects that deal with the care of water and water systems. Currently principal and interest can only be used only by municipalities and state agencies. HB123 increases the impact of Clean Water dollars by allowing community organizations, developers, non-profits and individuals to borrow for projects to mitigate pollution from nonpoint sources through a linked deposit program with a third party financial institution.

DEC currently administers pass through loans to municipalities. This places any risk of the municipality defaulting on their loan on the State. For individual borrowers under a linked deposit loan program the financial responsibility for a loan default would be on a commercial financial institution rather than the State. DEC would place Clean Water Dollars in a Certificate of Deposit at a bank. The local bank would screen borrowers for their creditworthiness and hold the loan. This removes the Department of Environmental Conservation from the burden of administering mini-loans. In turn, the financial institution would charge a slightly higher interest rate than if the borrower were borrowing directly from the Fund. However, this still would represent a greatly reduced interest rate and be beneficial to the borrower.

The largest use of the linked deposit program in other states is to provide low interest loans to home owners to improve or replace failing septic systems and address stormwater management. Farmers have used the Clean Water Fund to institute agricultural best practices such as manure storage facilities and runoff mitigation. Developers have used the loans to implement "green infrastructure" into their development. This is done through improvements such as permeable pavement, flood plains, riparian buffers, pocket wetlands and tree boxes. Brownfield remediation, cleaning up landfills and turning them into developable property, is another use of the fund that promotes economic development in communities. There are many creative ways to use Clean Water dollars to help mitigate pollution in our water systems.

At their current rate of borrowing municipalities do not utilize the available federal funds. Broadening the access to the Fund would allow for the full benefit of these federal dollars to be utilized in water projects throughout the State.

HB123 creates a convenient mechanism for individuals, businesses, and non-profits to access low interest loans and provides a market incentive to engage in projects that promote healthy watersheds and better development projects.

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number
Bill Version **27-LS0445\A**
() Publish Date

Identifier (file name): HB123-DEC-FC-2-11-11
Title Clean Water Fund: Linked Deposits
Sponsor Representative Seaton
Requester House Resources Committee

Dept. Affected: Environmental Conserv
Appropriation Division of Water
Allocation Facility Construction
OMB Component Number 637

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services	142.5		104.6	104.6	104.6	104.6	104.6
Travel	10.0		5.0	5.0	5.0	5.0	5.0
Services	113.5		11.3	11.3	11.3	11.3	11.3
Commodities	15.0		0.5	0.5	0.5	0.5	0.5
Capital Outlay	0.0		0.0	0.0	0.0	0.0	0.0
Grants	0.0		0.0	0.0	0.0	0.0	0.0
Miscellaneous	0.0		0.0	0.0	0.0	0.0	0.0
TOTAL OPERATING	**281.0**	**0.0**	**121.4**	**121.4**	**121.4**	**121.4**	**121.4**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts	281.0		121.4	121.4	121.4	121.4	121.4
1003 GF Match	0.0		0.0	0.0	0.0	0.0	0.0
1004 GF	0.0		0.0	0.0	0.0	0.0	0.0
1005 GF/Program Receipts	0.0		0.0	0.0	0.0	0.0	0.0
1037 GF/Mental Health	0.0		0.0	0.0	0.0	0.0	0.0
Other (please identify)	0.0		0.0	0.0	0.0	0.0	0.0
TOTAL	**281.0**	**0.0**	**121.4**	**121.4**	**121.4**	**121.4**	**121.4**

Estimate of any current year (FY2011) cost

POSITIONS

Full-time	1.0		1.0	1.0	1.0	1.0	1.0
Part-time	0.0		0.0	0.0	0.0	0.0	0.0
Temporary	1.0		0.0	0.0	0.0	0.0	0.0

Why this fiscal note differs from previous version (if initial version, please note as such)

Not applicable, initial version.

Prepared by Lynn J. Tomich Kent
Division Water
Phone (907) 269-7599
Date/Time 2/11/11 11:55 AM

Approved by Dan Easton
Deputy Commissioner
Date 2/11/2011

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

BILL NO. HB 123

Analysis

HB 123 will require the Department of Environmental Conservation to establish a Linked-Deposit program to provide a source of low-interest financing for certain non-point source pollution control programs or projects undertaken by a person, municipality, or other qualified entity.

DEC would need one temporary position (Loan/Collection Officer II) and a permanent full-time (Environmental Engineering Associate I) position to implement the program.

The Loan/Collection Officer will, in coordination with financial institutions and other States' linked-deposits financial program managers, research options for Alaska's new program. The position will establish DEC policies and procedures; develop guidance on how deposits will be made with the financial institutions for loans; develop guidance on how the program will be managed; draft regulations for public review; and guide necessary changes to DEC's information systems to track linked deposits. The Environmental Engineering Associate will work with the communities or project proponents to review the projects to determine the eligibility for funding under the Clean Water Act and revolving loan fund requirements. The above is based on initial information and additional engineering and support staff may be needed if there is high interest in the program.

In addition to the temporary position, first-year costs include Department of Law legal assistance for developing regulations and other legal documents for agreements with banks, professional services contracts for making changes to the computer information system, public notices, audit to meet federal requirements, and initial position support costs.

Clean Water State Revolving Fund

FACT SHEET

Funding Wet Weather Projects with the Clean Water State Revolving Fund

The Problem

"Wet weather discharges" refers collectively to discharges that result from precipitation events, such as rainfall and snowmelt. The primary sources of these discharges are storm water runoff from paved surfaces and other impervious areas, agricultural land and animal feeding operations, municipal separate storm sewer systems (MS4), combined sewer overflows (CSO) and sanitary sewer overflows (SSO).

Storm water discharges from MS4s are a major concern in urbanized areas due to the high concentration of pollutants found in these discharges. Urbanized areas, because of dense development, have a high concentration of impervious surfaces, such as city streets, driveways, parking lots, and sidewalks, on which pollutants settle and remain until a storm event washes them into nearby storm drains. The most common pollutants include pesticides, fertilizers, oils, salts, litter and other debris, and sediment.

Sediment accumulation at a construction site.

Runoff from agricultural sources is often the result of improper management of manure and animal wastewater as well as pesticides and fertilizers used on crop land. When left uncontrolled, these discharges can result in fish kills, the destruction of spawning and wildlife habitats, a loss in aesthetic value, and contamination of drinking water supplies and recreational waterways that threatens public health.

Combined sewer systems are sewers designed to collect rainwater runoff, domestic sewage and industrial wastewater in the same pipe. During periods of heavy rainfall or snowmelt, the total volume of wastewater within the system may exceed the system's capacity. The system is designed to overflow in a controlled manner by discharging untreated wastewater directly into nearby streams, rivers or other water bodies. These overflows contain not only storm water but also untreated human and industrial waste, toxic materials, and debris.

Sanitary sewer systems collect and transport all of the sewage that flows into them to a publicly owned treatment works. Occasionally, these systems overflow due to severe weather, improper system operation and maintenance, or vandalism. Untreated sewage from these overflows can contaminate our waters, causing serious water quality problems, and back up into basements, causing serious health concerns and property damage.

Capacity of the CWSRF

Congress created the CWSRF program to provide reduced-rate loan funding for water quality projects of all kinds. CWSRF programs were established in every state and Puerto Rico to work like banks. Federal and state contributions are used to capitalize or set up the programs. These assets, in turn, are used to make low or no-interest loans for important water quality projects. Loan repayments are then recycled to fund other important water quality projects.

Nationally, the CWSRF has in excess of $37 billion in assets (includes loans already made and current funds available to make loans). Currently, the CWSRF is funding about $3-4 billion in water quality projects each

year. Funding from the CWSRF for polluted runoff abatement projects (including animal feeding operations) is gaining momentum. These projects have received more than $1.6 billion in CWSRF funding since the program's inception. In 2002, nearly 42 percent of the CWSRF Program's assistance agreements addressed nonpoint source or estuary pollution.

Who May Qualify

The Clean Water Act (CWA) Amendments of 1987 authorized the CWSRF to fund treatment plants (§212), and nonpoint source (§319) and estuary (§320) activities. As stipulated in the CWA, §212 projects must be publicly owned to receive CWSRF funds. Nonpoint source and estuary activities, however, do not have this restriction. Included in a long list of eligible CWSRF loan recipients for nonpoint source and estuary activities are community groups, individuals, agricultural associations and nonprofit organizations.

Funding Eligibilities

Because there are many sources of wet weather discharges, there are also many types of projects related to such discharges that may be funded by the CWSRF, falling under different eligibilities. Combined sewer overflow and sanitary sewer overflow correction projects may be funded under the CWSRF's §212 point source eligibility. CSOs and SSOs are defined by the CWA as treatment works and therefore must be publicly owned to be eligible.

Storm sewer overflow following a precipitation event.

Polluted runoff from MS4s may be funded under either the CWSRF's §212 eligibility or its §319 nonpoint source eligibility. If a community is permitted, it is considered a point source, and therefore, may only be funded under the CWSRF's §212 eligibility. Communities with Phase I or Phase II NPDES permits may fund sewer system rehabilitation, new collector sewers, new interceptors, storm sewer rehabilitation, infiltration/inflow correction, and stormwater management facilities such as sediment traps and basins, constructed wetlands, street sweepers and catch basin vacuum vehicles, so long as these projects address problems in a publicly owned system.

If a community does not have a draft or final NPDES permit or is exempt from permitting, projects may be funded as non-point sources of pollution under §319, including privately-owned facilities. Types of projects include sewer rehabilitation, infiltration/inflow correction, and stormwater management facilities such as sediment traps and basins, constructed wetlands, street sweepers and catch basin vacuum vehicles. Additionally, any of the above public and private projects may be funded under the §320 eligibility if the project is located in a National Estuary and is listed in the estuary's Comprehensive Conservation Management Plan (CCMP).

Additionally, if a community has a draft or final permit, activities may be funded under the program's nonpoint source (§319) authority if the activity is not specifically required by a draft or final NPDES permit. This includes both public and private activities, such as riparian buffers. Construction BMPs are an example of activities covered by NPDES permits, and are therefore not eligible projects for private borrowers.

Getting Your Project Funded

Since the program is managed by the states, project funding varies according to the priorities, policies, and laws within each state. Eligible applicants also vary by state. The necessary first step in obtaining CWSRF funding is to get the activity/project listed in a state's priority list for §212 projects, Nonpoint Source Management Plan for §319 projects or CCMP for §320 projects. Contact your state's CWSRF, NPS, or Estuary program for details. CWSRF state contacts can be found at www.epa.gov/owm/cwfinance/cwsrf/contacts.htm.

Sources of Repayment

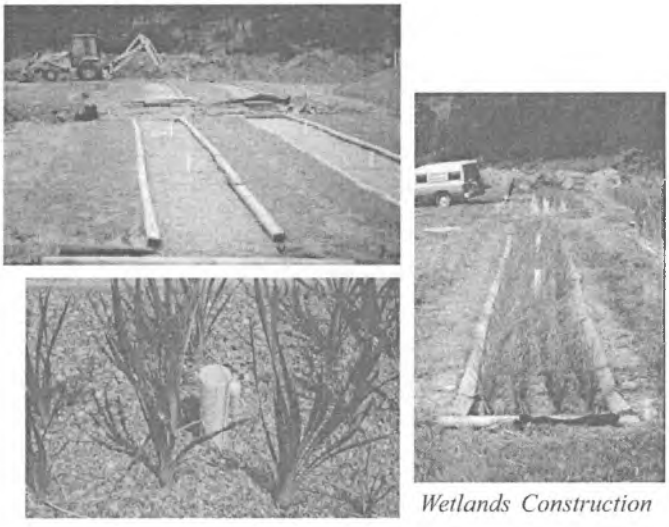
Each state must approve a dedicated source of loan repayment as part of the application process. Though finding a source of repayment may prove challenging, CWSRF users have identified many creative repayment sources, which need not come from the project itself. Some possibilities include:

- Stormwater utility fees
- Wastewater user fees
- Dedicated portion of local, county, state tax fees
- Fees paid by developers on other land
- Recreational fees (fishing license, entrance fees)

Restrictions

In 1990, the Environmental Protection Agency (EPA) promulgated rules establishing Phase I of the National Pollutant Discharge Elimination System (NPDES) storm water program. The Phase I program requires all medium and large municipal separate storm sewer systems (MS4), certain industrial activities, and construction activities disturbing 5 acres or more to apply for NPDES discharge permits and to implement a storm water management program. A medium MS4 is one which serves a population of 100,000 to 249,999. A large MS4 serves a population of 250,000 or more. Phase II of the program, signed in October, 1999, applies to all previously unregulated MS4s, including small MS4s and small construction activities disturbing between 1 and 5 acres of land. A small MS4 is defined as any MS4 not already regulated under the Phase I program.

Any MS4 covered under either Phase I or Phase II of the storm water permitting program will be regulated under NPDES permitting authority. Therefore, a permitted MS4 is defined under the Clean Water Act as a point source. A point source can be funded under the CWSRF program so long as it is a publicly owned treatment works. Any privately owned regulated entity will therefore not be eligible, unless the project is not specifically required by a draft or final NPDES permit and is considered a nonpoint source.

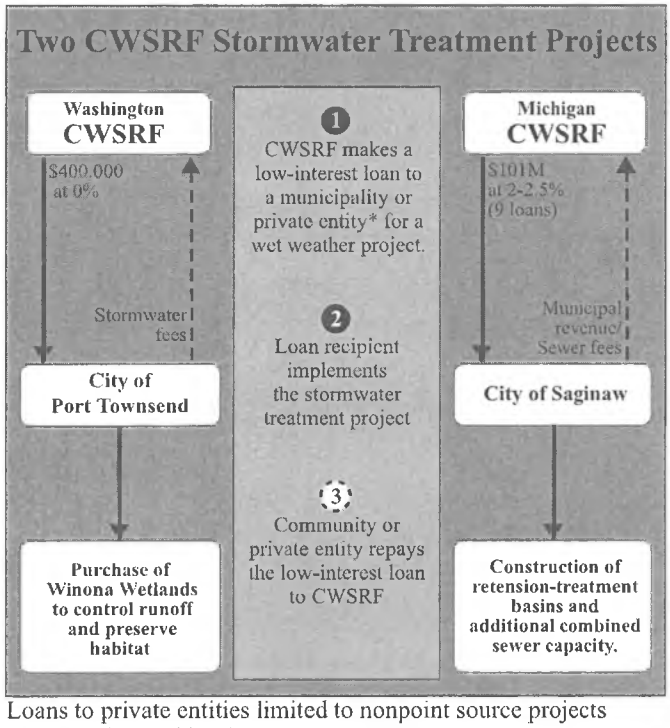


Wetlands Construction

Success Stories

The flexibility extended to state CWSRF programs and to loan recipients has enabled many innovative wet weather projects. The two projects hightlighted here have taken advantage of special low interest rates and have designated alternative repayment sources.

Wetlands Preservation and Stormwater Management
The city of Port Townsend, Washington used the CWSRF program to simultaneously meet storm water management and a wetlands preservation objectives. The city purchased an area called the Winona Wetlands, a critical storm water basin for the area that also provides a



Loans to private entities limited to nonpoint source projects where authorized by the state.

valuable wildlife habitat. The city's purchase protects the wetlands from further development. Development would have resulted in storm water management problems as well as destruction of the wetlands. The project required a $400,000 CWSRF loan at 0% interest. The loan is to be paid back in 5 years with a portion of the city's $5 per household storm water utility fee.

Addressing Combined Sewer Overflows in Michigan
Of the 219 loans provided by Michigan's CWSRF program, 112 have funded combined sewer overflow projects. The state has committed over $950 million to CSO improvements, more than half of its $1.9 billion in total CWSRF assistance. Starting in the mid 1980s, Michigan initiated the NPDES permit processes for CSOs with approximately 80 communities. The Department of Environmental Quality required optimized operation to minimize discharges, implementation of measures to eliminate raw sewage discharges, and treatment plans to achieve compliance with water quality standards. CWSRF funding has helped these municipalities implement long-term CSO control plans. Close to 65 of them have not only finished the planning process, but have also completed construction. Municipalities have used several strategies to reduce CSOs. For example, new retension-treatment basins and relief combined sewers have reduced CSO discharges to the Saginaw River by 75%, restoring the walleye fishery. Data is coming in from the Rouge River Wet Weather Demonstration Project, a multi-town study of alternative treatment technologies, each designed for different stormwater flows. The project will help identify effective CSO controls for Detroit and Dearborn as well as several smaller municipalities. The CWSRF contribution to Michigan's ambitious CSO program serves as a model for other states' stormwater permitting processes.

Challenges Ahead
EPA encourages states to use their CWSRF resources to finance high-priority water quality projects. Those interested in obtaining funding for wet weather projects are encouraged to seek out their state CWSRF programs and apply for funding.

For more information about the Clean Water Revolving Fund, or for a program representative in your State, please contact:

U.S. Environmental Protection Agency
1201 Constitution Avenue, NW (Mailcode 4204M)
Washington, DC 20004
Phone: (202) 564-0752 **Fax:** (202) 501-2403
Internet: http://www.epa.gov/owm/cwfinance/index.htm

EPA · · · · · · Clean Water State Revolving Fund

ACTIVITY *UPDATE*

Innovative use of Clean Water State Revolving Funds for Nonpoint Source Pollution

States are successfully using linked deposit and pass-through loans to fund important nonpoint source pollution remediation projects

Many states are successfully using the USEPA's Office of Water, Clean Water State Revolving Fund (CWSRF) loan program to fund important nonpoint source pollution remediation projects. Nonpoint source pollution is widely viewed as one of the most serious threats to our nation's water quality. State and local governments, local watershed and agricultural organizations, and many others are working to devise solutions that address nonpoint source pollution. The CWSRF program provides very attractive low-interest loans that spread project costs over a repayment period of up to 20 years. Today, CWSRF programs are funding projects that address agriculture runoff, leaking on-site septic systems, and urban nonpoint source pollution, including stormwater runoff and brownfield contamination.

During the initial operating phase of CWSRF programs, states designed loan options and implemented administrative procedures that would best serve municipal wastewater system projects. However, when considering how the CWSRF program could be used to address nonpoint source pollution, a number of states recognized that they would need to go beyond the typical municipal borrower and provide loan assistance to farmers, homeowners, and nonprofit organizations. States also recognized that providing loans to small private borrowers could be challenging. The loans would fund a variety of small projects, there would be more of them to service and manage, and there would be a greater risk of loan defaults.

States have taken different approaches to addressing these challenges. In some states, the CWSRF program has called upon internal expertise and the expertise of other state personnel to help manage loans to private borrowers. Other states have used creative lending approaches that pass loan risks and loan servicing responsibilities to financial institutions, local governments, or other state agencies. These lending methods include linked deposit loan programs with local financial institutions and pass-through loan programs with local government or state agencies. This activity update will highlight these loan structures with three case studies of successful state programs.

What is a linked deposit loan?

Under a linked deposit loan approach, a state works with local private lending institutions to provide assistance for nonpoint source pollution control. The state agrees to accept a reduced rate of return on an investment (e.g., a certificate of deposit) and the lending institution agrees to provide a loan to a borrower at a similarly reduced interest rate. For example, if the typical earnings rate for a certificate of deposit (CD) is five percent, a state might agree to purchase a CD that earns two percent interest, and in exchange, the lending institution agrees to provide a loan to a borrower at an interest rate that is three percentage points lower than the market rate for the borrower. In this program, the CWSRF investment (deposit) is linked to a low-interest loan, thereby earning the description "linked deposit loan."

Linked deposit loan programs provide benefits for CWSRF programs, local financial institutions, and borrowers. The linked-deposit approach benefits CWSRF programs because they support high priority nonpoint source projects and because they place risk and management responsibilities with local financial institutions. Financial institutions earn profits from the linked deposit agreements and add an additional service for their customers. Borrowers find linked deposit programs to be economical and comfortable; they save money with low-interest loans, and they are comfortable working with local financial institutions.

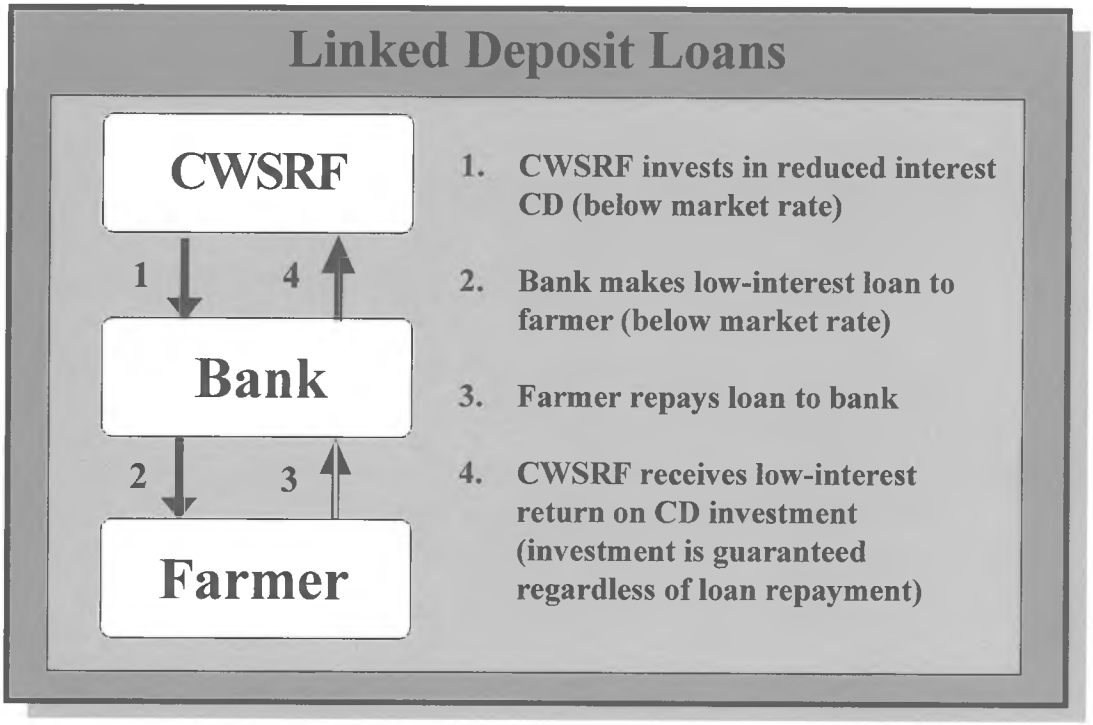


Figure 1. Linked deposit program flow chart

What is a pass-through loan?

In a pass-through loan, a CWSRF program makes a loan to another state or local government agency and that agency then lends the funds to private borrowers to address nonpoint source pollution. The town, county, or state agency reviews the project and the finances of each borrower. CWSRF loan funds are "passed-through" another government agency to private borrowers.

Pass-through loan programs benefit CWSRF programs, pass-through partners (towns, counties, and state agencies), and borrowers. These programs benefit CWSRF programs because they support high-priority nonpoint source projects and because they place risk and management responsibilities with program partners. Towns, counties, and state agencies benefit from pass-through programs because CWSRF funds support their nonpoint source priorities. Pass-through loans can offer two potential benefits to borrowers. First, pass-through loans are not provided by private lenders and, as a result, are likely to have lower interest rates. Second, local government agencies may have greater flexibility to provide loans to borrowers with relatively weak credit conditions if the borrower's nonpoint source project is a high priority for the state or local government agency.

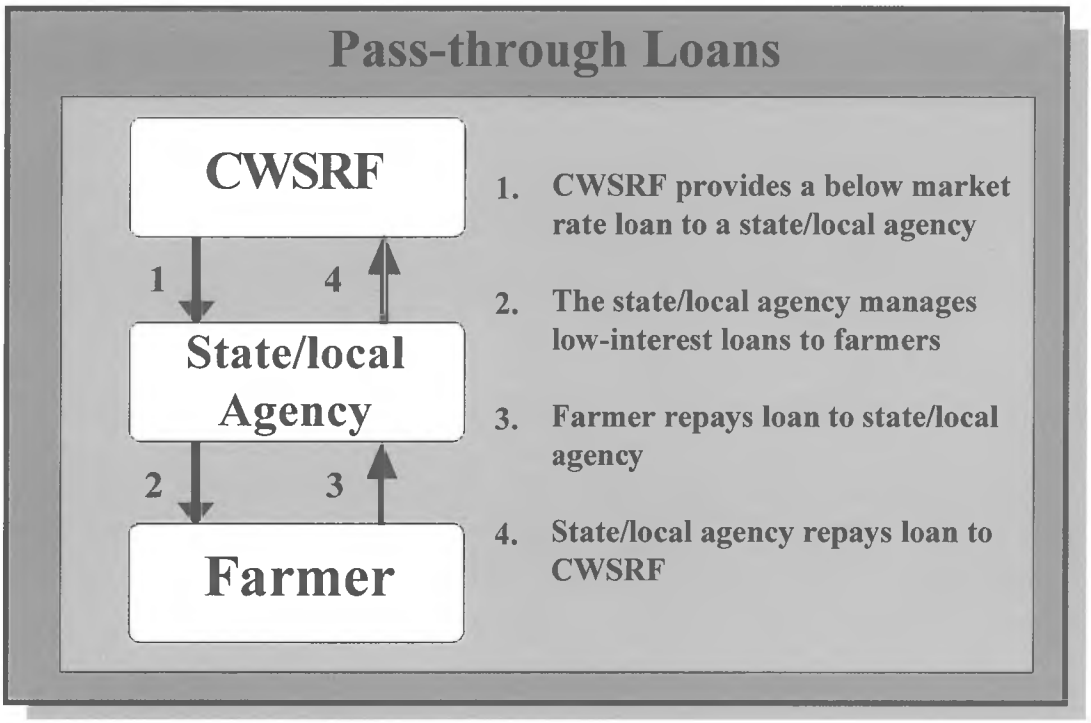


Figure 2. Pass-through program flow chart

Who has benefited from these programs and what have they funded?

CWSRF linked deposit and pass-through loan programs have supported borrowers implementing a variety of nonpoint source projects:

- Homeowners have implemented stormwater runoff best management practices and repaired or replaced failing on-site septic systems.
- Homeowner associations have addressed failing stormwater management facilities.
- Farmers have addressed agricultural runoff with a wide variety of agricultural best management practices including the construction of manure storage facilities, the restoration of filter strips and grassed waterways, and the use of conservation tillage equipment.

Ohio Case Study — Linked Deposit Loan Program

Ohio has used a linked-deposit loan program since 1993 to fund projects that support county watershed management plans. This program has funded more than 300 projects, including the repair of onsite wastewater treatment systems and the implementation of best management practices for agriculture, forestry, stormwater, and land development. The CWSRF program developed this program with the help of county soil and water conservation districts and local banks.

The CWSRF program implements its linked deposit loan program one county at a time. Each county's program is developed with two concurrent steps: the county soil and water conservation district develops a watershed management plan, and the CWSRF program and local financial institutions enter into agreements describing requirements and procedures for linked deposit loans.

Watershed management plans describe a watershed, identify sources of pollution, suggest actions that would address those pollution sources, prioritize water quality problems, identify sources of funding, and establish an implementation schedule. The county soil and water district's draft plan is reviewed by Ohio EPA and by a formal public review process. If Ohio EPA approves a plan after this review, the CWSRF program and the soil and water conservation district sign a memorandum of understanding that describes how these two entities will coordinate their implementation of the management plan.

At the same time that a watershed management plan is developed and reviewed, soil and conservation districts contact local banks to identify institutions that would like to participate in a linked deposit program. Interested banks enter into agreements with the CWSRF program that describe requirements and procedures for linked deposit loans.

Any borrower with a project that helps to implement a watershed management plan is eligible for a linked deposit loan. Participating banks review borrowers' credit using their own credit standards. If a bank approves a linked deposit loan, the CWSRF program purchases a CD of equal value from the bank. The CWSRF program accepts a CD interest rate that is five percentage points lower than the rate of a U.S. Treasury Note or Bond with the same term. The borrower's loan interest rate is also reduced by five percentage points. The bank makes semiannual payments of principal and interest to repay the CWSRF for its investment in the CD, and it makes these payments even if the borrower defaults on the linked deposit loan.

Massachusetts Case Study — Lending through Local Government

Since 1995, Massachusetts' Community Septic Management Program has used pass-through loans with local municipalities to fund the repair and replacement of failing septic systems. The program has funded more than 3,000 projects across the state. The CWSRF has developed this program with the cooperation of local municipalities.

Communities that participate in Massachusetts' Community Septic Management Program can borrow hundreds of thousands of dollars from the CWSRF program, but communities must first develop a septic management plan and procedures for a local betterment loan program (the community uses betterment assessments to secure the loans). Massachusetts provides grants of up to $20,000 to municipalities to support these planning activities and the administration of the program.

Massachusetts law defines a betterment assessment as a charge imposed on real property that receives a benefit from a public improvement. Municipalities have traditionally imposed betterments to pay for improvements such as roads, sidewalks and sewer lines. In the Community Septic Management Program, however, betterment agreements allow individuals to receive community support (a betterment loan) for septic system improvements, and the agreements allow communities to ensure that the loans are repaid as part of a property tax bill. The community can place a municipal lien on property if a homeowner defaults on a betterment loan.

Septic management plans identify and prioritize areas with septic systems that require monitoring, maintaining, and upgrading. As part of the planning process, communities develop maintenance schedules for septic systems, and they develop databases that track the inspection, maintenance, and upgrade of these systems. The Massachusetts Department of Environmental Protection reviews all community septic management plans.

Before a community can receive a CWSRF loan from the state, however, it also develops the framework for a local betterment loan program. Communities create administrative structures to manage the programs, devise a method for selecting priority projects, and work with their tax assessors to ensure that homeowners will repay their betterment loans as part of their local tax assessments.

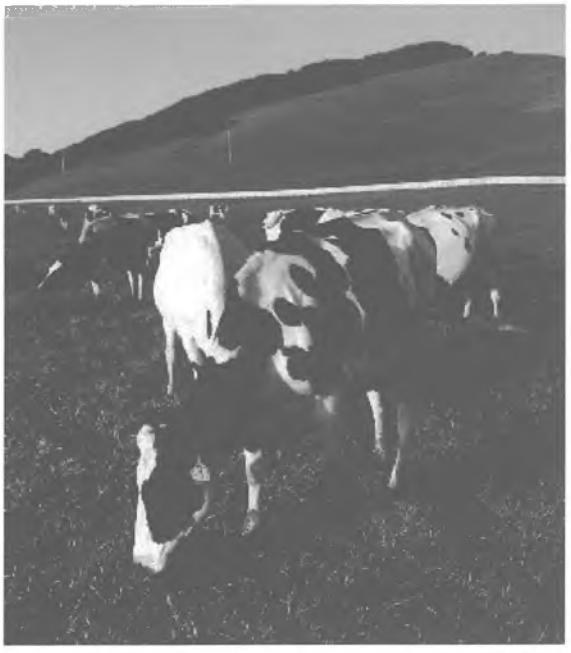
Communities that develop septic management plans and procedures for a local betterment loan program receive loans from the CWSRF program for 20 years at zero percent interest. Communities typically borrow $200,000 from this program. Homeowners typically receive twenty-year loans from communities at two to five percent interest. Communities can use interest accrued on betterment loans to support the administrative costs of the loan programs. Communities must begin to repay the CWSRF within one year after they have finished dispersing the proceeds of each CWSRF loan.

Missouri Case Study — Lending through State Agencies

Missouri's Nonpoint Source Animal Waste Treatment Facility Loan Program is a pass-through loan program that uses a state agency as a loan intermediary. Since 1995, the Missouri Agriculture and Small Business Development Authority (MASBDA) has borrowed $5 million from the CWSRF program, and MASBDA has used these funds to support the construction of 88 animal waste treatment systems for livestock and poultry producers. The agricultural operation of each borrower in this loan program produces fewer than 1,000 animal units -- concentrated animal feeding operations are ineligible.

Missouri's Nonpoint Source Animal Waste Treatment Facility Loan Program does not require a regional planning effort similar to the soil and water conservation plans required in Ohio' linked deposit program or the septic management plans required in Massachusetts' pass-through loan program. Engineers with Missouri's CWSRF program review each project application to ensure that CWSRF-financed structures and equipment support the goals of the program.

Missouri's CWSRF program provides 10-year loans to MASBDA that have a 1.8 percent interest rate. Individual agricultural producers access these resources by submitting applications to MASBDA. MASBDA reviews the financial component of each application, assessing cash flows and establishing security requirements. Borrowers must provide a dedicated source of repayment and a first or second deed of trust on their property. Agricultural producers typically receive 10-year loans from MASBDA that have interest rates from 5.3-5.8 percent. However, MASBDA does not offer construction financing for animal waste treatment systems. Typically, agricultural producers use loans from the Nonpoint Source Animal Waste Treatment Facility Loan Program to pay off construction loans from a private lender. MASBDA uses the repayments from agricultural producers to repay its loan from the CWSRF.



Case Study Contact Information

More information on the programs outlined in this update can be found on the state program web sites or by contacting the programs themselves.

Ohio Environmental Protection Agency
Div. of Environmental & Financial Assistance
Contact: Bob Monsarrat
Phone: 614-644-3655
Web site:
www.epa.state.oh.us/defa/linkdepo.html

Massachusetts Department of Environmental Protection
Massachusetts' Community Septic Management Program
Contact: Joseph McNealy
Phone: 617-556-1068
Web site: www.state.ma.us/dep/brp

Missouri Department of Agriculture
Animal Waste Facility Loan Program
Contact: Steve Townley
Phone: 573-751-1397
Web site: www.mda.state.mo.us/a2c.htm

For more information about the Clean Water Revolving Fund, or for a program representative in your State, please contact:

Clean Water State Revolving Fund Branch
U.S. Environmental Protection Agency
1201 Constitution Avenue, NW (Mailcode 4204M)
Washington, DC 20004
Phone: (202) 564-0752 **Fax:** (202) 501-2403
Internet: http://www.epa.gov/owm

Clean Water
State Revolving Fund

Office of Water July 2002 EPA 832-F-02-004

Clean Water State Revolving Fund

FACT SHEET

Green Infrastructure Approaches to Managing Wet Weather with Clean Water State Revolving Funds

This fact sheet identifies several ways in which states, communities, and individuals can use the Clean Water State Revolving Fund (CWSRF) to finance green infrastructure projects. A general overview of green infrastructure and the CWSRF program are provided, as well as case studies highlighting specific projects from across the country.

What is green infrastructure?

"Green infrastructure" is a relatively new and flexible term that has been used in a variety of contexts. For the purposes of this factsheet, the term "green infrastructure" refers to systems and practices that use or mimic natural processes to infiltrate, evapotranspire (the return of water to the atmosphere either through evaporation or transpiration), or reuse stormwater. Examples of green infrastructure approaches currently in use include green roofs, trees and tree boxes, rain gardens, vegetated swales, pocket wetlands, infiltration planters, permeable pavements, riparian buffers, and floodplains. Green infrastructure also includes decentralized harvesting approaches, such as the use of cisterns to capture water for flushing toilets or subsequent outdoor irrigation. These approaches reduce the amount of runoff discharging to surface waters and keep rainwater out of our sewer systems so it does not contribute to sewer overflows.

What are additional benefits of green infrastructure?

In addition to reducing the overall volume of stormwater runoff and the frequency of sewer overflows, green infrastructure can help communities enjoy a number of additional environmental and economic benefits, including:

- Cleaner Water
- Enhanced Water Supplies
- Cleaner Air
- Reduced Urban Temperatures
- Climate Change Benefits
- Increased Energy Efficiency
- Source Water Protection
- Community Benefits
- Cost Savings

Vegetated swales capture and infiltrate runoff along this "green street" in Portland, Oregon.

These benefits make green stormwater development an attractive option for towns and cities looking to upgrade their infrastructure systems. Nevertheless, many local governments lack the financial resources needed to implement green infrastructure projects in their communities. This is where the CWSRF can help.

Read more about the benefits of green infrastructure at: **www.epa.gov.npdes/greeninfrastructure**

What is the Clean Water State Revolving Fund?

The CWSRF is a powerful financing program that provides loan assistance for wastewater treatment, stormwater management, nonpoint source abatement and estuary protection projects. Today, all 50 states plus Puerto Rico operate successful CWSRF programs that have provided over $68 billion in financial assistance since 1988. This funding is provided in the form of low interest loans at an average of 30% below market rate. In 2007 alone, the CWSRF financed $5.3 billion in national water quality projects. At present, only a small percentage of the CWSRF has financed green infrastructure. However, as demand for green infrastructure projects increase, we expect CWSRF funding to be used more.

Downspouts that are not connected to the sewer system allow stormwater to be absorbed into landscaped areas.

- *Framework of CWSRF* - CWSRF programs are capitalized with a grant from the EPA, plus a 20% match from the state. The revolving nature of the program is perpetuated with loan repayments, interest, and federal capitalization grants that are used to fund new projects.

What are the benefits of using Clean Water State Revolving Funds?

The CWSRF is an attractive financing option for several reasons. For one, CWSRF money is readily available and can be used for a wide variety of projects. State managers of the CWSRF program are very innovative and can often leverage available resources to meet fluctuating demands.

- *Affordable Funding* – Although CWSRF money is not free, it is affordable. CWSRF loans can have interest rates as low as 0%, and cover up to 100% of a project's costs with no matching requirement on behalf of the borrower. This is different from a grant, which typically requires the grantee to provide matching funds that must be available at the start of a project. In some cases, the savings accumulated with a CWSRF loan are comparable to a partial grant.
- *Flexible Repayment Options* - States have flexibility to set interest rates and repayment terms. Loans are usually paid off over 20 years or the useful life of the project - which ever is less - with repayment commencing within one year of project completion. In many cases, funds to repay CWSRF loans are generated by the project itself or from unrelated revenue sources. Some examples of repayment sources are listed below.

- "Flush" Fees
- Stormwater Fees
- Homeowner Fees
- Recreational or License Fees
- Dedicated Portion of State, County, Town, or Special District Fees or Taxes
- Community General Obligation Bond Authority
- Donations or Membership Dues made to Nonprofit Organizations
- Individual or Business Revenues

Helpful Hint: EPA has developed several useful tools for evaluating a wide range of project financing options, including:

EPA's Financial Assistance Comparison Tool (FACT), available at:
www.epa.gov/owm/cwfinance/cwsrf/fact.htm

EPA's Guidebook of Financial Tools, available at:
www.epa.gov/efinpage/guidebook.htm

EPA's Overview of Green Infrastructure, available at
www.epa.gov/npdes/greeninfrastructure

Is my green infrastructure project eligible for Clean Water State Revolving Funds?

The CWSRF has broad authority to fund watershed projects directly related to (1) Publicly Owned Treatment Plants (POTWs), (2) states' Nonpoint Source Management Plans, and (3) the National Estuaries' Comprehensive Conservation Management Plans (CCMP). Green infrastructure projects located within a community that is regulated under the National Pollutant Discharge Elimination System (NPDES) stormwater program must abide by NPDES requirements.

- *Permitted Communities* – If a community is permitted for stormwater, it is considered a point source, and therefore projects may be funded as POTWs. These types of projects must be publicly owned. If a community is permitted and the project is not specifically required by a draft or final NPDES permit, it may be funded as a nonpoint source project if it is consistent with a state's Nonpoint Source Management Plan. Nonpoint source projects may be publicly or privately owned.
- *Non-Permitted Communities* – If a community does not have a draft or final NPDES stormwater permit or is exempt from permitting, the project may be funded as a nonpoint source project under a state's Nonpoint Source Management Plan and can include publicly or privately owned projects. Additionally, any public or private project may be funded as an estuary project if the project is located in a National Estuary Program's watershed and is sanctioned by the estuary's CCMP.

What kinds of green infrastructure projects can the CWSRF pay for?

- *Eligible Projects* – The CWSRF can fund the "capital costs" of water quality improvement. Capital costs include traditional infrastructure expenditures (such as pipes, pumps and treatment plants), as well as unconventional infrastructure costs (like land conservation, tree plantings, equipment purchases, planning and design, environmental cleanups and even the development and initial delivery of environmental education programs). One of the few things the CWSRF cannot fund is the operation and maintenance costs of a project (i.e. mowing the grass in an urban park or paying operator salaries). Grey stormwater infrastructure, such as traditional pipes and pumps, continue to be eligible for CWSRF assistance. Grey infrastructure can be improved and upgraded by implementing green infrastructure development, such as:

Tree Boxes	Green Roofs
Vegetated Swales	Riparian Buffers
Vegetated Median Strips	Parks & Greenways
Cisterns & Rain Barrels	Permeable Pavements
Land Conservation & Reforestation	Wetland & Floodplain Construction
Downspout Disconnections	Rain Gardens & Bioinfiltration Practices

- *Assurances* – The CWSRF can also help reduce risks associated with the performance of green infrastructure practices. Some communities may be reluctant to try these relatively new stormwater management technologies because of concerns that they may fail to perform as expected. Fortunately, there is a simple way to ease these concerns. States may charge additional fees on their CWSRF loans, known as non-program income, which can be used for a wide range of purposes. Using this additional source of income, states can pay for insurance that cover the risk associated with the performance of newer green technologies. If there is sufficient non-program income, states can also use the funds to replace a particular technology that fails to perform adequately. The practice of providing assurances is not widely utilized by states. Contact your state for more information.

Helpful Hint: By incorporating green infrastructure into traditional stormwater infrastructure projects, POTWs can use CWSRF funds to pay for land acquisitions in public right-of-ways that would not otherwise be authorized. Here is how:

Under current regulations, POTWs cannot receive CWSRF funding for land, including right-of-ways, unless that land is integral to the wastewater treatment process. However, percolation of stormwater through the soil matrix is often essential to the operation of green infrastructure practices, many of which can be conveniently located in public right-of-ways. Thus, because green infrastructure practices can utilize the soils and plants in a right-of-way to clean and infiltrate stormwater, the land in that right-of-way becomes integral to the treatment process and is therefore eligible for CWSRF funding.

How have other communities used the CWSRF to finance green infrastructure projects?

A growing number of communities are now using the CWSRF to pay for green infrastructure projects that improve water quality while providing additional economic and environmental benefits. The following case studies provide examples of the ways in which the CWSRF has been used to facilitate green infrastructure implementation.

- *Seattle Plans Redevelopment while Protecting Salmon* – Seattle Public Utility's High Point project will use a 20 year, 1.5% CWSRF loan of $2,715,000 to install innovative natural drainage elements, such as bioswales, compost-amended soil reservoirs, and porous pavement. These green infrastructure additions have been designed to improve stormwater management in the 303(d) listed Longfellow Creek Watershed, an important watershed for spawning salmon. The 120-acre redevelopment plan for low-income communities is along one of Seattle's most important urban creeks. Upon completion of the project, 10% of the Longfellow Creek watershed will be restored to drainage conditions comparable to rural pastures. The development project has been designed to provide significant benefits to water quality, wet weather flow reduction, habitat protection, and public outreach and education in the 34 block community.

- *Cohasset, Massachusetts Wins 2006 Smart Growth Award* – The Town of Cohasset, Massachusetts used a $479,500 CWSRF loan with a 2% interest rate to retrofit its stormwater drainage system to implement recommendations identified in the Drinking Water SRF funded Source Water Protection Plan. This two-year project included the construction of more than 40 rain gardens and several vegetated swales to reduce the amount of runoff entering the town's

stormwater collection system. The rain gardens were strategically placed within township right-of-ways and are designed to capture the first 0.9 inches of rain during wet weather events. A winner of the 2006 Massachusetts Smart Growth Award, the project provides an excellent example of how low-cost and low-maintenance green infrastructure techniques can improve stormwater quality and protect drinking water sources.

Curb-less roadside, equipped with stormwater drainage system in Cohasset, Mass.

- *Rockville, Maryland Wins PISCES Award for Restoration Efforts* – The city of Rockville, Maryland obtained a $14 million, 0% interest CWSRF loan to fund the planning, design, and restoration of the main stem of Watts Branch, a tributary of the Potomac River. The project included enhancements to existing wetlands, restoration of stream buffers, stabilization of 4,000 feet of eroding stream bank and upgrades to storm drain outfalls. These improvements were designed to enhance aquatic habitat and reduce pollution from stormwater runoff in the Chesapeake Bay. Funds to repay the loan will be generated from Rockville's stormwater fee. In recognition of the project's success, the Maryland Department of Environment selected Rockville to receive EPA's 2006 PICSES Award, which is presented to communities that most effectively and efficiently use funding from EPA's CWSRF program.

- *West Jefferson, Ohio Protects Aquatic Ecosystems with CWSRF* – The Ohio CWSRF program has provided over $1.1 million in low interest rate loans to Hidden Creek Ltd to fund a variety of projects that protect the Big Darby Creek watershed – one of the highest quality warm-water aquatic ecosystems in the United States. Environmentalists became concerned when a large tract of highly erodible agricultural land within the Big Darby watershed went up for sale and was expected to be bought by a developer. Fortunately, a conservationist-owned company, Hidden Creek Ltd, bought the property with financial assistance from the CWSRF. Hidden Creek Ltd then designed a housing project to demonstrate that development can be both environmentally sensitive and financially profitable. With the help of CWSRF funds, a comprehensive set of actions were taken to limit the amount of runoff generated from the development project. This included the construction of vegetated swales, restoration of the wooded stream corridor, and the establishment of emergent wetland habitat. In addition, 230 acres of the riparian stream corridor have been protected via a conservation easement held by the Natural Resources Conservation Service. A program has also been developed to educate homeowners and housing contractors about watershed protection and related deed restrictions attached to each property. This project was intended to serve as a model for future development in the watershed. Hidden Creek Ltd has since received a national wetland award for land stewardship and development from the Environmental Law Institute, and has repaid the CWSRF loans with revenues from the sale of the housing lots.

- *San Francisco, California Protects 10,000 Acres with CWSRF* – In 2004, the Nature Conservancy used a $9 million CWSRF loan

to fund the interim financing and holding of a critical portion of land, known as the Palo Corona Ranch, in Monterey Country. The Palo Corona Ranch is largely considered the gateway to California's Big Sure coastline. This project protected 9,898 acres of pristine Redwood and Monterey Pine forests from imminent development. Without the Nature Conservancy's purchase increased sedimentation and stormwater runoff would have cause severe impaired to coastal and aquatic resources. The property will be retained by the Department of Parks and the Monterey Peninsula Recreational Park District with dedicated funds over a seven year period.

Easement in Monterey Co., CA protects aquatic resources.

- *Port Townsend, Washington Manages Stormwater with Wetlands Protection* - The City of Port Townsend, Washington was able to meet several stormwater management and wetlands preservation objectives by obtaining a $400,000 loan at 0% interest from Washington State's CWSRF to purchase an area known as the Winona Wetlands. This wetland provides critical stormwater attenuation for the area and maintains valuable habitat for local wildlife. Potential development of the area not only threatened the wetlands, but would also result in significant stormwater management problems. The city purchased the 6.5 acres in Phase I of the project and an additional 9 acres in Phase II. The loans were completely paid back within 5 years with a portion of the city's new $5 per household stormwater utility fee.

The valuable wildlife in the Winona Wetlands of Washington are protected with $400,000 loan.

Helpful Hint: Here are several ways you can work with your state CWSRF:

- Help your state CWSRF managers document the relationship between stormwater and water quality.
- Comment on the CWSRF Annual Intended Use Plan: provide written comments and attend public hearings.
- Be a Broker: bring stormwater capital projects to the CWSRF and bring the CWSRF to the stormwater community.
- Think creatively about how to target CWSRF funds at stormwater projects, e.g., loan terms, marketing, dedicated pots of money.

For more information, contact

U.S. Environmental Protection Agency
1201 Constitution Avenue, NW (Mail code 4204M)
Washington, DC 20460
Phone: (202) 564-1029 Fax: (202)501-2403
www.epa.gov/OW-OWM.html/cwfinance/cwsrf

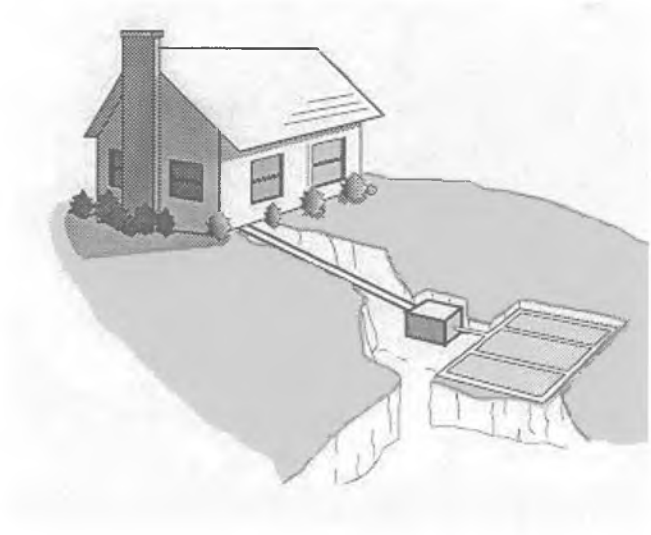
Clean Water State Revolving Fund

Clean Water
State Revolving Fund

ACTIVITY *UPDATE*

Funding Decentralized Wastewater Systems Using the Clean Water State Revolving Fund

The Clean Water State Revolving Fund (CWSRF) is a low-interest or no-interest source of funding for the installation, repair, and upgrading of "decentralized" wastewater systems in small-town, rural, and suburban areas. "Decentralized" wastewater systems include: on-site disposal systems such as septic systems with drainfields and alternative systems such as mounds and cluster systems. Cluster systems are designed to treat the wastewater from two or more dwellings or businesses, but not entire communities. There are an estimated 25 million households that use decentralized wastewater systems. In 1995, according to the U.S. Census Bureau, two-and-one-half million systems malfunctioned. This estimate is probably conservative. It is anticipated that as our communities continue to expand into suburban and rural areas, that the number of decentralized systems and associated system failures will increase.



Source: National Small Flows Clearinghouse

Background

In the 1970s and 1980s, large federal investments in the construction of wastewater facilities focused primarily on large, centralized collection and treatment systems. This effort did not recognize the benefits of properly managed decentralized wastewater systems in achieving the goals of the Clean Water and Safe Drinking Water Acts.

Problems Associated With Decentralized Wastewater Systems

In many existing communities, the initial decision to install a particular system (i.e., to hookup to a centralized system or to use a decentralized system) is primarily made in the private sector by the developer of a property, based on affordability, profitability, and availability of a central sewer system. In small communities with limited or no centralized system, developers typically choose the most common, affordable and easily installed on-site systems. Once installed, these conventional on-site systems are often not inspected or maintained except in emergency situations when wastewater backs up into homes and backyards. Malfunctioning systems can cause contamination of groundwater and nearby surface waters. Many state and local regulatory codes have not been updated to discourage or eliminate inadequate practices and/or allow the use of new technologies with demonstrated performance. As a result, small communities may incur significant economic burdens where alternative wastewater systems are not considered or permitted.

Nationwide data show that conventional on-site system failures can be attributed to the following:

- Improper siting and/or site evaluation
- Improper system selection and design
- Poor installation practices
- Insufficient operation and maintenance

Benefits of Properly-Managed Decentralized Treatment Systems

Properly-managed decentralized wastewater systems are viable, long-term alternatives to centralized wastewater facilities, particularly in small and rural communities.

Why install a decentralized system? Because they:

- **protect public health and the environment.** Properly managed decentralized systems can provide the treatment necessary to protect public health and the environment. They can be sited, sized, designed, installed and operated to meet all federal, state, and local water quality requirements.

- **are appropriate for low density communities.** Decentralized systems are usually the most appropriate technology and most cost-effective option for rural areas and much of the urban outskirts.

- **are appropriate for varying site conditions.** Decentralized systems can be designed for a variety of site and soil conditions, including shallow water tables, bedrock and small lot sizes.

Financing Decentralized Systems . . .

The Clean Water State Revolving Fund

The Clean Water State Revolving Fund (CWSRF) programs in each state and Puerto Rico operate like banks. Federal and state contributions are used to capitalize or set up the programs. These assets, in turn, are used to make low or no-interest loans for important water quality projects. Funds are then repaid to the CWSRFs over terms as long as twenty years. Repaid funds are recycled to fund other water quality projects. These CWSRF resources can help supplement the limited financial resources currently available for decentralized treatment systems. Projects that may be eligible for CWSRF funding include:

1. New system installation (single and clustered systems) to correct an existing nonpoint source problem
2. Replacement, upgrade, or modification of inadequate or failing systems
3. Costs associated with the establishment of a centralized management entity* (permitting fees, legal fees, etc.)
4. Capital associated with centralized management programs (e.g., trucks, storage buildings, spare parts, etc.)

* We encourage the establishment or designation of a management entity for all decentralized projects. Acceptable management entities include cities and counties, special governmental units (sanitary districts, county service districts, etc.), public or private utilities, private corporations, and nonprofit organizations.

Capacity of the CWSRF

Nationally, the CWSRF has in excess of $42 billion in assets and has issued nearly $39 billion in loans since 1988. The CWSRF currently is funding over $4 billion worth of water quality projects annually. Clearly, the CWSRF can be a powerful financial resource for funding decentralized systems projects.

Who May Qualify?

The Clean Water Act (CWA) of 1987 authorized the CWSRF to fund point source (§212), nonpoint source (§319), and estuary (§320) projects. Decentralized system projects that are solutions to nonpoint source problems may be eligible as a §319 or §320 project. Included in a long list of eligible CWSRF loan recipients for NPS and estuary projects are community groups, farmers, homeowners, small businesses, conservation districts, and nonprofit organizations. Since the program is managed by the states, project funding varies according to the priorities, policies, and laws within each state. Eligible applicants also vary by state.

Getting a Project Funded

Given that each state administers its own CWSRF program differently, your first step in seeking a CWSRF loan is to contact your state CWSRF representative. The list of CWSRF state representatives can be found on our website (www.epa.gov/owm/cwfinance/cwsrf/index.htm). Here are some suggested questions to ask your representative:

1. Has the State committed to funding decentralized systems in its CWSRF Intended Use Plan (IUP)?
2. If not, what can I do to help get these systems listed on the IUP?
3. Can an individual or private entity receive a CWSRF loan for a decentralized system?
4. If not, can I receive a CWSRF loan through my county?

Your CWSRF state representative will be able to guide you through the proper channels. In addition, you can refer to the Ohio case study under the "Success Stories" section of this fact sheet for further details on a popular approach to implementing a CWSRF/decentralized systems state program.

Sources of Loan Repayment

Each state must approve a source of loan repayment as part of the application process. Though finding a source of repayment may prove challenging, it does not have to be burdensome. Many users of the CWSRF have demonstrated a high level of creativity in developing sources of repayment. The source of repayment need not come from the project itself. Some potential repayment sources include:

- Property owner's ability to pay (determined during loan application)
- Fees paid by developers
- Recreational fees (fishing licenses, entrance fees)
- Dedicated portions of local, county, or state taxes or fees
- Donations or dues made to nonprofit groups
- Stormwater management fees
- Wastewater user charges

Success Stories

In August 1997, the **Ohio EPA** and the **Mahoning County General Health District** entered into an agreement to create a linked deposit program to make low-interest loans available to individual homeowners in need of upgrading or replacing their home sewage disposal systems. The process for obtaining a CWSRF loan is as follows:

1. The homeowner obtains a permit, which contains specifications on the proper installations, operation, and maintenance of the onsite system, from the county.
2. The homeowner is then issued a certificate that he or she can take to any bank that participates in the Linked Deposit Program.
3. The lending institution, using its own criteria, decides whether or not to offer the applicant a loan and at what interest rate and term.
4. The lending institution then notifies the Ohio EPA. The Agency then deposits the loan

amount in the institution at a reduced interest rate.

5. Savings from the reduced interest rate are then passed on to the loan applicant.

Over the past four years, Ohio's EPA Water Pollution Control Loan Fund made over a million dollars available for use in this program. A similar program was launched in **Cuyahoga County, Ohio** with $1,950,000 earmarked for the first three years of the program.

In June 1995, the **Maine Municipal Bond Bank** (MMBB) and the **Maine State Housing Authority** (MSHA) entered into a Memorandum of Understanding (MOU) to make low-interest loans to finance septic systems for owner-occupied, single-family residences through the MSHA loan programs. The funds are used for the rehabilitation or replacement of septic systems. The interest rate is set at one percent with a maximum term of 20 years. The MSHA remits to the MMBB on a monthly basis any repayments for loans received during the prior month, which are put back in the CWSRF.

In 1994, **Pennsylvania** instituted a program to fund on-site sewage disposal systems for individual homeowners using their CWSRF. The Pennsylvania Infrastructure Investment Authority, the Pennsylvania Housing Finance Agency, and the Pennsylvania Department of Environmental Protection collaborated on the development of this special funding program, which allows a homeowner to borrow up to $25,000 at an interest rate of one percent per annum to fund the rehabilitation, improvement, repair, or replacement of an existing on-site treatment system. These loans are processed through participating local lending institutions.

In 1995, **Minnesota** created several sub-programs within its CWSRF to address nonpoint source pollution. Once such program is the Tourism Loan Program, administered through the Department of Trade and Economic Development, which loans CWSRF funds to private owners of small lake resorts for replacement or upgrade of onsite treatment systems. The loans are made in participation with a local bank, with the state financing 50 percent of the costs at two percent interest and the bank financing the remaining 50 percent at a market rate. The Department also administered the Small Cities Loan Program, which provided CWSRF loans at zero percent to small, unsewered communities to upgrade or replace all failing on-site systems. The Small Cities program has since been replaced by other funding mechanisms for small, unsewered areas.

Challenges Ahead

The EPA encourages states to open their CWSRFs to the widest variety of water quality projects while still addressing their highest priority projects. Those interested in implementing or upgrading an decentralized treatment system should seek out their CWSRF program, learn how their state program works, and participate in the annual process that determines which projects are funded.

Other Federal funding sources for decentralized systems . . .

EPA 319 Grants

Section 319 of the Clean Water Act provides the statutory authority for EPA's Nonpoint Source Program. This program provides funds to states to restore waters adversely affected by nonpoint source pollution, and to protect waters endangered by such pollution. Most states have nonpoint source management plans that allow for the use of section 319 funds for decentralized wastewater system projects. The program has provided money to small communities and state agencies to construct decentralized wastewater systems in areas where these systems are more cost effective than centralized systems. Nonpoint Source Program funds have also been used to repair decentralized systems where such systems are common. Finally, these funds have been and will continue to be used for decentralized system technology demonstration projects. For more information visit their web site at: **www.epa.gov/owow/nps/cwact.html**

USDA Rural Utilities Service (RUS)

Water and Waste Disposal Loans and Grants are available to develop water and waste disposal (including solid waste disposal and storm drainage) systems in rural areas and towns with a population not in excess of 10,000. The funds are available to public entities such as municipalities, counties, special-purpose districts, Indian tribes, and nonprofit organizations. Grant funds are available to reduce water and waste disposal costs to a reasonable level for rural users. Grants may be made for up to 75 percent of eligible project costs in some cases. RUS also guarantees water and waste disposal loans made by banks and other eligible lenders. The facilities financed must be owned and controlled by the borrower/grantee. Financed decentralized systems would have to be owned and managed by the RUS borrower/grantee.

USDA Rural Development offices located throughout the country administer the programs. Additional information including local contacts may be found by visiting their web page: **www.usda.gov/rus/water**.

HUD Community Development Block Grant

The state administered Community Development Block Grant program (State CDBG) provides annual grants to 48 states and Puerto Rico. The states and Puerto Rico in turn, use the funds to award grants for community development purposes to smaller cities and counties. The states of Hawaii and New York have not chosen to administer the program. As a result, in those two states HUD directly administers the awarding of CDBG grants to smaller cities and counties.

CDBG grants can be used for numerous activities, including rehabilitation of residential and non-residential structures, construction of public facilities, and improvements to water and sewer facilities. For more information, visit their web site at: **www.hud.gov/cpd/cdbg.html**.

Non-Federal Assistance

In addition to funding available from the federal government, several states have created infrastructure funds, which can fund the development of local on-site infrastructure. State-funded programs supporting decentralized systems are ongoing in several states including Massachusetts, North Carolina, Pennsylvania, and Virginia.

For more information about the Clean Water Revolving Fund, or for a program representative in your state, please contact:

Clean Water State Revolving Fund Branch

U.S. Environmental Protection Agency

1201 Constitution Avenue, NW (Mailcode 4204M)

Washington, DC 20004

Phone: (202) 564-0752 **Fax:** (202) 501-2403

Internet: www.epa.gov/owm/cwfinance/index.htm

Clean Water
State Revolving Fund

Office of Water | January 2003 | EPA 832-F-03-003

Clean Water
State Revolving Fund • • • • • • ACTIVITY UPDATE

Ohio CWSRF Provides Loans to Brownfield Remediation Projects

Ohio has funded $8.8 million in brownfield remediation projects that provide water quality benefits to surface water or groundwater

Since its inception in December 1996, Ohio's Voluntary Action Program (VAP) has used $8.8 million in CWSRF loans to support brownfields remediation. The VAP encourages the reuse of brownfield sites by specifying cleanup standards and releasing owners of sites from further liability when standards are met. The state has encouraged participation in the VAP and the improvement of Ohio's water resources by offering CWSRF low-interest loans to projects that will result in water quality benefits to surface water or groundwater.

Ohio's industrial heritage has left the state with a legacy of contaminated land that, prior to the creation of the Voluntary Action Program, sat idle for fear of liability and high cleanup costs. CWSRF loans, as part of the Voluntary Action Program, provide an incentive to overcome the barriers to redeveloping commercial land. Development is directed to underutilized commercial land instead of open spaces.

Ohio has provided CWSRF loans to twelve brownfield remediation projects. Eight loans, for $8.5 million, have funded actual cleanup activities. Four loans for $320,000 have funded Phase II assessment activities (site tests to confirm the location and identity of environmental hazards). Phase I assessment activities (historical record searches) are also eligible for funding.

In one example, Barberton Laundry and Cleaning, a small company in Barberton, Ohio, received CWSRF financing to undertake Phase II site assessment work.

Soil and groundwater sampling determined the extent of existing

contamination and the scope of remedial activities needed to prepare the site for reuse. The loan recipient will use a revenue stream from accounts receivable to repay the loan. Inventory and cash provide additional collateral. Private lenders were unwilling to finance this assessment work.

In another example, the Grant Realty Company received CWSRF financing for the cleanup of a 20-acre industrial site in Cleveland to prepare the site for industrial reuse. Contaminated soil and groundwater were remediated using vapor extraction and dual phase vacuum extraction technologies. Grant Realty will use income from a tank cleaning operation to repay the loan, and personal loan guarantees and a second position mortgage will provide additional collateral.

These loans from Ohio's Water Pollution Loan Control Fund address nonpoint source pollution and are consistent with the state's Nonpoint Source Management Plan. Brownfield water quality loans are offered for five years with an interest rate of 3.2 percent. 20-year loans are offered at a rate indexed 1.25 percentage points below the 20-year GO bond market rate. Other terms and conditions can be negotiated based upon the specific project and the recipient's needs.

Contact:
David Reiff
Ohio EPA
614-644-3646

OhioEPA **Division of Environmental and Financial Assistance**

the WPCLF Linked Deposit Program

FLOWCHART | PAST PROJECTS | SAMPLE DOCUMENTS

12/13/99

What is a linked deposit?

The linked deposit program is a mechanism for financing certain Water Pollution Control Loan Fund (WPCLF) projects. Instead of borrowing directly from the Fund, a linked deposit loan is made to the applicant by a private lending institution. The below-market interest rate for the loan is supported by a WPCLF-funded certificate of deposit with the lender. The Ohio WPCLF was the first SRF program in the nation to use linked deposits.

Linked deposits were first used by the Ohio EPA in 1993 in the Killbuck Creek watershed to establish an agricultural nonpoint source control program. The Ohio EPA has since expanded the availablility of linked deposits to a wider variety of projects, such as urban stormwater runoff control, stream corridor restoration, forestry and land development best management practices, as described in the WPCLF Management System. In general, linked deposit loans are available to private oraganizations and individuals for nonpoint source projects, and for improvements such as the up-grade of failed on-lot wastewater treatment systems.

Agricultural linked deposits

Since the Killbuck watershed program was established, agricultural linked deposit loans have also been made in the Stillwater River, Black River, Indian Lake, and Darby Creek watersheds. These loans were designed to provide water quality improvements through agricultural best management practices (BMPs). Linked deposits loans have been awarded for BMPs such as manure storage facilities, which control animal waste runoff from entering streams, and the use of conservation tillage equipment, which reduces the amount of soil eroded from farm fields and deposited in water bodies. Other funded BMPs include filter strips and grassed waterways (which filter sediments out of runoff), fencing and alternative watering sources to keep livestock out of streams, and the construction of a wetland to treat process water from a dairy operation. These individually small projects can provide a large water quality improvement when implemented on a watershed-wide basis.

Developing a Nonpoint Source Watershed Financing Program

Interested county Soil and Water Conservation Districts (SWCDs) contact the Ohio EPA and express their interest in developing a nonpoint source program in their watershed. A Watershed Management Plan is developed which comprehensively discusses the nature of the watershed, the pollution sources that exist, solutions to those pollution sources, prioritization of where the emphasis should be placed, where funding will come from, and a schedule for implementation of the project. The writing of this Watershed Management Plan is often a collaborative effort involving the SWCDs, the Natural Resources Conservation Service, the Ohio EPA, and other groups or individuals working within the watershed. The Watershed Management Plan is then reviewed by the Ohio EPA.

The Ohio EPA drafts an assessment document which describes the environmental impacts of the actions of the proposed Watershed Management Plan, and issues this assessment for a 30-day public comment period. At the end of the comment period, the Ohio EPA usually then issues a Finding of No Significant Impact, and formally approves the Watershed Management Plan. A Memorandum of Understanding (MOU), based on the content of the Watershed Management Plan (WMP) is signed by the Ohio EPA and the SWCDs (or a Joint Board if one exists). This MOU describes how the entities will work together to implement the projects described in the WMP, and outlines each entity's responsibilities.

During the time period that the above is occurring, local banks are contacted (either by the Ohio EPA or by the SWCDs) to see if they would be interested in participating in the program in their watershed. Often, meetings are held to describe the program and answer questions. Once interested banks are identified, each bank enters into a Participating Bank Agreement with the Ohio EPA and the Ohio Water Development Authority (OWDA). These agreements describe exactly how the financial transactions will occur, as well as the procedures to be used and any banking requirements that must be met.

When the above four items (Watershed Management Plan, Finding of No Significant Impact, Memorandum of Understanding, and Participating Bank Agreements) are completed, the structure for the program is in place, and linked deposit loans can be awarded.

Awarding Agricultural Link Deposit Loans to Applicants (Flow Chart)

The steps for an agricultural nonpoint source loan are generally as follows:

- A land owner develops, with county Soil and Water Conservation District (SWCD) staff, an individual soil and water conservation plan that conforms with a watershed management plan developed for the watershed in which the land is located.

- The land owner obtains a Certificate of Qualification from the Board of Supervisors of the county SWCD, identifying the proposed improvements in the land's soil and

water conservation plan that are eligible for WPCLF Linked Deposit Program funding.

- The land owner applies for a loan from one of the local area banks participating in the WPCLF Linked Deposit Program.
- After the land owner presents the Certificate of Qualification, the bank evaluates the credit-worthiness of the land owner using its criteria. If these criteria are met, the bank then enters into a loan agreement with the land owner.
- The bank sends an investment request form, which identifies the land owner and the terms of the loan, and a copy of the land owner's Certificate of Qualification to Ohio EPA.
- Upon approval, Ohio EPA and the Ohio Water Development Authority (OWDA) deposit with the bank, through a certificate of deposit, funds equal to the face value of the loan to the land owner. The term of the deposit is equal to the term of the bank's loan with the land owner, but in no case is longer than 20 years.
- The interest rate on the certificate of deposit is discounted below the bank's normal cost of funds, as determined by a comparison to the interest rates of U.S. Treasury notes and bonds. The bank's repayment schedule in the certificate of deposit contains semi-annual payments of principal and interest to the WPCLF.
- The interest rate of the bank's loan to the land owner is reduced by the same amount as the discount the bank received from the WPCLF.

Some Features of the Agricultural Linked Deposit Program

- The Linked Deposit Program provides an economic incentive for farmers to voluntarily implement best management practices to control nonpoint source pollution. Voluntary efforts such as these may preclude the necessity for regulatory approaches.
- At the local level, the program is administered by the county SWCDs, which develop soil and water conservation plans, issue the Certificates of Qualification, and monitor the improvements. Farmers are familiar with their local SWCD and are used to working with them. The SWCDs have the existing expertise to recommend the BMPS which should be implemented on a particular farm.
- Land owners can work with the banks (assuming that they participate in the program) that they reularly do business with. Many farmers prefer to only work with the institutions that they have dealt with in the past.

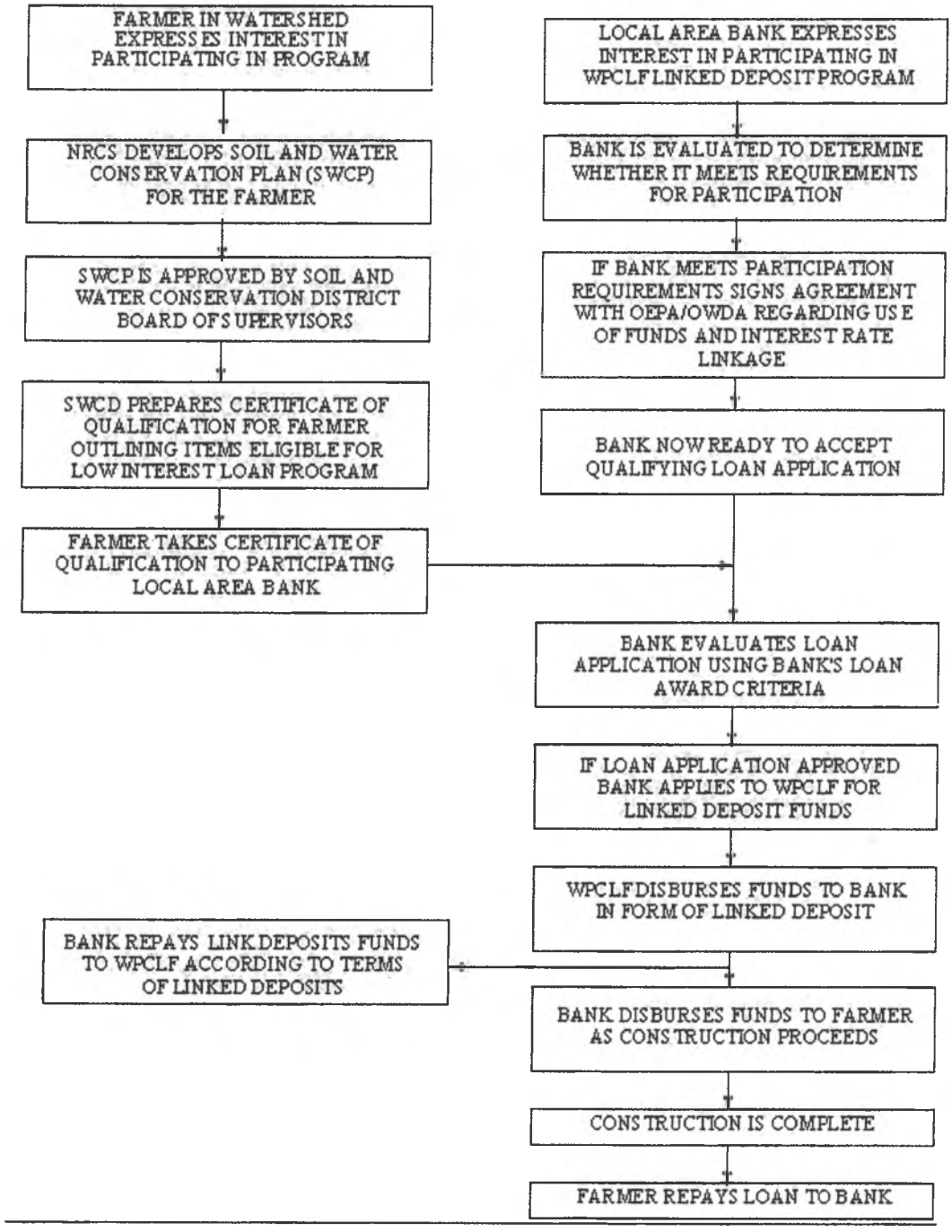
- The participating banks have the existing structure and experience to make and administer the loans. If this were not present, there would be an administrative expense on the part of the Ohio EPA to administer the loans.
- Participating banks earn the same amount of profit as they normally would on their other loans. In addition, the banks that participate can offer this as an additional service to their established agricultural customers.
- The WPCLF's Certificate of Deposit is insured by the FDIC, and thus is secure.
- The wire transfer of funds from the WPCLF to the participating bank normally occurs 1-2 days after the investment request form is received by the Ohio EPA. Thus, there is very little delay in the award of funds from the bank to the land owner.
- The reporting requirements of the SWCDs to the Ohio EPA are minimal. Ohio EPA requires a one-page report to be filed on a quarterly basis.

For more information about a WPCLF linked deposit loan, contact the Division of Environmental and Financial Assistance, Planning Section, at (614) 644-2798 or send us  e-mail.

DEFA's main page *WPCLF page* *Ohio EPA's home page.*

OhioEPA **Division of Environmental and Financial Assistance**

WPCLF LINKED DEPOSIT PROGRAM FOR NONPOINT SOURCE AGRICULTURAL LOANS



State of Ohio
Environmental Protection Agency

Fact Sheet

Ohio Water Pollution Control Loan Fund
Linked Deposit Programs

September 2007

Introduction

Ohio EPA's Water Pollution Control Loan Fund (WPCLF) offers low-interest financial assistance for implementation of nonpoint source pollution control projects consistent with Ohio's Nonpoint Source Management Plan. One mechanism to provide this assistance is through a linked deposit loan from a participating financial institution whereby the WPCLF "buys down" the borrower's interest rate.

The Methods

There are two methods of providing linked deposit financial assistance.

A. Certificates of Qualifications (CQ)

After development of an acceptable Management Plan by the appropriate regulatory agency (either the County health department or the local Soil and Water Conservation District), the Ohio EPA enters into a Memorandum of Understanding with them whereby the appropriate agency reviews and approves specific projects and issues a Certificate of Qualifications to the individual borrower which identifies eligible items and amounts.

Agricultural Best Management Practices: A landowner develops, along with the Soil and Water Conservation District (SWCD), an individual conservation plan that conforms with the watershed Management Plan developed for this purpose. Upon review and approval of the specific improvements, the SWCD issues the landowner a CQ.

Forestry Best Management Practices: A logging operation that is certified in the Ohio Forestry Association's Master Logger Program files a Silvicultural Operation and Management Plan with the appropriate SWCD. The logging operation then obtains a CQ from ODNR's Division of Forestry.

Onsite Septic System Improvements: A homeowner with a failing septic system presents a proposal to upgrade their onsite system to the County Health Department. The Health Department then reviews the proposal for acceptability and consistency with the Countywide Home Sewage Management Plan developed for this purpose. Upon review and approval of the specific improvements, the Health Department issues the homeowner a CQ.

B. Letter of Approval and Authorization (LoAA)

This method is designed for stand-alone projects such as contaminated sites, animal feeding operations, biomass reuse and other privately owned projects. Upon Ohio EPA's decision to proceed (based on an initial review of the proposal), the project is added to the WPCLF project priority list. DEFA then reviews the proposed improvements and 1) identifies eligible items, and 2) assesses the environmental impacts of the proposed improvements. Ohio EPA will then issue a Letter of Approval and Authorization (LoAA) to the applicant which identifies eligible items and amounts and authorizes the applicant to seek linked deposit financing from a participating bank.

The Process

The Ohio EPA has executed Participating Bank Agreements with many lenders in Ohio. The borrower will include either the CQ or the LoAA in its loan application to a Participating Bank. Based on its own review, the lender will approve the loan and notify Ohio EPA of the amount, term and interest rate. The WPCLF will invest in a Certificate of Deposit (CD) for the amount and term of the loan to the borrower. The rate on the CD will be discounted (based on a T-Bill rate) by up to 5 percent (the CD rate can never be less than 1 percent). The same discount is then "linked" to the loan to the qualified borrower. For example, if the lender's normal rate is 8 percent, the linked rate discount would result in an actual interest rate of 3 percent.

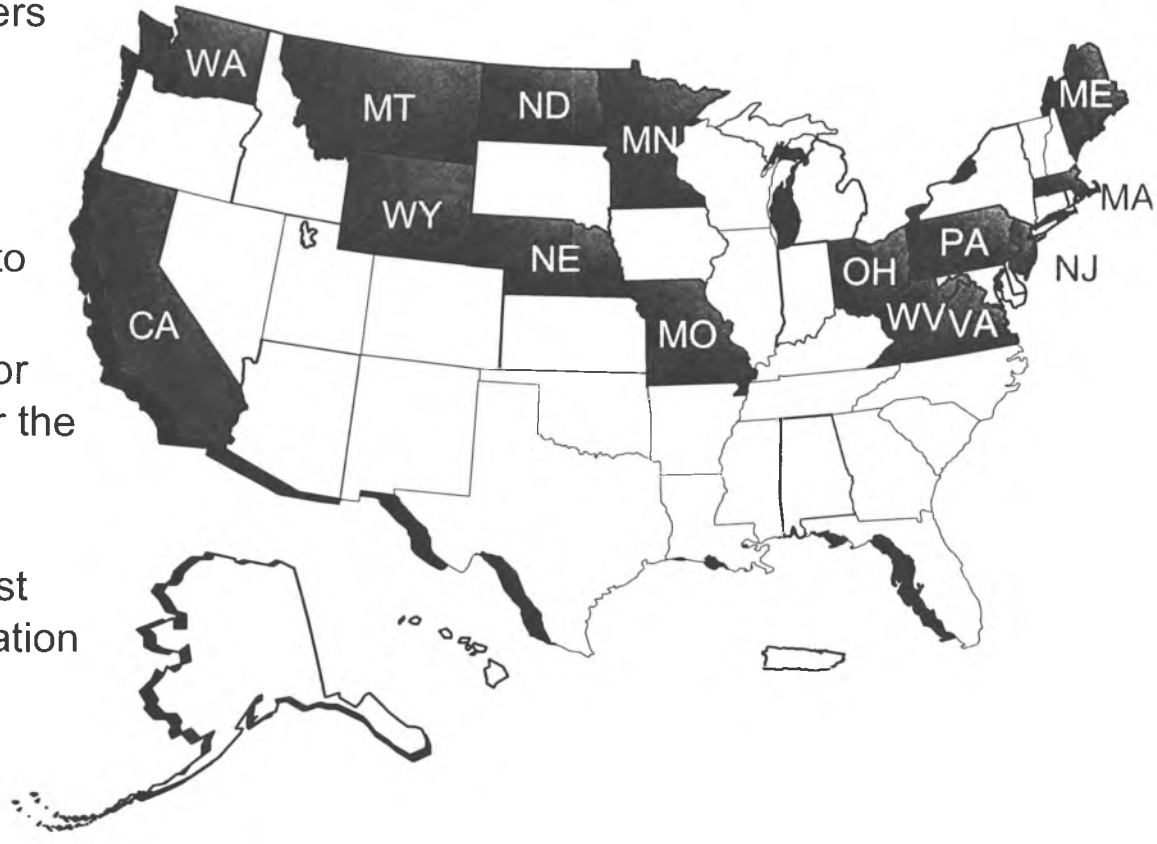
Additional Information

For more information, please refer to the most recent WPCLF Program Management Plan. You can also contact us at (614) 644-2798 or visit our Web page at: www.epa.state.oh.us/defa

CWSRFs Use Conduit Financing

Effective for reaching small borrowers like farmers, small businesses, and home owners

- SRF partners with other state agencies or local governments to administer or loan SRF funds
- Often the partner state agency or local government will administer the loan or in turn loan the funds to other borrowers
- Projects include: agricultural best management practices; remediation of leaking underground storage tanks and failing septic systems



Resurrection Bay Conservation Alliance

PO Box 1092
Seward, Alaska 99664
907 224 4621
www.rbca-alaska.org

February 10, 2011

Alaska Legislature
Juneau, Alaska

Dear Legislators,

This is a letter of support for HB 123, "An Act relating to the Alaska clean water fund." This bill would allow many proactive projects to proceed, where they would otherwise die. As Alaska continues to grow we need to ensure the protection of our water quality, which directly affects the health of our rivers, our salmon runs, and our tourist industry.

The Linked Deposit program would provide financial incentives for individuals and businesses to take actions to benefit our water quality. These actions include building to elevated standards where site conditions warrant it but where regulations do not require it. An example includes Homer's Landscape Suitability Mapping project; individuals who are considering building on steep unstable soils would gain a financial incentive to build with the proper methods. This not only protects the individual, it also benefits the entire community. In Seward we have a significant flooding threat, and many homeowners have built in areas where flooding is inevitable. If land owners had a little incentive, they would spend the extra dollars needed to allow their structure to withstand these events without significant damage.

There are many other examples of how the linked deposit program can effectively encourage responsible development; such as upgrading failing septic systems, controlling soil erosion, addressing accidental toxic spills, and reinforcing unstable stream banks. These are issues that many Alaskans must face, and giving them financial encouragement to do the right thing makes good sense.

Often, people will not do what is best without a financial incentive; this bill provides a reasonable incentive through reduced interest rates. This bill would also transfer default liability from the state to financial institutions, providing less liability for the state of Alaska. There is really no down-side to this.

Please consider these facts and vote in support of HB 123; it helps to protect the environment, the State and encourages people to do what is best in the long run.

Sincerely,

Matt Gray
RBCA, Watershed Program Coordinator

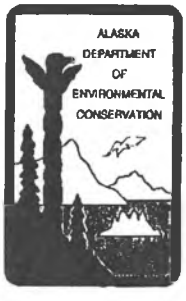
Alaska Clean Water Fund

STATE WASTEWATER LOAN PROGRAM

INTENDED USE PLAN
FINAL

FFY 08 Grant Allotment
State Fiscal Year 2009

Submitted to the U.S. Environmental Protection Agency
by
Alaska Department of Environmental Conservation
Division of Water
June 2008



PROGRAM GOALS

The ADEC administers the Alaska Clean Water Fund, guided by the following long and short term goals:

Long Term

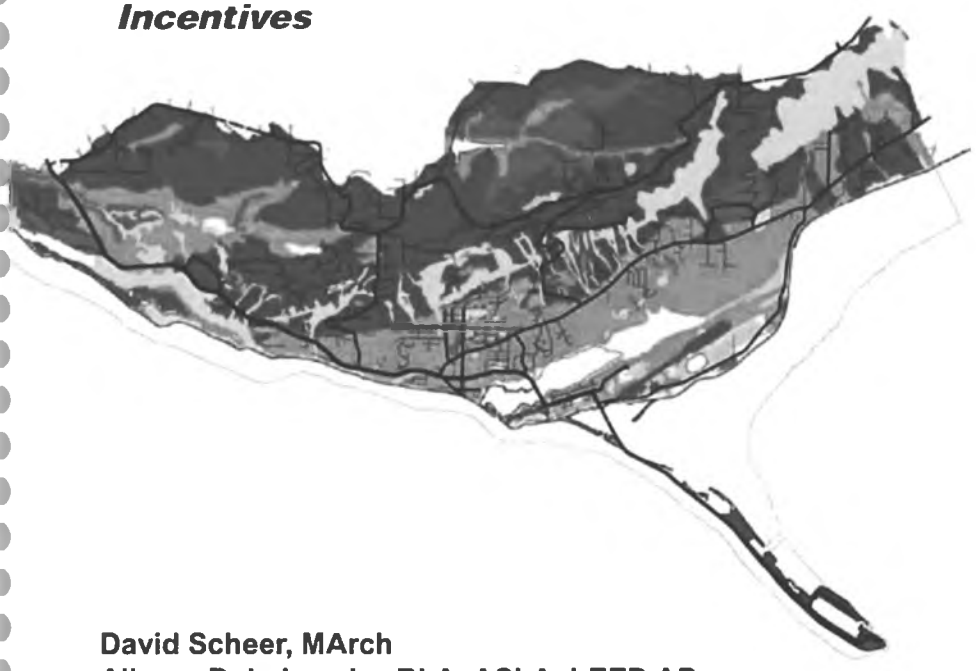
1. Protect public health and the waters of the State by offering financial assistance for the planning, design and construction of eligible projects.
2. Assist local communities as they strive to achieve and maintain statewide compliance with federal and state water quality standards.
3. Facilitate the construction of projects by providing a long term source of financing to assist communities in attaining and maintaining compliance with the Clean Water Act as amended by the Water Quality Act Amendments of 1987, PL 100-4.
4. Promote coordinated efforts by the State and eligible entities to expedite funding of eligible projects.
5. Increase the pace at which available funds are loaned by marketing to existing and potential new eligible entities by expanding the overall funds usage. Potential new entities may include lending to non-profit organizations for water quality type of projects, and to homeowners through a link-deposit program for on-site septic system improvements.

Short Term

1. Provide low interest loans of $37.3 million dollars to communities for eligible wastewater treatment or nonpoint source pollution projects.
2. Complete the Capitalization Grant Agreement with the U.S. Environmental Protection Agency for Alaska's FFY08 Title VI allocation.
3. Seek EPA's acceptance on meeting Title II equivalency compliance requirements on all projects. However, all nonpoint source (319) projects in this IUP will be non-equivalent in meeting Title II requirements and only be required to meet minimal cross-cutter requirements.
4. Develop a web based tracking system for handling project questionnaires, applications, and project management functions.
5. Due to interim request from communities to add new projects to the IUP, DEC will now, on a regular mid-year basis, amend the IUP to accommodate communities needs to add projects to the IUP.
6. Seek legislative authorization to begin utilization of the ACWF administrative fee account to maintain the level of support necesary to adminster the responsibilities of the ACWF program.

Landscape Suitability Map

Best Stewardship Practices
Development Certification for
Incentives



David Scheer, MArch
Allegra Bukojemsky, RLA, ASLA, LEED AP
Homer Soil and Water Conservation District

Landscape Suitability Map

Best Stewardship Practices Development Certification for Incentives

August 2008

David Scheer, MArch
Allegra Bukojemsky, RLA, ASLA, LEED AP
Homer Soil and Water Conservation District

This Project was made possible by support from:
The US Environmental Protection Agency
The US Fish and Wildlife Service
The National Park Service Rivers, Trails and Conservation Assistanceship
City of Homer, Alaska

Table of Contents

Introduction

The Homer Soil & Water Conservation District, in partnership with DnA Design, and with funding and support from the US EPA and US Fish and Wildlife Service and The National Park Service Rivers Trails and Conservation Assistantship, has created the **Homer Suitability Map** to help guide future development in Homer to enhance public and private benefits. The **Landscape Suitability Map** identifies lands within the City that may provide "*Green Infrastructure*" (GI) functions such as slope stabilization, stormwater management, habitat and recreation, and landscape connectivity, if developed in a way that minimizes impacts to these valuable functions. The accompanying **Development Suitability Map** identifies lands most suitable for development in areas of moderate slopes, valuable amenities and good infrastructure.

Suitability for development was determined based on physical features affecting construction costs (such as drainage, topography, soil type) and landscape amenities affecting property values (such as views and proximity to infrastructure, trails and parklands). Importance for providing green infrastructure was identified based on both physical and cultural features, including hydrologic functions, wildlife uses, trail connectivity, and aesthetic qualities. Mapping the overlap of these two categories (suitability for development, importance as green infrastructure) provides a planning tool that can help inform site design strategies to improve both economic and ecological value during development of mapped properties.

For lands identified as *both* highly developable *and* important as green infrastructure, we've identified **best stewardship practices** that can be used during development to protect valuable natural functions and maintain the connectivity of larger landscape systems across property boundaries. To encourage development projects of any scale to integrate these best stewardship practices where appropriate, we are proposing a number of **incentives**, which include expedited permitting, low interest rate loans, tax benefits and land trades.

Incentives will be available through the **Developer Certification Program** for projects that follow the requirements of the Developer Certification for Incentives. These handbooks guide participants in using the Landscape Suitability Map to select stewardship practices most applicable for their projects. The expectation is that developers wanting to take advantage of incentives must first be certified through this program. The following document and the zone handbooks describe the practices and methods that should be used to become eligible for financial and procedural incentives to support your development project.

The primary purpose of the maps is to inform and encourage consideration of functional land features that extend beyond the boundaries of a single ownership parcel. For this reason, eligible projects include any development proposed on parcels with mapped GI features. Parcels in areas identified as highly suitable for development, but with no notable green infrastructure functions, will not be eligible for incentives. However, incentives may be requested if 'like-kind' trades are done, and land is set aside outside the project area, and within the same greater watershed, in either a conservation easement or with a deed restriction. Community projects may also be

supported through the incentive program for the designation of a trail, park, greenway, or other open space zone that crosses multiple property boundaries.

YOUR COMMENTS AND SUGGESTIONS – This project is a work in progress and we welcome your thoughts about the Homer Landscape Suitability Map, best stewardship practices, incentives, and the Developers Certification Program. Your input is needed to make sure this project will be relevant and useful to citizens, land managers, and developers of Homer. Feel free to share this information with your friends and neighbors. For your convenience we have included a feedback form in this booklet.

Please provide comments to:

Tara Schmidt, District Manager
Homer Soil and Water
Conservation Service
4014 Lake Street
Homer, AK 99603

tara@homerswcd.org
907-235-8177 ex 5
907-235-2364 fax

Eligibility Guidelines

General Instructions

To become eligible for incentives, any project with one or more Green Infrastructure features anywhere on the property, according to the Landscape Suitability Zone Maps and on-site demarcation, are required to follow the guidelines in the All Sites section below, and in each of the *Zone* applicable to the property.

Each Zone contains Prerequisite items and Optional Credit items. Eligible projects will be required to fulfill all prerequisites and 4 credits in the **All Sites** section. Eligible projects will also be required to fulfill all prerequisites and the minimum number of credits noted for each zone within the eligible GI zone. This will assure the minimum design standards required to preserve GI function, while allowing the flexibility necessary to meet project design goals. **There is a checklist at the end of the Booklet**.

In many cases, prerequisites and/or credits are similar or complementary in one or more zone types. Therefore if your property contains more than one GI zone, multiple requirements or credits may be satisfied by the same design consideration. In other cases, there may be more prerequisites and/or credits for properties with multiple zone types than for those with fewer zone types present. In any case, all prerequisites and at least 3 credits must be met for each zone type on the property.

Compliance can always be met in one of two ways, either by integrating GI functions into the site plan, or by setting aside areas delineated with GI features in the Zone Maps and on-site demarcation. Techniques for integrating GI functions are described in the Zone Booklets and Low Impact Development supplements available from the incentives manager. This option usually allows more land area to be developed and will often make a development more valuable or less expensive to

develop. Setting aside GI features can be done with a conservation easement or replat with deed restrictions on the GI parcel. The boundaries of any such set-aside should be negotiated with the incentives manager.

As this program is still under development, innovative solutions to meeting the intent of preserving the mapped GI function will always be considered by the incentives manager. Like-kind trades to preserve similar GI functions on property off-site, but within the same general watershed (see map), will also be considered.

Submission Requirements

Step One: Determine the areas of Green Infrastructure that intersect the property.
Using the four 'Zone Maps', locate the property that is proposed for development and note which zones intersect any portion of the parcel. For additional information, each 'Zone Map' has a number of sub-maps that describe land features in more detail, such as slopes, watersheds, wetlands, drainages, viewsheds, trails, etc. These submaps can be used to identify specific valuable features that may be present on your site. Please refer to the Eligibility Guidelines section below.

Step Two: Map or get an on-site delineation of GI land features.
The current maps were created based 'remote sensing' data created from aerial images, radar scanning, or satellite imagery, and from field collected data. The maps are only as accurate as the original information, and are current for the date that the data was collected. For this reason, an on-site delineation of actual GI features should be done to verify mapped features and delineate boundaries more precisely. This can be done by the certifying agency (SWCD), or documented by the owner or developer through a site plan and accompanying photographs. It will sometimes be the case that a property proves to have no eligible GI lands and therefore does not qualify for incentives.

Step Three: Integrate or Preserve.
To certify your development, you may either integrate your development plan with the GI features by following the Development Certification requirements in the handbooks for your GI Zone(s), or you may certify your development by simply setting aside the GI portion of your property entirely. You may do this by placing a conservation easement on the portions of the property delineated with GI Zones, or you may subdivide the property and place a deed restriction on the GI parcel (this simply requires that any development on that

parcel must follow the certification requirements in the appropriate GI Zone Handbook, and does not otherwise restrict future development).

Step Four: Prepare a certified development plan.
After determining which GI Zones the property contains and what specific landscape features to preserve and protect, complete the appropriate 'GI Zone' checklist and required submissions described below and in the appropriate GI handbooks. All checklist items will specify what to consider in the development plan and the documentation to submit to meet the requirement. In some cases submittals will include lists or letters, but in most cases there will be something that you should consider when laying out your site development plan. See below for more information on how to use the checklists and the required and optional points.

To standardize the submissions, four site plans or maps are required for project eligibility. In many cases these are plans and maps that are already required for development submittals such as Homer zoning permit applications, or Army Corps permits, etc. Other site information can be found in one of the Landscape Suitability submaps. It is not necessary to create separate plans for GI certification if the information requested is clearly identified in other plan pages prepared for other submissions.

All projects must submit at minimum the 4 plans described below. Additional information may be requested based on the points that are selected to qualify the project. The plans should clearly show all actions taken to preserve the landscape functions as determined by the Suitability map and selected credits.

Site Analysis Plan

This map should show existing pre-development land characteristics, including:

- Existing structures and roads/driveways
- Soil types from NRCS, Suitability Map or Geotech report
- Slopes on site, including tops of slopes, toes of slopes, high points and low points, or other notable slope break-lines.
- Drainage channels and directions.
- Drainage features, including ditches, creeks, swales, wetlands, etc, either wet or dry.
- Vegetation communities such as spruce forest, birch forest, mixed forest, willow or alder scrub, open grassland, low shrubs and mosses. These can be depicted in general areas or clumps according to types depicted on the Suitability Map vegetation map.
- Existing trees or areas of trees over 6 inches in diameter. Map all trees on the property line or immediately adjacent to property line on the neighboring property.
- Map any existing trails on site or connecting along any property line.

For more information, please refer to the Draft Pre-design Site Assessment Checklist in the Sustainable Sites Initiative Standards & Guidelines: Preliminary Report.

Most of the necessary information and guidance will also be available from the City of Homer Planning & Zoning office or the Homer Soil & Water Conservation District office, including aerial photographs and other maps referred to in this booklet.

Site Context Map

This map will show how your property fits into the surrounding context. It should include an area at least as large as the extent of the watersheds that intersect the property shown on the Small Watersheds Suitability Map. Most of this information can be generated directly from Suitability Map submaps by the certification manager or online.

This map should include:

- General drainage patterns in the surrounding area. Make note what areas drain to your site, and where any runoff from your site drains to.
- General vegetation types such as forest, meadow, cultivated/mown lands. This can most often be derived directly from the Suitability Map Vegetation Map.
- Trails in the surrounding area. Mark the trail with any known destination points outside the map area.
- Roads within the mapped area, with surface type and general width.

Development Site Plan.

This plan can be used for the City of Homer Zoning Permit, Drainage Plan and for part of the submittals that may be required by the Army Corps of Engineers and others.. This plan should be created in consideration of the guidelines in the GI Zone booklets.

This plan should show the proposed development, including:

- Location of utilities (trenches and drains)
- Driveways
- Buildings
- Proposed garden/mowed areas
- Areas of cut and fill, with quantities or depths from native ground.
- Drainage plan (direction of drainage, swales, ditches after development)
- Trails
- Any key connections to GI features beyond your property line

- Any other key element determined by credits being pursued

Construction Plan

This plan is intended to prevent disturbance of more area than is necessary for site development and construction. It will include demolition/clearing and staging plan as well as erosion control measures. This should be prepared by or with your contractor, or should be part of your bid package when hiring a contractor. This plan can also be used for the City of Homer Storm Water Plan submission and/or a required EPA SWPPP.

This should include:

- Structures to be removed
- Trees to be removed and trees to be preserved
- Protective fencing or staking delineating vegetation or other sensitive areas not to be disturbed.
- Silt fencing or other construction erosion control measures
- Staging area. This is where construction equipment and delivered materials will be stored on site (this is where you will stack lumber, gravel, soil, piping, sheetrock, etc.)
- Extent of grading
- Areas to be re-vegetated for erosion control.
- Any other post-construction erosion control measures such as straw blankets or wattles.

All Sites

4 credits required

Prerequisites

A - P1	Do not plant any invasive plant species
Prerequisite	

Get a list of local invasive species and species of concern from the Homer Soil and Water Conservation District. Ensure none of these plants or their seeds are included in any planting or seed mix – including erosion control seeding.

Submission: A list of plants and seeding mixes to be used and their source.

A – P2	Meet all construction erosion control requirements in the City of Homer Standards for a Development Activity Plan (DAP) for any size development, and meet EPA requirements applicable to the site
Prerequisite	

Construction activities can create increased stormwater runoff. The bare and disturbed soils are likely to be eroded, negatively impacting local drainages, wetlands and water bodies. All erosion control such as silt fencing, straw wattles, and temporary impoundment areas must be in place before any grading or trenching occurs. If the site is cleared of vegetation, the erosion control must be in place immediately after clearing. Construction erosion control must be inspected at least monthly and after significant storm events to ensure it is still in place and working properly. Inspections can be the responsibility of the contractor, owner or anyone else familiar with the control measures.

If grading more than an acre a Notice of Intent is required to be filed with the EPA. The EPA also requires the preparation of a Storm Water Pollution Prevention Plan (SWPPP) for project of this size to protect the area during construction activities. (Note: The City of Homer also requires a post-construction Storm Water Plan (SWP) for projects of a certain size. This requirement applies to post-construction, and is not intended to control construction activities like the DAP or SWPPP.)

After the site is graded, erosion control seeding should be planted immediately, and/or erosion blankets should be placed on bare slopes according to manufacturers specifications. If the site is being constructed in phases it is important to stage erosion control accordingly and install temporary measures when slopes are to be undisturbed for more than a month.

Submission: A construction plan that includes construction storm water and erosion control measures. Specification or installation details of erosion control measures such as straw wattle, erosion control fencing, etc. The seed mix and source of any erosion control mix. A copy of the DAP and/or SWPPP. The city inspector must be notified when erosion control is in place and either before or on the first day of construction; advanced notice is preferable if a staging date is set.

Resources:

City of Homer Zoning Code – DAP, SWP
Environmental Protection Agency - SWPPP

A – P3	**Meet all requirements for long term stormwater control and mitigation as specified by the City of Homer SWP and the EPA**
Prerequisite	

This requirement is simply a restatement of City of Homer Zoning Code and EPA regulations and applies only to projects of the type described by the applicable section of HCC and/or EPA regulations. Please refer to the Homer Stormwater Manual for more information on integrated stormwater management and runoff calculation techniques.

Submission: a copy of the project Storm Water Plan (development plan with permanent post-construction stormwater management features clearly demarcated) and appropriate sections or details of stormwater management elements along with calculations of pre- and post-runoff volumes.

A – P4	**Do not grade (cut or fill) within drip line of trees on neighboring properties, trees within one foot of property line or trees to be preserved (except for internal boundaries that are part of a multi-parcel development plan).**
Prerequisite	

Any trees on the property line or immediately adjacent to the property line will have roots that cross into your property. It is important not to disturb the root zone of these trees, and can be a violation of City Code by negatively affecting the neighboring lot. The area under the extent of the tree branches or canopy (the drip line) is usually considered a good approximation of the extent of primary root systems and should not be disturbed. Disturbance includes fill. Plan a naturalistic grade to these areas to avoid significantly disturbing subsurface hydrology. If any retaining walls are planned near preserved trees or the property line, carefully consult with the contractor and engineer to ensure the required excavation does not disturb or soil on property line or neighbors' property. Most of all, talk to your neighbors and maybe even create a multi-parcel development plan that may work better with existing natural boundaries.

Submission: Construction plan showing extent of grading. If construction is planned close to protected areas and/or driplines, show protective fencing to be installed. If trees are on property line or adjacent property, clearly mark them on the site inventory plan, construction plan and development plan. Photos may also be included.

A – P5	Do not cut or fill right up to the property line
Prerequisite	

Stormwater runoff, soil settling, and potential erosion or slope failure can occur on both cut and fill slopes. For this reason all grading should stop at least 5 feet from the property line, or a distance such that slopes will be less than 1 in 3, to allow for natural processes and stormwater management that will not impact neighboring properties. Avoiding negative impacts to neighboring properties will avoid future conflicts, and is also a requirement of City code.

Submission: Construction plan showing extent of grading and protective fencing if planned. Clearly show any applicable slopes and the direction of drainage at property boundaries.

Credits

4 credits required

A – 1	**Scrape and stockpile topsoil and/or vegetation mat for reuse on site or off site.**
1 CREDIT	

Topsoil is the top layer of soil that contains organic material. Topsoil is critical for establishment of plants and vegetation as sub-soils are usually poorly draining and have no organic matter. Topsoil takes decades to be formed in Alaska and is often a very thin layer. Therefore, the topsoil and surface vegetation on your site should be considered a valuable amenity. Try to avoid mixing topsoil and subsoil when excavating areas. Take a light pass first with a dozer, scraper or excavator and put aside this soil for future use before excavating to the desired depth. This will improve your plant establishment and erosion control and reduce your cut volume, and will save significant costs for fill and/or final landscaping. Do not stockpile soils in wetlands, drainage paths, or under trees.

Exception: if your site has existing areas of invasive species do not preserve and re-use this soil as topsoil. When possible, surface soils with invasive species and seed stock should be placed at the bottom of any fill areas.

Submission: Construction plan that includes a note requiring the stockpile of topsoil and a demarcation of areas to be scraped and where it should be stored on site. Your contractor will likely help you develop this plan. Provide a copy to excavation contractor.

A - 2	Protect areas not being developed with fencing, flagging or other means to prevent vehicle and equipment traffic on soils to prevent compaction
1 CREDIT	

Soil structure is delicate. Topsoil is a carefully balanced structure of organic material, air and water pore space, microscopic roots, invertebrates, fungi and bacteria. Vehicular traffic, heavy foot traffic, materials storage, etc. can compact soils changing the structure especially the availability of air and water, and the ability of plant roots and other organisms to penetrate the soil. Therefore, areas of the property where existing vegetation is to be preserved, wetlands or drainage ways, or areas where you may want to plant after construction should be protected to preserve the health and function of the soil. This is especially important where there is vegetation and large trees on the property line or on neighboring properties that may be affected by construction activities on your site.

Do not stockpile materials such as lumber, piping, excavated soils, etc in these areas. For smaller sites with few contractors this may be as simple as a construction site plan with protection areas outlined and a quick overview of the site with the contractor at the beginning of site prep. For larger sites and sites that may have multiple contractors, protective fencing, staking or other measures may be required.

Submission: Construction plan with areas to be protected clearly demarcated. On plan or in additional documentation include method for

protection such as fencing or staking, and any additional measures proposed such as contractor orientation or proposed supplemental information.

A - 3	**Transplant at least 50% of sizeable [see below] shrubs, trees and other plants such as ferns on site for replanting on site.**
1 CREDIT	

Germination and growth of desirable species such as ferns, spruce, elderberry and willow is slow in the Homer environment. Many of these species, such as spruce, elderberry and willow can easily be transplanted and even stored for some time. These plants can be used to revegetate for erosion control post grading/construction and either used for informal or formal garden design, reducing landscaping costs and recovery time. Even alders are great screening plants, are fast-growing and are very important in soil building, wildlife habitat, and for erosion control. Existing plants will establish in new location on site quickly since they are used to the soils and climate, and they are free. Have your contractor excavate plants and either transplant them immediately, or store them in an easily reached location on site where they can be watered or cared for until re-planting. Flag them prior to site construction and/or work closely with your contractor to choose and transplant specimens.

Submission: Construction plan marked with vegetation to be transplanted and temporary nursery area identified if needed. Flag specimens if needed. Photos of vegetation areas may also be included but are not required.

Note: *'Sizeable' has different meanings on different sites. In this case it means plants and plant*

communities that are established, but still small enough to transplant. The goal is to preserve native vegetation near where it has naturally established. Work with your certification reviewer or make a reasonable case for your plan.

A - 4	**Mulch or leave as 'nurse' logs, 80% of cleared trees and vegetation on site. Use for erosion control, soil amendment, etc.**
1 CREDIT	

Trees and shrubs felled on site are a good source of organic material to use for soil building and erosion control. Top soil is built by decomposing plant material, and this material can help slow and retain rainwater and speed recovery of topsoil on site and in place. After felling trees and stripping logs, and/or clearing brush such as alders, chip or shred branches, leaves and roots on site. You may want to stockpile the shredded material for use after construction. In areas being cleared but not being constructed on leave root-wads in place for soil stability and natural decomposition.

Submission: Construction plan marked with areas where mulch will be spread. After construction, a signed letter or invoice from the contractor or equipment rentalcompany verifying that material was mulched.

A - 5	**Collect and retain stormwater from roofs on site with a domestic collection system, downspout sump, and/or install green roof.**
1 CREDIT	

Roofs are a significant contributor to a site's impervious cover and therefore to increasing stormwater runoff, especially when concentrated into gutters and downspouts. Install a cistern to collect roof runoff for non-potable or potable use in the house or garden, install a downspout sump or a green roof. When using runoff for indoor use ensure it is properly filtered or treated to ensure it meets health standards.

A green roof or eco-roof significantly captures and reduces roof runoff on low pitched or flat roofs. This can have significant runoff reductions on projects with a high percentage of building coverage. In addition it can increase the insulation value of the roof, prolong the roofs lifespan, and create habitat. There are many commercially available green roof systems for easy and reliable installation, and they have been proven to function well in cold climates with either native grasses, mosses, or sedums.

Submission: Designate on development plan any green roofs, and/or locations of roof downspouts and cistern location(s). Cisterns should be sized to hold roof runoff for at least a 10-year, 2 hour storm event (see Homer Stormwater Manual).

A - 6	Post construction stormwater runoff volume not to exceed pre-development conditions for an undisturbed site. Post construction runoff to be 25% less than pre-development conditions on a previously disturbed or developed site.
1 CREDIT	

Manage all runoff from impervious areas and areas of increased runoff on site so that calculated runoff volume post construction is equal to or less than pre-disturbance runoff volume. Increased stormwater runoff volume degrades drainage ditches, creeks and receiving waters (lake, wetland, bay) quality. In addition increased runoff from developed areas usually has increased levels of pollutants and sediment. And, increased runoff increases the frequency and level of local flooding. Mitigating increased runoff on site can be done with rain gardens, filter strips, swales and basins. Technical specifications are available in the Homer Stormwater Manual, and passive site development techniques (sometimes referred to as LID – Low Impact Development techniques or BMP- Best Management Practices) may be enough to fulfill this credit without needing formal structural measures.

Submission: Calculations showing pre and post development runoff quantities and net change. Development Site Plan should clearly demarcate stormwater management areas and volumes. Cross-sections of stormwater management elements such as rain gardens and basins must accompany plan.

A - 7	**Use over 90% native plants (by cover) in landscape design.**
1 CREDIT	

Native plants are well adapted to the weather and soil in Homer, and they are important for habitat and stormwater management. There are many attractive native plants such as ferns, crooked stem, elderberry, willows, birch, dogwood, rose, cranberry, blueberry that can be planted in more formal arrangements and gardens. The % cover area excludes areas used for vegetable gardens or fruit trees as part of the planting area.

Submission: Development Plan and/or planting plan that shows and calls out planted species, noting areas of native and non-native plantings.

A - 8	Innovation Credit
1 CREDIT	

This credit is to recognize development or design that went above and beyond the requirements of the Suitability Map Developer Guidelines requirements to accomplish the goals of the guidelines. This extra point cannot be used to substitute for any prerequisites within the specific GI Zone areas of compliance.

This credit can be applied for once for each GI Zone if the innovation can be shown to accomplish the stated intentions for that particular zone type.

Submission: In writing describe the additional measures proposed and how they will be undertaken, and how this protects the site ecology or specific landscape feature on or off site.

A - 9	Agency personnel or specialist consultant
1 CREDIT	

There are many specialists available for reference or to use as a professional consultant for a project. If you hire a consultant or get a consultation from a specialist for assistance in designing your site beyond what is required by code or law, you can receive this credit point. Specialists can include Landscape Architects familiar with native plants and habitat restoration, trail design specialists trained in Sustainable Trail Construction through Alaska Trails or other National organization, natural resource conservation personnel, biologists and ecologists, and other 'ists' who can consult on specific environmental conditions being considered on the site.

This credit can be applied for once for each GI Zone.

Submission: Documentation or report created by the consultant for the project, or a signed letter explaining the consultants' assistance that includes contact information for the consultant.

A - 10	Plat, subdivide or replat along ecological boundaries
1 CREDIT	

The original property divisions across the country were located on a grid pattern that did not refer to local conditions of topography, hydrology or vegetation. This has often created pitfalls for developers and property owners, making a property less developable due to disconnected areas of suitable land, causes inappropriate filling of drainages, leftover slivers of land where a road must follow natural contours, etc.

As property boundaries are modified, this credit encourages owners to locate new property lines, or modify existing ones, to fall on natural boundaries. In this way, drainage setbacks, for example, can be made to correspond to required building setbacks from property lines, buffers along property lines can create both privacy and habitat connectivity, and etc.

Any platting action that locates or relocates a property line to better accommodate an identifiable natural or ecological boundary qualifies for this credit.

Submission: Recorded plat showing new property boundary. Site Analysis Map identifying and supporting the existence of the relevant natural boundary.

Slopes and Soils

3 credits required

Prerequisites

S – P1	Create/obtain a slope map of your property
Prerequisite	

Knowing where the slope is, and how it changes is important for you, your designer and contractor(s). At minimum create a plan that calls out slope percent(s) and direction(s) and shows general slope breaks: top of slope, bottom of slope, high points, low points, other transitions in slope. For more involved and sloped sites you may want/need a topographic survey to truly understand the slope variances to design your driveways, foundations, utility connections, etc.

Note that there may be data available on your slope topography through published or historical maps. The City of Homer can provide fairly accurate 5 foot contours from a 2004 LiDAR survey, and the Suitability Map Slope submap is a good starting point, but slopes should be verified through an on site survey (formal or informal, as needed).

Average slopes across intervals of at least 10 feet are appropriate to neglect small variations in topography. Slope percent classes should be identified as : 0 to 4, 4 to 8, 8 to 15, 15 to 20, 20 to 30, 30 to 40, 40 and more.

Submission: Slope plan or topographic plan with slope percents labeled.

S – P2	Determine soil type(s) on the site
Prerequisite	

Determine what soils are on your site by looking at the NRCS soils map, available online or in the Suitability Map Soils submap. Also look at the associated soils descriptions as they pertain to suitability for roads, driveways, foundations and septic leech fields. Note if there are any slope related concerns, as soil stability and suitability at a particular slope will vary greatly between soil types. Also note the 'drainage class' of your soil, which will help identify approaches to handling site hydrology.

A soils map will help you understand the potential construction concerns and costs associated with construction in the given soil type, and may help guide site layout and location of structures. Infiltration descriptions of the different soil types on your site can determine what stormwater management options are viable and where. It is a good idea to dig a test hole to confirm the soil type and depth of margins on site. Look at and record the depth of the different soil horizons with your contactor and/or engineer. This is a common service most contractors provide prior to any excavation work. If you are installing septic, request this information from the engineer who performs your required soil testing.

Submission: Soils map of project site and/or print out of description of site soil types and construction suitability.

S – P3	Limit disturbance of steep slopes
Prerequisite	

Soil structure and associated vegetation cover on and around stable steeper slopes is developed over time. This balance may be very close to the maximum stable slope possible, and any disturbance can cause local and/or regional instability or collapse. The areas mapped in this GI zone have been identified as sensitive for these reasons.

Do not disturb slopes over 40%, limit disturbance of slopes over 30% to 5% of their area in plan, and limit disturbance of slopes over 20% to less than 15% of their area in plan. Alternatively, create engineered retaining walls, gabian stacks or foundation walls to create a buildable area while maintaining native surface contours above or below the retaining walls, OR provide certification from a licensed engineer that any proposed slope's Factor of Safety will be at least 1.5.

Isolated relief, or areas of steep slopes less than 400 square feet are exempt from this prerequisite.

Submission: Slope plan or topographic plan with slope percents labeled, areas of disturbance noted and retaining walls identified. Provide engineering certification if retaining walls over 3 feet high are to be constructed.

S – P4	Setback all structures a distance equivalent to at least the 50-year erosion rate on shoreline lots, according to the 2003 shoreline erosion study, and 40 feet from escarpments and areas of active erosion
Prerequisite	

Shoreline erosion is a natural process in Homer, and historical aerial data has recently allowed the erosion rates to be accurately measured. Controlling bluff erosion is a costly endeavor, and inappropriate private development can lead to public cost. Setting back structures a reasonable distance is the best way to protect them from loss.

Use the Suitability Map Shoreline Erosion map or City of Homer data to identify the 30-year erosion line, and plan all structures to be built behind this line. Structures on skids that are design to be moved are exempt from this prerequisite. In non-coastal areas, identify a 40-foot setback from all areas of active erosion and 'escarpment' soil types from the NRCS soils map or Suitability Map Soils submap.

Submission: Development plan showing all structures and the 30-year erosion boundary and/or 40-foot setback.

Credits

3 credits required

S - 1	Limit grading to construction areas per buffer table
1 CREDIT	

Soil structure and associated vegetation cover is established over many decades. The balance of compaction and air and water space creates a relatively stable structure on suitable construction sites. Disturbance of this structure can cause changes in surface and subsurface water flows, ultimately limiting future vegetation growth, and possibly compromising stability of sloped areas. By limiting the amount of soil disturbed to the immediate area needed for construction and trench creation one insures a limited change in overall site soil structure.

Buffer Table:
To obtain this credit, limit all site grading to within:
40 feet from building perimeter
15 feet beyond roadway edge/curbs
10 feet beyond utility trenches and parking surfaces

Submission: Construction plan clearly showing the extent of grading and any protective fencing or staking planned. Provide annotated plan to contractor.

S - 2	Balance cut and fill on site.
1 CREDIT	

Keep all soils on site to eliminate the import or export of soils to and from the site. Try to minimize unnecessary disturbance of the site with fill outside the constructed areas, and scrape and replace topsoil and as much native vegetation as possible on any filled areas. Balancing cut and fill will encourage minimizing excavation in the first place, reduce costs and will also avoid contributing to inappropriate disposal of fill soils elsewhere in the City.

Note that this credit will not be possible in many cases. Often it is the most appropriate and cost effective to balance cut and fill, but the emphasis of any development plan should be to minimize disturbance of native conditions in sensitive areas. Other credits are available for these situations.

Submission: Grading plan and calculations showing area and depth excavated or filled and total cubic yards (this includes building and road foundations and utility trenches). Show areas of fill with calculations matching the amount of cut, a compaction variable may be included. Show total areas of disturbance and areas of buildings, driveways and roads.

S - 3	**Maintain native contours within 5 vertical feet (10 vertical feet for roads), and do not create slopes more than 1 in 4 except for retaining walls**
1 CREDIT	

Create a development plan that modifies native contours by no more than 5 vertical feet (10 vertical feet for roads) except for areas with an engineered retaining wall or foundation. Create no slopes over 1 in 4.

Submission: Grading plan, pre-construction and proposed post-construction contours showing all areas modified, annotated with slopes and depths of excavation and fill.

S - 4	Create naturalistic slopes
1 CREDIT	

Do not create geometric steep slope of 3:1 for more than a 3 foot rise. When grading the site and creating cut and fill slopes do not create geometric steep slope with harsh transitions to natural slopes. The geometric slope and abrupt transitions create areas prone to erosion, failure, and can be an eyesore. Consider varying slope profile and steepness, always reduce slope and create slow transition between top and bottom of slope and existing or pad grade. Varying slope will create a naturalistic appearance, slow runoff and limit areas of stormwater erosion. If a slope were to fail, the variability in a naturalistic slope can limit the extent of failure. Keep slope less than 4:1 and where space permits try to vary slope between 8: and 5:1 slope. Plant slopes with a mix of native grasses and shrubs to reduce erosion and stabilize the slope.

Submission: Development plan with contour lines, and or elevation points at top of slope and bottom of slope and on grid or at appropriate slope breaks or changes.

S – 5	Avoid steep slopes
1 CREDIT	

Limit construction to areas of the site with less than 15% slope

Isolated relief, and areas of steep slopes less than 400 square feet are exempt from this prerequisite.

Submission: Development plan with areas of slope over 15% identified. If this information is not provided by a licensed surveyor, slope information will be verified with the City of Homer LiDAR slope map.

S – 6	**Setback all structures a distance equivalent to at least the 100-year erosion rate on shoreline lots, according to the 2003 shoreline erosion study, and 100 feet from escarpments and areas of active erosion**
1 CREDIT	

Shoreline, bluff and cliff erosion is a natural process in Homer, and historical aerial data has recently allowed the erosion rates to be accurately measured. Setting back structures a distance that recognizes a building's lifespan is the best way to protect them from loss.

Use the Suitability Map Shoreline Erosion map or City of Homer data to identify the 100-year erosion line, and plan all inhabitable structures and structures with foundations to be built behind this line. In non-coastal areas, identify a 100-foot setback from all areas of active erosion and 'escarpment' soil types from the NRCS soils map or Suitability Map Soils submap.

Submission: Development plan showing all structures and the 100-year erosion boundary and/or 100 foot setback.

S - 7	Buffer steep slopes
1-3 CREDITS	

Steep slopes are susceptible to destabilization due to changes to the conditions above and below the slopes. Drainage and stormwater management is also more critical on sloping terrain, as higher flow rates carry more energy which leads to higher rates of erosion and scouring than the same flow quantities on shallow slopes. Vegetation and soil structure on and around steep slopes help to control flows and hold slopes together.

To be eligible for this credit, site all buildings and do not disturb areas of slopes or buffer zones around the top or bottom boundaries of slopes according to the following table:

Slope Disturbance Buffer credits:

CREDITS	***30% to 40% slope***	***40% slope and over***
1 CREDIT	none	35 foot vegetated buffer
2 CREDIT	20 foot vegetated buffer	50 foot vegetated buffer
3 CREDIT	40 foot + vegetated buffer	100 foot + vegetated buffer

Note – Areas of isolated relief, or areas of steep slopes less than 400 square feet are exempt from these buffers.

Exemptions and Alternatives: Areas below slopes which are stabilized with an engineered retaining wall, gabian stack or foundation wall, if the remaining slope is fully vegetated or otherwise permanently stabilized.

Submission: Development plan with areas of slope over 30% and over 40% identified. If this information is not provided by a licensed surveyor, slope information will be verified with the City of Homer LiDAR slope map. If retaining structures are used, certification by a licensed engineer and annotation on development plan of locations and heights.

S - 8	Conservation easement or deed restriction on all slopes over 35%
2 CREDITS	

The conservation easement must restrict future construction and clearing on all slopes over 35% on the property, except for possible light impact trails, engineered retaining walls and actions necessary to protect developed property.

Submission: A signed conservation agreement or a letter stating the intent and interest from the agency agreeing to hold the easement. Copy of any platting documents.

S - 9	Innovation Credit
1 CREDITS	

This credit is to recognize development or design that went above and beyond the requirements of the Suitability Map Developer Guidelines for Slopes and Soils to accomplish the goals of the guidelines. This extra point cannot be used to substitute for any prerequisites

Submission: In writing describe the additional measures proposed and how they will be undertaken, and how this protects the site ecology or specific landscape feature on or off site.

Wetlands and Drainages

3 credits required

Prerequisites

W – P1	Map all wetlands, creeks, drainages or other water features on site. Obtain ACOE-approved wetland delineation.
Prerequisite	

During site analysis and inventory carefully map all drainages, seeps, wetlands and other surface water features. Note that not all features will be wet but can be determined by topographic relief, vegetation and/or soils conditions. Your surveyor can help by either performing a full topographic survey and/or doing a rudimentary analysis, or you may use the topographic map available from the City's 2004 LiDAR.

Look carefully at the current wetlands map and obtain a Corps or other professional wetland delineation of the site. Note that wetlands are not always obvious as surface water but can be forested and/or have heavy shrub cover. In addition many sites have changed over the years due to road construction and improvements, as well as neighboring construction resulting in the creation of new wetlands or existing wetlands no longer being wet. The available wetlands maps, on which this zone map was based, are not definitive at all scales and wetlands may be over- or under-mapped in some areas. The Corps has a list of consultants that can assist you with determining if there are wetlands on your site.

Submission: A site Inventory plan/map with all water features, drainages, etc. clearly drawn and annotated. A copy of a wetland determination and/or acceptance letter of determination from the Corps of Engineers.

W – P2	Map general location of creeks, drainages and wetlands within 100' of property (as possible without trespass) noting direction of drainage.
Prerequisite	

Look at suitability map, local wetlands map, and aerials, as well as noting what can be seen from your property or adjacent streets or trails. Inspect neighboring properties if possible with the owners permission.

Submission: Site context map/plan with estimated location of above clearly marked and annotated.

W – P3	**No disturbance or fill in 90% of existing wetlands (see exemptions below), creeks or drainages, OR restore an equivalent area of similar and connected wetland or creek adjacent to filled wetlands. Prevent disturbance due to construction activities near wetlands and creeks.**
Prerequisite	

While wetlands are abundant in Alaska, they are most important in developed and developing areas for water quality, erosions control, stormwater management and habitat. Wetlands outside developed areas do not replace these local functions. Because much of the soil in and around Homer has low permeability, and with a long winter accumulation of snow and resultant snowmelt, wetlands are crucial in slowing, filtering and infiltrating water, reducing flooding, and creating a hospitable growing environment for trees, shrubs and other vegetation. Wetlands are also important for local and migrating wildlife. When impacting any wetlands or creeks you will have to obtain a permit from the Army Corps of Engineers prior to any disturbance.

Some areas of Discharge Slope wetlands and wetlands ranked 1 or 2 in the Landscape Suitability - Wetland submap may be exempt from this requirement at the discretion of the incentive manager.

Boardwalks and piling structures that do not otherwise disturb the ground are not considered

disturbance or fill in wetlands. A construction plan using these methods must be carefully planned to avoid disturbance or compaction by the equipment installing the pilings.

If developing near wetlands the following actions must be taken to limit the impact.

- Keep disturbances at least 10 feet from the outer edge of a wetland. Mark this boundary with staking or flagging prior to any construction or clearing activity.
- Do not divide or bisect a wetland or wetland complex with linear features (utilities, roads, driveways) unless surface conditions will be completely restored or a subsurface connection across the linear disturbance will be installed (see next).
- If a driveway or road traverses a wetland, place at least one peat and gravel filled culvert under the road to connect the two areas. The culvert should have open aggregate gravel subsurface support to reduce heaving. The culvert should be filled with a peat mix and have soil contact on both ends at least half the height of the culvert. This will create connection of saturated soils between the two sides of the driveway. Allow for air space in the culvert to allow for soil expansion during freezing conditions. Do not ditch and create an open culvert.

If you are impacting a stream or major drainage channel these are some of the actions you must take:

- Re-route the stream around the disturbance in a naturalistic manner. The created stream reach should have a natural meander and stream

channel side slope. Have an engineer or Landscape Architect design the stream and calculate appropriate channel size to ensure channel stability and water conveyance to avoid flooding.

- When crossing the stream with a road or driveway cross the channel as close to perpendicular as possible.
- Oversize any culverts. Place a culvert under the road at least 50% larger than the size called for in minimum engineering calculations. Place the bottom of the culvert below the bottom of the creek channel bed and fill the culvert bottom with native soil and gravel to create a seamless soil bed connection. The culvert should be placed on a stable gravel bed to reduce heaving and allow for subsurface flows during freezing temperatures.
- If the elevation drop between the outfall and the creek bed channel bottom is significant between opposite sides of the road, create a pool at the culvert outfall to eliminate scouring and dissipate the energy of water exiting the culvert. Limit the slope of the culvert to keep water velocities low.

Submission: Wetland delineation and construction plan clearly indicating areas of impact, if any. Cross sections of all impacted area showing constructed elements including roads, foundations, etc. Dimensioned sections of any culverts and constructed creek channels or wetlands. Copy of Army Corps of Engineers Permit if wetlands are to be dredged or filled. If pilings or piers are proposed, a Construction plan with staging and equipment areas

clearly delineated. Signed note acknowledging receipt of construction plan by contractor.

Credits

3 credits required

W - 1	No ditches on property
2 CREDITS	

Except were required by City of Homer, such as roadside drainage ditches (these are usually within the City right-of-way), there shall be no ditches on the property. Ditches increase the concentration of water, and depending on grade, the velocity of water. Ditches can also change site hydrology and sub surface water flows. While ditches are often installed to create more developable area on a wet property, it is not appropriate in this GI zone, and other techniques should be used to create a developable site or development should be done on another part of the property.

If surface runoff is a concern around buildings, roads and driveways, a shallow vegetated swale is recommended to divert surface runoff without increasing flow velocities. If concentrated water runoff already exists on the site then the creation of a meandering stream channel is recommended to slow runoff. Careful topography, channel materials, check dams and vegetation must be considered to limit scour and erosion. A creek can be an aesthetic amenity and will be counted toward City landscaping and stormwater requirements.

Submissions: Development plan clearly showing all water conveyance systems. If creeks or swales are planned, show a cross section and a longitudinal

section or spot elevations that specify the slope of the channel bottom.

W - 2	Create and maintain buffers and building setbacks from wetlands, creeks and significant drainages per chart below.
1-3 CREDIT	

The health and continued function of a wetland, creek or drainage is dependent on the adjacent upland area. The uplands and vegetation slow and filter stormwater runoff. The transition zone between upland and wetland is a rich diverse habitat area. Creeks often have a distinct riparian zone including a diversity of trees and shrubs. Therefore built structures, including roads and driveways should be set back from any wetlands and creeks to ensure the runoff from the structure is slowed and filtered. Undisturbed riparian zones and thick tall grasses or mosses are most beneficial. Therefore do not to mow the vegetation in the riparian zone or vegetated buffer. If access is desired consider a boardwalk on helical piers.

Some areas of Discharge Slope wetlands and wetlands ranked 1 or 2 in the Landscape Suitability - Wetland submap may be exempt from this credit at the discretion of the incentive manager.

Buffer Credit Table:

Vegetated Buffers and building setbacks credits:

1 CREDIT	25 foot vegetated buffer
2 CREDIT	50 foot vegetated buffer
3 CREDIT	100 foot + vegetated buffer

Note – Boardwalks on helical piers to gain access to wetlands
or creek edges are exempted from the setback restrictions.

Submission: Wetland delineation and setback line clearly showing building setbacks and buffers. Setback must be staked or flagged on site. Include setback in any required construction plan provided to contractors.

Resources:

On the River, a publication from the Kenai River Center and the Kenai Watershed Forum for guidelines and suggestions for designing around and preserving buffers. While this book is focused on river edge properties, the same principles and concerns hold true for wetlands and creeks.

W - 3	Place a conservation easement around wetlands or creeks including the buffer area and building setback, OR if an ACOE Individual Permit is required, include wetland and creek buffers as part of that permit.
1 CREDIT	

The conservation easement must restrict future construction within the buffer and setback area above, except for possible light impact trails and helical pier boardwalks. The conservation easement must ensure funding for long term maintenance of the wetland, creek and buffer areas.

Submission: A signed conservation agreement or a letter stating the intent and interest from the agency agreeing to hold the easement. Copy of all platting documents. Army Corps of Engineers permit.

W - 4	If a Stormwater Plan is required by the City of Homer, design the site to accommodate required stormwater runoff detention in newly-created wetlands and/or riparian areas integrated with the site stormwater plan.
1 CREDIT	

Wetlands and riparian areas are critical for stormwater management and wildlife habitat, as described above. Particularly when impacts to existing wetlands are unavoidable in a project, stormwater control with a constructed wetland is the best way to offset these impacts as well as create additional habitat benefits. It can be especially valuable to restore and protect degraded systems that are not directly impacted by the development.

This credit is not available if a stormwater plan is not implemented for the project, but can be used if stormwater control measures are used on site for neighboring properties under a joint Stormwater Management Agreement submitted to the City of EPA.

Submission: Development plan with area of created or restored wetlands or riparian areas clearly demarcated. Details, sections, and planting strategies for proposed created or restored areas.

W - 5	Innovation Credit
2 CREDITS	

This credit is to recognize development or design that goes above and beyond the requirements of the Suitability Map Developer Guidelines for Wetlands and Drainages to accomplish the goals of the guidelines. This extra point cannot be used to substitute for any prerequisites

Submission: In writing describe the additional measures proposed and how they will be undertaken, and how this protects the site ecology or specific landscape feature on or off site.

Wildlife Habitat

3 credits required

Wildlife habitat is the most difficult to map and even to identify on site. For this reason, most of the credits below are quite subjective and open to interpretation. Please take the time to read the background information referred to in each credit, to consider the potential of your site for habitat value, and make your best case for how your development plan creates or preserves significant areas of habitat in the ways described. It will be the responsibility of the applicant to make the case for eligibility for each credit. Recommendations from a professional biologist or wildlife specialist will be highly valued in determining eligibility for these credits.

Prerequisites

H – P1	Determine areas of valuable habitat on the site
Prerequisite	

Wildlife need food and water, but also the ability to get to and from food and water and areas for breeding and raising young. There is a great deal of habitat value on most properties in Homer, but much of it exists in edge zones and buffers that can become degraded when developed. Many species prefer to use open or edge areas if they have somewhere to quickly and easily retreat to, meaning that human habitat and animal habitat are not necessarily incompatible.

Look at your site for possible wildlife habitat features. Are there willow thickets that moose might browse, are there alder and elderberry shrubs that birds might feed and nest in? Is there clean accessible water in a creek or wetland? Are there clearly used wildlife trails on your property? Are there known occurrences of wildlife on the property? Ask the neighbors or local wildlife personnel.

Submission: Site inventory plan and context map with vegetation zones mapped and called out. Wildlife trails, and or known key elements or locations. List of species known to occur on the site or in the neighborhood.

Credits

3 credits required

H - 1 **1 CREDIT**	**Preserve and protect areas or characteristics of known habitat value within this on-site delineated GI Zone of the property**

Areas or characteristics to consider include willow scrub, wetlands, ponds and creeks, alder and tree thickets. Preserve these areas and elements with the appropriate buffers. Plan your site to reduce impacts and possible confrontations. Preserving a willow thicket away from the house but in view from a window facilitates safe viewing of moose, a willow thicket right next to your front or back door may result in a hungry moose defending his or her right to eat and preventing you from getting in or out of your house. Tree and scrub thickets next to a meadow or mown areas can increase the habitat value for songbirds and cranes. Look at the larger context map and preserve connections and corridors to habitat beyond your property line. Many habitat areas inadvertently become 'islands' with little or no connections to each other. Preserving access and connections are critical. Look at connection of tree canopies and shrub lines, creeks and wetlands, and preserve these connections through your property. Preserve existing wildlife trails and their natural buffers and cover vegetation.

Submission: Development plan that clearly shows preserved vegetation and elements of habitat value and access and connections to and through your property. List of target species.

H - 2	Limit development impacts
1 CREDIT	

Keep the house compact and outbuildings close by. Large distances between outbuildings, driveway, house and other features essentially disconnects habitat areas, and creates a larger impact footprint. While your house may be small, the addition of all the other spread out elements will result in the same habitat impacts as a large sprawling house.

'Compactness' will be determined on a case-by-case basis for your specific area by the certification manager.

Submission: Development plan that clearly shows the extent of development and locations of outbuildings. Note the square feet of building footprints, driveway and parking, lawn and other constructed landscapes, and lot size. Other supporting evidence may include aerial photos of neighboring lots with comparative areas noted.

Resources:

For more guidance on habitat design and preservation

Kachemak Heritage Land Trust's "Living in Harmony with Moose,"

National Wildlife Federation's Back Yard Habitat program

National Audubon Society

H - 3	Improve and create habitat on your property
1 CREDIT	

Plant and manage vegetation and buffers that have high wildlife value such as alders and wildflowers for bird habitat, spruce, birch, aspen and willow for bird and moose habitat. Preserve clean water available on site in either in a creek, wetland or pond. Always consider escape routes for all animals and humans, to increase use and avoid negative interactions.

Refer to KHLT's "Living with Moose," National Wildlife Federation's Backyard Habitat program, and the Audubon Society for habitat guidelines and certification. Use caution to ensure you are not attracting bears, refer to The Alaska Audubon Society's publication "Living in Harmony with Bears" available online or from AK department of Fish and Game.

Submissions: Development plan that shows areas of created habitat including vegetation planted/transplanted and species, water features, etc.

H - 4	Place a conservation easement on habitat and corridor areas
2 CREDITS	

Protect significant areas of existing or restored habitat and corridor from future impacts by placing a conservation easement on the property. Include a clear management plan to ensure future maintenance and management to keep the habitat healthy and high value.

Submission: A signed conservation agreement or a letter stating the intent and interest from the agency agreeing to hold the easement. Copy of any platting documents.

H - 5	Institute the recommendations of an agency personnel or specialist consultant
1 CREDITS	

There are many local wildlife specialists available for reference or as professional consultants for a project. Instituting the recommendations of a professional consultant or specialist to create or preserve significant habitat and connectivity in your development plan will automatically qualify for this credit. Qualifying for this credit will usually also qualify you for at least one other credit.

Specialists can include professional Wildlife Biologists, researchers, Landscape Architects or local specialists familiar with local species and habitat.

Submission: Documentation or report created by the consultant for the project, or a signed letter explaining the consultants' assistance that includes contact information for the consultant. Development plan signed by the consultant clearly delineating areas of habitat to be preserved or created, with specifications and list of target species.

H - 6	Create or preserve significant areas or characteristics of moose, raptor, Sandhill crane or shorebird habitat
1 CREDITS	

Moose, Sandhill crane, raptors and shorebirds define Homer for visitor and locals alike. An additional credit is available if habitat creation or preservation is focused on these important local species.

Submission: Development plan that shows areas of created habitat including vegetation planted/transplanted and species, water features, etc. List of target species.

H - 7	Create or preserve a connecting corridor or linear habitat element
1-3 CREDITS	

Connectivity is one of the primary focuses of the Suitability Map project, and is often the most difficult large-scale landscape characteristic to preserve in a small-parcel private ownership situation. This credit is designed to encourage the creation and preservation of habitat that is linear in nature and connects across a parcel, potentially becoming part of a much larger and healthier habitat system.

In your development plan and implementation, create a continuous, uninterrupted habitat corridor that extends at least from one property boundary to the opposite boundary, or continuously along 100% of one property line. If a dedicated habitat or open space area (park, conservation easement, deed-restricted parcel or other established area) exists adjacent to the property, the corridor must connect at least at this point. If no such area exists adjacent to the property, provide supporting testimony for why the corridor is located in the planned area.

Corridor credits will include the following:

1 CREDIT	50 foot wide habitat corridor or 25 ft corridor if at least a 25 ft corridor exists along the adjoining property line
2 CREDITS	75 foot wide habitat corridor
3 CREDITS	150 foot + wide habitat corridor

Submission: Development plan that shows areas of created habitat including vegetation planted/transplanted and species, water features, etc. Location and dimensions of any adjoining property habitat areas.

H - 8	Minimize light trespass from building and site
1 CREDIT	

Light pollution has large impacts on wildlife and human environment. Light pollution reduces our ability to enjoy stars and northern lights, as well as general sense of place. Lighting can deter or confuse animals. Lighting design can still provide a well lit, safe environment without creating unnecessary light pollution.

All exterior lighting must be directional, directing light downward. Bollard lighting must be directed at appropriate angles to ensure no direct uplighting. Light fixtures on exterior paths, garages, and other areas where high light levels are needed can use motion detectors adjusted to properly activate when a person or vehicle is in the vicinity. Any accent lights for signs and landscape features should be either downlights, or focus beam angled correctly to shine on the sign and eliminate stray light. Interior lighting should be designed to reduce direct focus out of windows.

Submission: Development plan and electrical plan (if applicable) with exterior lighting types called out. Product description of exterior light fixtures. Section drawings for all exterior accent lights that are not downlights clearly showing the cone of illumination and the target element.

H - 9	Innovation Credit
2 CREDITS	

This credit is to recognize development or design that goes above and beyond the requirements of the Suitability Map Developer Guidelines for Wildlife Habitat to accomplish the goals of the guidelines. This extra point cannot be used to substitute for any prerequisites

Submission: In writing describe the additional measures proposed and how they will be undertaken, and how this protects the site ecology or specific landscape feature on or off site.

Trails and Viewsheds

3 credits required

Prerequisites

T – P1	Map on-site and nearby trails or potential trail corridors
Prerequisite	

Consult with City of Homer Planning staff, Parks and Recreation Staff and other local trail advocates to determine any existing, proposed or historic trails or trail corridors on or near the property. Trails mapped in the Suitability Map - Trails subzone map identify all potential trail corridors, proposed trails from the Homer Non-Motorized Trails and Transportation Plan and reported existing or proposed trails. Note the locations of these corridors and discuss the potential of implanting these corridors on your site or alternatives to maintaining those connections.

Note: House Bill H25, sponsored by Rep Paul Seaton and passed during the 2007 congressional session, may be relevant to property owners concerned about liability arising from public use on private property and easements.

Submission: A site inventory Plan and Context map showing trails clearly marked as existing or historic trail and trail corridors on and near the property.

Credits

3 credits required

T - 1 **2 CREDITS**	**Preserve existing trails on site in current location OR preserve an alternate connection to and through the site to existing trail**

Trails are a valuable resource in Homer, allowing for year round activities, and connection to a larger network, even connecting to downtown in some cases. In most areas with an established and well-maintained trail system, property values adjacent or near trails are 5% to 40% higher than comparable properties without this amenity. Many trails are informal and not mapped or protected; many on private property. Preservation and improvement of these trails and their connection can make Homer and your property more valuable and enjoyable.

Preserving the connection in perpetuity is important, especially if the trail is planned for future construction and connections. This will guarantee the access for future tenants and community members. An easement can also be prepared to ensure funding of or source for maintenance of the trail for the long term.

This credit requires only that trails are formalized in the new development plan, construction and maintenance is not required. Provide a trail easement on an existing trail corridor or on an alternate route that connected from and to the other parts of the trail. Easement width must be at least 10 feet if located across the interior of a

property, or 20 feet is located along a property line (or 10 feet if at least a 10 foot trail easement exists on the adjoining property). Note: a 20 foot easement is required for the corridor to be considered for maintenance to be taken over by the City of Homer.

Submission: Development Site plan and plat that shows preserved and/or created trails and area plan showing connections to greater trail network (existing or proposed). If applicable, a signed conservation agreement or a letter stating the intent and interest from the agency agreeing to hold the easement. Copy of any platting documents. If applicable, a narrative supporting deletion or re-routing of a proposed corridor or existing trail. A signed conservation agreement or a letter stating the intent and interest from the agency agreeing to hold the easement.

T - 2	Improve existing or new trails on site
1 CREDIT	

Formal establishment of a trail with hardening or other improvements is another way to insure the long term access of the trail corridor. This credit requires improvement of a trail, but does not require establishment of a formal trail easement. Trail improvements must be constructed to last a minimum of ten years.

Improve and maintain trail conditions to allow for easy access and way finding; this may include occasional tree/shrub trimming and mowing. Don't forget connections to the trails from roads and sidewalks.

Submission: Development Site plan that shows preserved and/or created trails and connections to greater trail network (existing or proposed). Copy of trail design drawings and construction or materials purchase agreements.

Resources:
Support for trail-building efforts is strong in Homer, and help can be found from such organizations as the Kachemak Nordic Ski Club, City of Homer, Alaska Trails, SNOMADs, and other recreation groups.

T - 3	Improved Trail Construction - Site and construct the trail sustainably
1 CREDIT	

Creating a trail is a great first step, however, the actual design and location of the trail will determine its usability, comfort, and maintenance. The trail must have grades that are easily traversed, and must be sited carefully to limit erosion potential and creation of overly muddy areas, etc. These actions will make the trail useable and easy to maintain. Choose a location for the trail that will clearly differentiate public trail from private residential area; this will increase enjoyment of the trail by visitors and the property owners. Plant trees and shrubs to enforce the boundary and to create visual privacy between buildings and trails. Ensure appropriate visibility on the trail so that users including wildlife avoid conflicts or accidents; create safe escape routes or buffer areas for humans and wildlife. There are a few books in print that have design guidelines for sustainable trail design, but you may want to contact Alaska Trails for their guidance and possible consultation or consultant referral.

Submission: Development plan with trail clearly demarcated and slope of traverse called out. Include trees or shrubs that may create a boundary or buffer. Include details or sections of any improved trail surface, bridges and/or drainage management.

T - 4	Create Trail Destination Improvements
1 CREDIT	

Trails are a great asset for skiing and hiking, but having special locations along a trail can create a sense of destination and reason beyond exercise for using the trail. Consider key areas along the trail, such as a spectacular view spot, a particularly appealing tree or tree grove, a pond or wetland. Create a destination associated with these areas by creating a clearing or amenity just off the trail. Include benches, tables, boardwalk, art and/or signage to highlight the area and invite users.

Submission: Clearly marked area on development plan with note calling out any furnishings or views.

T - 5	**Prepare a legal agreement with organization for the long term maintenance of the trails.**
1 CREDIT	

There are many stewardship groups in Homer such as the Kachemak Nordic Ski Club. These organizations may be interested and able in maintaining your trail(s) if they connect to a larger trail system that is maintained by them. This type of agreement can assure the maintenance and access of your trails by the Homer public.

Submission: A written and signed agreement from an entity or organization willing to take on the maintenance of the trails, or a letter indicating the intent to take on the management of the trails.

T - 6	**Pair trail corridor with wildlife landscape feature or function preservation.**
1 CREDIT	

Many of the site functions and elements that are advocated for protection by the Suitability Map can enhance a trail corridor. If you are preserving an area of wetlands or a creek or greenway, include a trail connection to and/or past the element to also qualify for this credit. However be responsible in protection of buffers and setbacks. Keep the trail on the edge of the preserved area or greenway. Wildlife can thrive on the edges of human use areas, but often prefer 'interior' habitats - habitats that have clear and well defined buffers around them. A trail along an edge will cause limited habitat disturbance and may encourage wildlife to use the preserved area, making the trail a more enjoyable experience if wildlife viewing is desired. Edge trails also create better safety zones and escape routes for human and wildlife reducing possible negative interactions.

Submission: Development map showing protected areas, buffers, and other complementary features, and location of trail(s).

T - 7	Preserve trail viewsheds
1 CREDIT	

The larger areas shown on the GI Trail Zone map indicate areas within the immediate viewshed of significant trails in natural areas. Preserving at least the visual impact of the larger environment around these trails is important for maintaining their desirability.

Preserve significant trees and buffers around buildings within the mapped viewshed of these trails. This credit is not intended to otherwise limit development of these areas, and in fact development is encouraged around trails to take the best advantage of the benefits of the trail system. Buffers, preserving large trees that are visible from a trail in summer or winter, or other innovative techniques can be used to qualify for this credit.

Submission: Construction plan and Development plan showing buffers, trees to be preserved, or other methods intended to preserve the experience of the trail system. Stake or flag buffers and/or trees and provide a copy of the development plan to the contractor.

T - 8	Innovation Credit
1 CREDIT	

This credit is to recognize development or design that goes above and beyond the requirements of the Suitability Map Developer Guidelines for Trails and Viewsheds to accomplish the goals of the guidelines. This extra point cannot be used to substitute for any prerequisites

Submission: In writing describe the additional measures proposed and how they will be undertaken, and how this protects the site ecology or specific landscape feature on or off site.

References

This document was prepared based on local knowledge of the area, and on information available in similar reference materials and certification programs. The following are key references recommended for further guidance.

LEED for New Construction & Major Renovations Version 2.2 (LEED NC) available online at www.usgbc.org/leed

LEED for Neighborhood Development Pilot Version (LEED ND) available online at www.usgbc.org/leed

LEED stands for Leadership in Energy and Environmental Design, and is a rating system created by the US Green Building Council (USGBC) www.usgbc.org or www.chapters.usgbc.org/alaska

The Sustainable Sites Initiative Standards & Guidelines: Preliminary Report. available online at www.sustainablesites.org

Land and Natural Development (LAND) Code: Guidelines for Environmentally Sustainable Land Development. Diana Balmori+ Gaboury Benoit . Wiley, 2007.

On the River: A Guide to Owning and Managing Waterfront Property on the Kenai Peninsula. The Kenai River Center & Kenai Watershed Forum. 2007.

Designing Greenways: Sustainable Landscapes for Nature and People. Paul C. Hellmund + Daniel S. Smith. Island Press, 2006.

Stormwater and Meltwater Mangement and Mitigation: A Guide for Homer, Alaska. City of Homer, Allegra Bukojemsky and David Scheer. 2007. Available from the City of Homer Planning Department.

Living in Harmony with Moose. Derek Stonorov. Kachemak Heritage Land Trust, 1998.

Living in Harmony with Bears. Derek Stonorov. Alaska State Office of the Audubon Society, 2002. Available online at www.audubon.org/chapter/ak/ak/images/LIHWB%202002.pdf

Credit Checklists
All Sites

	A - P1 Prerequisite	Do not plant any invasive plant species
	A – P2 Prerequisite	Meet all construction erosion control requirements in the City of Homer Standards for a Development Activity Plan (DAP) for any size development, and meet EPA requirements applicable to the site
	A – P3 Prerequisite	Meet all requirements for long term stormwater control and mitigation as specified by the City of Homer SWP and the EPA
	A – P5 Prerequisite	Do not cut or fill right up to the property line
	A - 2 1 CREDIT	Protect areas not being developed with fencing, flagging or other means to prevent vehicle and equipment traffic on soils thereby preventing compaction
	A - 3 1 CREDIT	Transplant at least 50% of sizeable shrubs, trees and other plants such as ferns on site for replanting on site.

	A - 4 **1 CREDIT**	Mulch 100% of cleared trees and vegetation on site and use for erosion control.
	A - 5 **1 CREDIT**	Collect and retain stormwater from roofs on site with a domestic collection system, downspout sump, and/or install green roof.
	A - 6 **1 CREDIT**	Post construction stormwater runoff volume not to exceed pre-development conditions for an undisturbed site. Post construction runoff to be 25% less than pre-development conditions on a previously disturbed or developed site.
	A - 7 **1 CREDIT**	Use over 90% native plants (by cover) in landscape design.
	A - 8 **1 CREDIT**	Innovation Credit
	A - 9 **1 CREDIT**	Agency personnel or specialist consultant
	A - 10 **1 CREDIT**	Plat, subdivide or replat along ecological boundaries
	TOTAL	All prerequisites must be met and at least 4 credits obtained

Slopes and Soils

	S – P1 **Prerequisite**	Create/obtain a slope map of your property
	S – P2 **Prerequisite**	Determine soil type(s) on the site
	S – P3 **Prerequisite**	Limit disturbance of steep slopes
	S – P4 **Prerequisite**	Setback all structures a distance equivalent to at least the 30-year erosion rate on shoreline lots, according to the 2003 shoreline erosion study, and 40 feet from escarpments and areas of active erosion
	S - 1 **1 CREDIT**	Limit grading to construction areas per buffer table
	S - 2 **1 CREDIT**	Balance cut and fill on site.
	S - 3 **1 CREDIT**	Maintain native contours within 10 feet vertical, and do not create slopes more than 1 in 4 except for retaining walls
	S - 4	Create naturalistic slopes

	1 CREDIT	
	S – 5	Avoid steep slopes
	1 CREDIT	
	S – 6	Setback all structures a distance equivalent to at least the 100-year erosion rate on shoreline lots, according to the 2003 shoreline erosion study, and 100 feet from escarpments and areas of active erosion
	1 CREDIT	
	S - 7	Buffer steep slopes
	1-3 CREDITS	
	S - 8	Conservation easement or deed restriction on all slopes over 35%
	2 CREDITS	
	S - 9	Innovation Credit
	1 CREDITS	
	TOTAL	All prerequisites must be met and at least 3 credits obtained

Wetlands and Drainages

	W – P1 Prerequisite	Map all wetlands, creeks, drainages or other water features on site. Obtain ACOE-approved wetland delineation.
	W – P2 Prerequisite	Map general location of creeks, drainages and wetlands within 100' of property (as possible without trespass) noting direction of drainage.
	W – P3 Prerequisite	No disturbance or fill in 90% of existing wetlands, creeks or drainages, OR restore an equivalent area of similar and connected wetland or creek adjacent to filled wetlands. Prevent disturbance due to construction activities near wetlands and creeks.
	W - 1 2 CREDITS	No ditches on property
	W - 2 1-3 CREDIT	Create and maintain buffers and building setbacks from wetlands, creeks and significant drainages per chart below.
	W - 3 1 CREDIT	Place a conservation easement around the wetlands or creeks including the buffer area and building setback.

	W - 4 **1 CREDIT**	**Create new wetlands and/or riparian areas integrated with the site stormwater plan that will accommodate required stormwater runoff detention.**
	W - 5 **2 CREDITS**	**Innovation Credit**
	TOTAL	**All prerequisites must be met and at least 3 credits obtained**

Wildlife Habitat

	H – P1 Prerequisite	Determine areas of valuable habitat on the site
	H - 1 1 CREDIT	Preserve and protect areas or characteristics of known habitat value within this on-site delineated GI Zone of the property
	H - 2 1 CREDIT	Limit development impacts
	H - 3 1 CREDIT	Improve and create habitat on your property
	H - 4 2 CREDITS	Place a conservation easement on habitat and corridor areas
	H - 5 1 CREDITS	Institute the recommendations of an agency personnel or specialist consultant
	H - 6 1 CREDITS	Create or preserve significant areas or characteristics of moose, raptor, Sandhill crane or shorebird habitat
	H - 7 1-3 CREDITS	Create or preserve a connecting corridor or linear habitat element

	H - 8	**Minimize light trespass from building and site**
	1 CREDIT	
	H - 9	**Innovation Credit**
	2 CREDITS	
	TOTAL	**All prerequisites must be met and at least 3 credits obtained**

Trails and Viewsheds

	T – P1 **Prerequisite**	Map on-site and nearby trails or potential trail corridors
	T - 1 **1 CREDIT**	Preserve existing trails on site in current location OR preserve an alternate connection to and through the site to existing trail
	T - 2 **1 CREDIT**	Improve existing or new trails on site
	T - 3 **1 CREDIT**	Improved Trail Construction - Site and construct the trail sustainably
	T - 4 **1 CREDIT**	Create Trail Destination Improvements
	T - 5 **1 CREDIT**	Prepare a legal agreement with organization for the long term maintenance of the trails.
	T - 6 **1 CREDIT**	Pair trail corridor with wildlife landscape feature or function preservation.
	T - 7 **1 CREDIT**	Preserve trail viewsheds
	TOTAL	All prerequisites must be met and at least 3 credits obtained