

Civil Works Futures

U.S. Army Corps of Engineers, Seattle District - Fall 2002

Ecosystem Restoration Success

Goldsborough Dammed No More

Once dammed, but cursed no more, salmon and resident trout are beginning to flourish in Goldsborough Creek again. Thanks to the removal of an aging wooden dam, one of the last largely unspoiled watersheds in south Puget Sound remains pristine.

A project to remember, the removal of Goldsborough Dam brought much attention from around the world. With little controversy and unanimous support, the U.S. Army Corps of Engineers helped remove a small privately owned dam and restored access to fish on Goldsborough Creek near Shelton, Wash.

The dam was built in 1921 to supply power to the city of Shelton. It was later used to supply water to mills on the waterfront, and then acquired by Simpson Timber Company in the 1950s to be used for cooling, fire protection and power generation.

Through the years, however, erosion would lead the structure to its demise, and in 1996, it became inoperable. Originally standing 14 feet high, streambed erosion increased its height to 31 feet. This made fish migration nearly impossible, despite repeated efforts in recent years to improve fish passage.

In May 2001, the Corps of Engineers embarked on the first steps of permanently restoring the creek. Using the engineering expertise of the Corps, the creek bed was dewatered and a construction crew channeled the 100-foot-wide Goldsborough Creek, at low flow, into a corrugated metal pipe 5 feet in diameter and 1,700 feet long.

The pipe was to be the only route downstream for young ocean-bound salmon and foraging trout for the duration of the

project. To rescue stranded fish in shallow pools during dewatering, teams of biologists and volunteers were employed. Rescued fish were transported in a tanker truck to nearby Coffee Creek, a tributary of Goldsborough Creek, for release.

The Corps began dismantling the dam shortly afterwards and major restoration work to the streambed followed.

Along the section of the creek where the dam used to stand, a total of 36 concrete weirs were installed. Consequently, what was once a treacherous journey of dam vaulting has become a gradual and safer climb for fish.



Goldsborough Creek after restoration work.

Completed in October 2001, the project was deemed highly successful by river activist groups such as American Rivers and also received international inquiries.

In an atypical public-private partnership, the Corps of Engineers, the Washington Department of Fish and Wildlife, and Simpson Timber Company collaborated to help solve a 70-year-old problem of declining salmon populations in the Puget Sound. Unlike most partnerships with the Corps, this project was able to accommodate—through agreements with Washington State—the involvement of Simpson Timber Company, a private entity. As a result, the Army Corps of Engineers was able to federally cost-share the restoration of the privately owned dam.

The Squaxin Island Tribe, the Southwest Puget Sound Watershed Council, the South Puget Sound Salmon Enhancement Group, the city of Shelton, Mason County and local legislators also supported the project towards overall success.



US Army Corps
of Engineers,
Seattle District

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USACE Environmental Operating Principles

As an integral part of our mission, the US Army Corps of Engineers is a national leader in environmental and natural resource stewardship for present and future generations. One Corps serving the Army and the Nation.

Responding to Tragedy 9/11

Corps Logistics Planning and Response Teams



From a familiar Northwest routine to chaos—immediately after the Sept. 11 disaster, Seattle District response teammates began packing their bags. Soon they'd be off to the East Coast.

The expertise of the U.S. Army Corps of Engineers is often called upon to assist in times of distress and disaster. It is one of the more admirable and visible tasks carried out by the public service agency. Seattle District has organized and readied groups of individuals available for support missions such as the attacks in New York; Washington, D.C.; and Pennsylvania.

The Federal Emergency Management Agency is the lead government agency that assesses need and determines whether to involve the Corps. Inside the Corps, once a large-scale emergency has occurred and has been assigned FEMA missions, an Emergency Response and Recovery Office is typically established. Key Corps employees deploy to the FEMA-established Regional Operations Center to work with state, local and other federal agencies to ensure a successful response effort. All requests from FEMA are filtered down from the Regional Operations Center to the office for actual accomplishment of the mission.

In 1999, the Corps standardized the way they respond to disasters by creating Planning and Response Teams for typical missions—each Division having one team of Ice, Water, Power, Temporary Housing, Temporary Roofing, Structural Safety Assessment, etc. In addition, functional support teams were also created.

The Logistics Planning Response Team is one such group which is a Division team set up to deploy to disasters to handle logistics operations. Teams from throughout the Corps deploy on a rotational basis. The teams stay intact throughout the year and attend training at least annually. Each mission gears up and winds down at different times. The Logistics Planning Response and Urban Search and Rescue teams are usually among the first to deploy.

Seattle District has an Ice Team, Logistics Planning Response Team, Structural Assessment and Urban Search and Rescue Team. Seattle also has numerous employees assigned to functional support Planning and Response Teams such as Public Affairs, Resource Management and Safety.

In the World Trade Center event, 22 people from Northwestern Division's Logistics Planning Response Team were assigned to support the U.S. Fire Administration and, in turn, the New York Fire Department in their response and recovery activities. Seven out of the 22 people departed directly from Seattle District. Working out of six Corps-owned Deployable Tactical Operations Systems units they provided administrative, supply and maintenance support. One other Seattle District member deployed under the Structural Assessment Planning and Response Team and also assisted the FEMA Urban Search and Rescue teams by making sure the rubble pile was safe to search.

Nationally, the Corps is highly regarded for its flood fighting disaster response expertise. Until recently, hurricanes, earthquakes and flood fighting were the worst of the response missions. 9-11 forced everyone to look at disaster response in a new light. In the world of disaster response, it reinforced the importance of individual efforts by team members to really make a difference. It is this combined force of individuals working together that moves mountains ... even if they're steel.

*It is the combined
force of individuals
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Greetings from Chief of Planning

Welcome to the fall issue of *Civil Works Futures*. As Chief of Planning Branch, I am pleased to share with you some of the many exciting features of the Seattle District Civil Works Program.



Mona
Thomason

The summer months have heated up, and so have the studies and projects at the Corps. We initiated construction on the Howard Hanson Dam Additional Water Supply project, a project that showcases the Corps' commitment to the environment and is an example of the application of the U.S. Army Corps of Engineers Environmental Operating Principles.

We continue to strive to be the world's premier engineering organization; trained and ready to support you at anytime and anyplace.

In this issue, we hope you enjoy the many highlights of our district to discover our organization's capabilities and how we can help you in the future.

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Civil Works Futures provides a forum for public works related news and activities affecting harbors and river basins in Washington, northern Idaho and Montana. Comments from our readers are welcomed. Please address correspondence to the above. The views and opinions expressed herein are not necessarily those of the Department of the Army.

For more information on Seattle District, visit our web site:
<http://www.nws.usace.army.mil>

Raising Waters, Testing Seepage

Howard Hanson Dam Additional Water Storage Project

As the temperature rose through the summer, the water rose beyond its normal level at Howard Hanson Dam. The Corps tested seepage characteristics of the dam embankment this past summer.

But don't worry—there was nothing wrong with the dam. The Corps did not anticipate any problems either. The tests were all a part of the Howard Hanson Dam Additional Water Storage Project that will eventually benefit fish, wildlife, downstream low flow, and the city of Tacoma's water supply as well as the water supply of Seattle and multiple other communities.

Recent drought conditions have increased the need for this project dramatically. It is anticipated that the need for additional water supply in the Puget Sound will only increase as the region's population continues to grow.

Authorized by Congress and co-sponsored by the city of Tacoma, another key element of the additional water supply project is improved fish passage. The long term goal is the reintroduction and survival of self sustaining runs of various anadromous fish in the upper Green River watershed area.

The fish passage features will include a new intake tower with new fish collection and transport facilities. There will also be a

wet-well, a fish collector, a fish lock, discharge conduit, fish transport equipment, and monitoring equipment. The design of the facilities will incorporate the latest technology and biological data.

The Howard Hanson Dam Additional Water Storage Project will also include 40 sites for habitat mitigation and restoration. These sites are targeted to sustain and improve usable habitat for both fish and wildlife.

Currently in construction phase, project completion is anticipated in 2006.



Howard Hanson Dam

Environmental sustainability is an example of the Corps seeking balance, synergy among human development activities, and natural systems by designing economic and environmental solutions that support and reinforce one another.

Conflicting Demands in the Columbia Basin

It's a changed world. Three agencies of the federal government—U.S. Army Corps of Engineers, Bureau of Reclamation, and Bonneville Power Administration—have long operated dams in the Columbia basin primarily for power generation, irrigation and flood control, as well as recreation. But as times have changed, so has the focus of dam usage. Since the early 1990s, the dams have been increasingly used to address the needs of threatened and endangered fish. In balance with the other purposes, fish recovery has become a priority in the Federal Columbia River Power System.

So what sparked the change? Since 1991, several stocks of salmon, steelhead, bull trout and white sturgeon have been listed under the Endangered Species Act. Hydropower was noted to be only one of several factors, but an inescapable one.

What is the process for attempting to reconcile these conflicting demands? The U.S. Fish and Wildlife Service and National Marine Fisheries Service administer the ESA for particular species for which they have jurisdiction. For USFWS, it includes resident fish—in this case, Columbia basin bull trout and Kootenai River white sturgeon. For the NMFS it's salmon and steelhead—the ones that go to the ocean and come back. However, all federal agencies are responsible for implementing ESA.

When a federal agency proposes to undertake or permit an action that might affect any listed species, or species proposed to be listed, ESA requires it to enter into consultation with one

or both of the services. The agency proposing the action is required to write a biological assessment of the likely effects of the action on those species and submit it to the services.

The response is a biological opinion, which describes the status and needs of the affected species, and outlines a set of measures and alternatives to be undertaken. Those measures and alternatives must be carried out if physically and legally possible and in this case include changes in dam operation, configuration, investigations or reporting requirements. Hundreds of such measures and alternatives were used in the two biological opinions of 2000 that the services prepared in response to the biological assessments of the Federal Columbia River Power System.

The Corps, Bureau of Reclamation, and Bonneville Power Administration have launched a major program to address the biological opinion measures in the Columbia basin. The Corps' Northwest Division office

in Portland manages this program for the Corps.

Seattle, Portland and Walla Walla districts are all major contributors to finding the right balance among numerous demanding needs. Seattle has a program manager, an endangered species coordinator, and a team of management and technical specialists to carry out its part. All these resources have a common goal of meeting the challenging needs of sensitive species while still providing power, flood control, irrigation and recreation.



Fish recovery is a priority.



Corps Recreation Carries Economic Clout

We all know that the Corps is in the recreation business. But do you have any idea of how big that business is?

It's huge! Really big!

The Corps is the second largest provider of outdoor recreation within the federal government, just trailing the U.S. Forest Service. Corps recreation areas hosted over 360 million visitors in 1999—21 percent of total federal recreation visitation. We have 4,340 recreation areas on 456 lakes and waterways across the country.

If you think that packs a fairly large economic punch, you're right. Latest figures show that visitors nationwide spent over \$12 billion a year in recreation at Corps projects. Economic analyses showed that this benefits businesses which supply goods and services to Corps visitors by creating 187,000 jobs resulting in \$5 billion in employee income. The total economic effect of visitor spending associated with Corps recreation accounted for 0.4

needs of present and future generations." The mission goes on to say, "The Corps integrates the management of diverse natural resource components such as fish, wildlife, forests, wetlands, grasslands, soil, air, and water with the provision of public recreation opportunities. The Corps conserves natural resources and provides public recreation opportunities that contribute to the quality of American life."

Translation: fishing, boating, water skiing, picnicking, hiking, camping, sightseeing, swimming, wildlife watching, interpretation services for nature and history—in a word, FUN. In Seattle District, that might mean playing the Albeni Falls Dam's *Campground Survivor Game* to test your skills in the wild. If you're at Libby Dam's Sunday Fun Day, there are games for the kids and cave tours in the dam, complete with cake and homemade ice cream. During Lake Washington Ship Canal's summer events you can listen to music from jazz

tent site, the new millennium's camper is looking for a place to situate a large recreation vehicle. Over time, Corps facilities have aged and are in need of maintenance or renewal.

Natural resource and recreation managers have long recognized this need. Their answer is RAMP—the Recreation Area Modernization Program. Seattle District outdoor recreation planner Jerry Gray says, "One of the main goals of RAMP is to meet customer needs with safe facilities that offer the high level of amenities and services the recreation visitor has come to expect from the Corps."

Through RAMP, the Corps is trying to obtain funding to complete a \$330 million modernization program for 225 Corps-managed recreation areas over the next five years. This modernization will use state-of-the-art materials and designs to reduce the cost of maintenance and help reduce the current maintenance backlog. Modern facilities will also enhance the visitor's willingness to pay user fees to help the Corps recreation program become self-sustaining.

What is biggest challenge to Seattle District's recreation facilities? Bob Rawson will tell you that "the greatest needs in Seattle District are to make our recreation areas accessible to all visitors, to modify our camp sites in order to better accommodate today's recreational vehicles, and to provide electric and water hookups for the camp sites."

Bob and the natural resources staff from Seattle to Libby, Mont., are hard at work making sure that our recreational visitors have a great place to play.



According to Corps figures, visitors' total trip spending during FY00 totaled \$63.89 million for 2.6 million visitors.

Corps recreation is a power to be reckoned with.

percent of employee income and 0.5 percent of all jobs in the United States.

According to Bonnie Ecker, a senior outdoor recreation planner in the Seattle District's natural resources management section, "In Seattle District, visitors total trip spending during FY00, excluding durable goods, for their entire trip—not just in the area of Corps projects—totaled nearly \$64 million for 2.6 million visitors."

Corps recreation is a power to be reckoned with. Recognizing this, the Corps' National Operation and Maintenance Program places recreation as a "business function," along with hydropower, navigation, environmental stewardship, and flood control.

What comprises Corps recreation? In part, the Corps' Natural Resource Management Mission is to "...conserve those natural resources, consistent with ecosystem management principles, while providing quality public outdoor recreation experiences to serve the

to classical, watch salmon migrating through the fish ladder, or lock through on your boat.

Bob Rawson, chief of the district's project support section, notes, "Recreation is increasingly seen as an important business function. This is not only because of the tremendous economic benefits of the program, but also because of the opportunity it gives us to interact with a large percentage of the American population. Our interpretive services program helps educate the public as to the diverse missions of the Corps and their benefits to the country."

The growing recognition of Corps recreation as a potent economic force has brought with it a recognition that recreation needs are changing. Most Corps recreation facilities were constructed in the 1960s and 1970s to meet the public's needs at that time. Visitors' expectations have changed significantly. While the 1960s camper was looking for a

Going Strong

Highlights of Seattle District Civil Works

Study Phases

Puyallup River Basin Study

A reconnaissance study is underway in the Puyallup watershed to investigate opportunities for ecosystem restoration and flood damage reduction.

The non-federal sponsor for this project is Pierce County. Other participating entities include the Puyallup tribe, King County and various cities in the Basin.

The feasibility phase is scheduled to initiate June 2003. The study will cover the historic Puyallup River Delta and the Puyallup, Carbon and White River.

Chehalis River Basin Ecosystem Restoration Study

Sponsored by Grays Harbor County, this feasibility study is evaluating the water resource needs of the entire Chehalis River Basin.

Environmental restoration and flood damage reduction opportunities are being studied to both recover the degraded ecosystem, primarily for salmonid recovery, and provide ancillary flood damage reduction benefits to the basin. Feasibility study completion is anticipated by December 2005.

Lake Washington Ship Canal Basin Restoration Study

The Lake Washington Basin Restoration Study team is evaluating two water-related issues in the greater Lake Washington basin.

The team is studying improved salmon migration and survival through water conservation and changes at the Hiram M. Chittenden Locks. They are also researching the creation of specific habitat improvements throughout the basin and estuary for fish and wildlife. The listing of Puget Sound Chinook as a threatened species has strengthened the need for specific habitat projects in the basin.

Sponsored by the city of Seattle and King County, phase one of this study is scheduled for completion by September 2004. Phase two completion is anticipated by 2006.



Chehalis River - Environmental restoration and flood damage reduction opportunities are both being studied.

Puget Sound Nearshore Ecosystem Restoration Project

A General Investigation Reconnaissance study conducted in 2000 found that major human modifications along the Puget Sound shoreline have resulted in a significant loss in estuarine and nearshore habitats.

The purpose of this feasibility study is to identify the fundamental causes of ecosystem degradation within the Puget Sound Basin and evaluate potential solutions to restore and preserve critical nearshore habitat.

Sponsored by the Washington Department of Fish and Wildlife, this study is anticipated to be completed within six years, followed by preliminary engineering and design to be completed within two years. Restoration and preservation construction is projected to begin in 2008.

Skagit River Flood Damage Reduction

The area considered for flood damage reduction in this feasibility study begins downstream of Sedro Woolley. Sponsored by Skagit County, it continues south through the cities of Burlington and Mount Vernon and on to

Skagit Bay.

A complex computer hydraulic model of the Skagit Basin has just been completed, and average annual flood damages are being computed. Principal alternatives currently being evaluated in detail include a diversion of flood flows to the northern Swinomish channel, setback levees, and urban ring dikes.

The goal is to develop a flood damage reduction plan that fits federal law and policy within the capability of the local sponsor. It is anticipated that the feasibility study phase will be completed by September 2004.



Lake Washington Ship Canal

Navigation Project Maintenance and Activities Schedule 2002

Grays Harbor Inner Channels FY02/03 — Clamshell maintenance dredging advertised July 2002.

Bay Center Channel — Clamshell maintenance dredging began June 15 in Willapa Harbor, Wash.

Ediz Hook Beach Nourishment — Truck haul placement of up to 50,000 tons of cobble and gravel materials begins in September at Port Angeles, Wash.

Neah Bay Breakwater — Repairs scheduled for placement of armor rock began in August at Neah Bay, Wash.

Swinomish Channel — Clamshell maintenance dredging to remove controlling shoals is scheduled for November.

Quillayute River — Pipeline maintenance dredging is scheduled for October.

Stillaguamish River Basin Restoration

The Stillaguamish River Ecosystem Restoration project study team comprehensively evaluated the entire river watershed to develop feasible restoration activities to restore discrete sites, which collectively correct widespread insidious deterioration of the ecosystem.

The project feasibility study is complete and identifies 10 sites to conduct restoration activities. The project team is discussing with the local sponsor the design agreement leading to the next project phase, which is preconstruction engineering and design. The design and construction, if appropriations are received, will take 10 years.

Located in Snohomish County in northwestern Washington, the local sponsor for the feasibility phase was Snohomish County. The Stillaguamish and Tulalip Tribes are co-managing the project.

North Jetty at Grays Harbor

Sponsored by the Port of Grays Harbor, this project addresses the structural integrity of the North Jetty which supports the Grays Harbor bar and entrance channels for safe and reliable navigation.

A North Jetty Major Maintenance contract is scheduled to be completed in FY03, subject to the availability of funding.

Puget Sound and Adjacent Waters Restoration

The Puget Sound and Adjacent Waters Restoration project provides a comprehensive program authority to construct individual restoration projects at various sites throughout the Puget Sound.

The project, or more accurately program, is currently being discussed in Congressional appropriation subcommittees with the first year funding as early as federal fiscal year 2003.

The geographic scope reaches all watersheds within the Puget Sound basin, including rivers, creeks, lakes, bogs, estuaries, and marine waters.

Engineering Design and Construction Phases

Green-Duwamish River Basin Restoration

This \$113 million project, consisting of 45 individual projects to be implemented over a 10-year construction period, addresses ecosystem degradation problems in the Green-Duwamish basin. The first phase of engineering and design work for habitat restoration projects is in progress now. Ten projects under consideration are anticipated for construction in 2004.

Sponsored by King County and supported by cities within the basin, this project emphasizes the restoration of critical habitat within the basin with full coordination of project design with interested federal, state and local agencies and tribes. Project features include reconnecting oxbows, levee removals and setbacks, placement of woody debris and culvert removal.

Centralia Flood Damage Reduction

Located in the upper Chehalis River Basin near the cities of Centralia and Chehalis in southwestern Washington, this project focuses on flood damage

reduction. The draft General Reevaluation Report and draft Environmental Impact Statement have been completed. The recommended alternative plan includes setback levees, modifications to the Skookumchuck Dam and nonstructural actions.

Sponsored by Lewis County, the project is currently seeking Water Resources Development Act 2002 approval from Congress which means construction could begin as early as spring 2005.

Mud Mountain Dam Right Bank Stability

Mud Mountain Dam currently has the "Right Bank Stability" construction project ongoing. Its scheduled completion is September this year. The work involves removal of 200,000 cubic yards of material on the right bank of the reservoir above the gate control structure. The work will reduce the likelihood of a slide impacting the reservoir operation as a result of earthquake. The dam is located about six miles east of Enumclaw, Wash., on the White River. The work is fully funded by the federal government. The construction project was designed by INCA Inc.

Carrying On...

Recently Completed Projects

Hamm Creek

A partnership between the Corps of Engineers and King County, the environmental restoration (Section 1135) consisted of excavating a new channel section and restoring tidal and nearshore habitat.

Prior to completion of the project, Hamm Creek traveled the last 2,000 feet of its length in a culvert, making fish passage difficult for many salmon and trout species.

Located in south Seattle across the Duwamish River from Boeing Field, it was completed in two phases spanning 2 years—the first year consisting mostly of excavation and general “rough-in” of the channel, and the second year finally connecting the existing Hamm Creek and completion of in-stream structures.

The new channel has six separate control structures, five ponds, one sediment pond, and numerous wide and narrow riffle sections.

Final construction cost of the project approximated \$2.3 million.

Deepwater Slough

The Deepwater Slough Section 1135 Ecosystem Restoration project was completed in October 2000.

Skagit County, Skagit System Cooperative, and the Washington Department of Fish and Wildlife were exploring ways to restore estuary in the Skagit River Wildlife Area. They developed a plan that would restore large areas on the Farmed Island Segment and Milltown Island.

In 1998, the Corps became formally involved on the request of the WDFW. The key feature of the project opened up Deepwater Slough and other portions of the Farmed Island Segment through the setting back large portions of levee opening over 204 acres to riverine and tidal influence.

The project now provides critical habitat to salmonid juveniles as they make their transition from fresh water to the salt water. Total construction for the project was approximately \$2 million.

Bogachiel

Bank erosion and over-bank flooding threatened the only access and potable water line supply to the Quileute Indian Reservation located on the Olympic Peninsula near La Push.

Emergency flood fight activities were undertaken in 1999 and 2000 to protect this only access road. A berm was built to reduce the frequency of over-bank flooding, slope protection consisting of armor rock and rock groins were constructed to deflect the river’s flow away from the eroding bank.

Approximately 4 feet at its highest point, the berm was armored on the back side to prevent erosion in the event of overtopping. The groins were constructed with woody debris

to incorporate them to add habitat value. Construction was completed in October 2000.

The district is still looking in to a more permanent solution, working with the Quileute Indian Tribe and state and local agencies.

Lake Washington Smolt Flumes

Fish passage at the Locks is key to salmon survival in the Lake Washington watershed, with every salmon and steelhead going in and out through this route. Because of its importance, local, state and federal agencies; local governments; and the Muckleshoot Tribe joined together to improve fish passage at the Locks.

The overall project to improve fish passage includes seasonal installation of smolt passage flumes in two spillway gates to help smolts safely out to sea,



Smolt Flumes - Fish passage at the Locks is key to salmon survival in the Lake Washington watershed.

strobe lights around the filling culvert entrances to discourage small fish from the entrance area where smolts may be pulled into and injured or killed in the culverts, and controlled large lock fills to reduce the force that pulls smolts into the filling culverts.

South Jetty at Grays Harbor

Sponsored by the Port of Grays Harbor, this project addressed the structural integrity of the South Jetty which supports the Grays Harbor bar and entrance channels for safe and reliable navigation.

The final phase of this project to repair the jetty was completed in May 2002.

Tommye Owings



Tommye Owings is a small woman big on enthusiasm and commitment. As the new Native American Coordinator, she’ll likely be out and about often,

involved with all sorts of people and projects around the district.

In her role, she works with Division, Headquarters, and other districts and divisions on Native American issues concerning policy, consultation and protocol. She maintains expertise in federal and state policies, regulations, treaties and laws regarding Native American tribes.

How Can We Help You?

On March 26, during the dedication of the Davis Pond Fresh Water Diversion Project in Louisiana, Chief of Engineers Lt. Gen. Robert Flowers announced the U.S. Army Corps of Engineers Environmental Operating Principles to guide the Corps in all of its works.

The U.S. Army Corps of Engineers has reaffirmed its commitment to the environment by formalizing a set of “Environmental Operating Principles” applicable to all its decision-making and programs.

These principles foster unity of purpose on environmental issues, reflect a new tone and direction for dialogue on environmental matters and ensure that employees consider conservation, environmental preservation and restoration in all Corps activities.

Environmental sustainability can only be achieved by the combined efforts of federal agencies; tribal, state and local governments; and the private sector, each doing their part, backed by the citizens of the world. These principles help the Corps define its role in that endeavor.

General Flowers says the principles provide the Corps with direction on how to better achieve its stewardship of air, water and land resources, while demonstrating the connection between water resources, protection of environmental health and the nation’s security.

By implementing these principles, the Corps will continue its efforts to develop the scientific, economic and sociological measures to judge the effects of its projects on the environment and to seek better ways of achieving environmentally sustainable solutions.

The principles are consistent with the National Environmental Policy Act; the Army’s Environmental Strategy with its four pillars of prevention, compliance, restoration and conservation; and other environmental statutes and Water Resources Development Acts that govern Corps activities. They are being integrated into all project management processes.

Environmental Operating Principles

- Strive to achieve environmental sustainability. An environment maintained in a healthy, diverse and sustainable condition is necessary to support life.
- Recognize the interdependence of life and the physical environment. Proactively consider environmental consequences of Corps programs and act accordingly in all appropriate circumstances.
- Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.
- Continue to accept corporate responsibility and accountability under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems.
- Seek ways and means to assess and mitigate cumulative impacts to the environment; bring systems approaches to the full life cycle of our processes and work.
- Build and share an integrated scientific, economic, and social knowledge base that supports a greater understanding of the environment and impacts of our work.
- Respect the views of individuals and groups interested in Corps activities, listen to them actively, and learn from their perspective in the search to find innovative win-win solutions to the nation’s problems that also protect and enhance the environment.

Please let us know how we can we help you? We look forward to serving you in your future civil works projects.

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