CENTER FOR
WATERSHED PROTECTION

Leading the Nation with Clean Water Solutions

The Center for Watershed Protection (CWP)'s mission is to advance clean water resources and healthy ecosystems through responsible land and water management. Our experienced staff of scientists, planners and environmental professionals are the technical experts who help municipalities, advocates, policymakers and citizens get clean water projects in the ground. Founded in 1992, CWP began as a nonprofit organization dedicated to research and education on watersheds. With an initial focus on protecting urban streams from the impacts of land development, the organization has grown to become a national leader on stormwater management and watershed planning. In addition to its Fulton, Maryland headquarters, CWP maintains satellite offices in Pennsylvania, New York, Virginia, Michigan, New Jersey, and South Carolina. Our programs include:

- Research
- Watershed and Stormwater Consulting Services
- Training
- Membership

RESEARCH

Research: CWP conducts applied research to better understand the influence of land use activities on water resources and develop and quantify the benefits of best management practices (BMPs) to mitigate these impacts. Our strength lies in translating scientific information into practical guidance and we have published more than 270 guidance manuals, articles and reports to assist our national audience with their watershed and stormwater management needs.

To learn more, contact Karen Cappiella at kc@cwp.org.

CONSULTING

Watershed and Stormwater Consulting Services: CWP provides consulting directly to state and local governments, watershed organizations, environmental consultants and other clients. Services provided include:

- Watershed assessment and plan development
- Stormwater retrofit surveys, design and implementation
- Local development code and ordinance review
- Stormwater design manual development
- Stormwater program and regulation development
- Local stormwater program audits
- Stream restoration project identification and crediting
- Geographic Information System (GIS) services
- Urban tree canopy program assistance
- Stakeholder meetings and public outreach
- Water quality modeling
- Guidance in complying with federal, regional and local water permits and requirements
- Illicit discharge surveys and program support

To learn more, contact Greg Hoffmann at gph@cwp.org or Beth Uhler at beu@cwp.org

TRAINING

Training: CWP provides high quality webcasts for stormwater and watershed professionals on a variety of subjects related to the industry; brings together the brightest minds in the field to network and share research on a diverse set of watershed and stormwater topics through our National Conference and specialty conferences; and offers customized training through our workshops and Clean Water Certificate Training Program. CWP has reached over 30,000 professionals through our trainings and conferences.

To learn more, contact Karen Titus at kmt@cwp.org.

MEMBERSHIP

Membership: The Center for Watershed Protection Association (CWPA) is a national network of professionals dedicated to advancing the state-of-the-art in watershed and stormwater management. CWPA is a forum for sharing ideas, resources, expertise, and information pertinent to watershed and stormwater professionals. CWPA provides training, education professional development and an Online Watershed Library and fosters collaboration among its members.

To learn more, contact Karen Titus at kmt@cwp.org.

CWP meets the Standards for Charitable Accountability set forth by the Better Business Bureau's Wise Giving Alliance and is a platinum level participant in the GuideStar Exchange for nonprofit transparency. To learn more about our organization, visit our website at www.cwp.org.

QUALIFICATIONS FOR SELECTED CWP SERVICES

Watershed Planning

CWP promotes an approach to watershed management that considers all stages in the land development process from land use planning through land development and post occupancy. This approach to watershed management was first advanced in CWP's *Rapid Watershed Planning Handbook*. CWP has also developed an *Urban Subwatershed Restoration Manual Series* which presents an integrated framework for urban watershed restoration, outlines methods for desktop and field assessment and stakeholder management to develop effective small watershed restoration plans, and describes seven major practices used to restore urban watersheds. While CWP's approach to watershed planning has evolved over the years, some constant features have included:

- a focus on small watersheds (e.g., less than 100 mi^2) and their subwatersheds (e.g., 10-20mi^2) as the appropriate scale for planning and implementation;
- a focus on urban and urbanizing watersheds;
- a rapid approach to watershed assessment and plan development;
- close coordination with local partners who are committed to watershed restoration; and
- the inclusion of specific recommendations with guidance for their implementation.

CWP has been applying these principles to develop watershed-based plans since its inception in 1992. To date, we have developed or contributed to the development of more than 122 plans in 16 states and U.S. territories. Watershed planning services can include local program and code evaluations, GIS analysis, chemical and biological data analysis, field assessments of stream corridors and upland areas, development of concept designs for recommended projects, stakeholder meetings, project ranking, modeling to estimate pollutant load reductions, plan development, stormwater funding strategies and more. Many of our plans have been developed to meet total maximum daily load (TMDL) or municipal separate stormwater sewer system (MS4) permit requirements and several address the USEPA's nine minimum elements for watershed-based plans.

Project Highlight: Maryland Coastal Bays Watershed Plan

Stormwater Retrofits

CWP has expertise in all aspects of stormwater BMPs, from conceptual planning and design to implementation. CWP conducted its first retrofit inventory in 1994 in Westminster, Maryland, which resulted in the construction of innovative wetland retrofits and stream restoration projects to enhance the quality of a degraded urban stream. In 2007, CWP published its *Urban Stormwater Retrofit Practices Manual*, a first-of-its-kind national manual that provides guidance on assessing retrofit potential at the subwatershed level and offers tips on retrofit design, permitting, construction, and maintenance. Over the years, CWP has used its *Retrofit Reconnaissance Inventory* protocol introduced in the manual to evaluate the feasibility of installing stormwater retrofit projects in more than 75 urban watersheds.

CWP has worked with communities to also design and build stormwater retrofit practices such as bioretention, swales, wetlands, green streets and pond retrofits. Our role has included development of conceptual designs, coordination of topographic surveys and geotechnical investi-gations, development of final construction plans, permitting, bid/procurement document preparation, and construction oversight for more than 129 stormwater retrofit projects. The projects are primarily located in Maryland and Virginia, with a handful in Pennsylvania, South Carolina and the Pacific Islands, and therefore cover a variety of landscape settings and conditions. Some of the retrofits were simple demonstration projects on public land implemented with volunteers while others were highly engineered and done in partnership with local governments and experienced contractors. CWP employs several licensed professional engineers who contribute to CWP's design work.

Project Highlight: Green Infrastructure Assessments for Coastal Resilience

QUALIFICATIONS FOR SELECTED CWP SERVICES

Illicit Discharge Detection and Elimination (IDDE) Programs

CWP offers assistance to municipalities on developing and improving programs to detect and eliminate illicit discharges. Specific services provided by CWP include: IDDE program reviews resulting in prioritized recommendations with estimated costs and timeframes; staff training on IDDE program basics and IDDE protocols to increase detection and enforcement capacity; development of a system to quantify and document pollutant reductions from illicit discharge elimination that ties in with regulations such as the National Pollutant Discharge Elimination System (NPDES) program and TMDLs; development of regulatory guidance for IDDE; and conducting field assessments to identify and track the source of illicit discharges.

CWP "wrote the book" on IDDE, literally, producing a national guidance manual in 2004 called *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments* that presents technical guidance for NPDES Phase II communities on how to build a local IDDE program. The 15-chapter manual contains information on establishing adequate legal authority and local ordinances; developing accurate mapping resources; conducting outfall reconnaissance investigation; using indicator monitoring to find and isolate discharges, techniques to prevent illicit discharges from generating sites, and methods to scope and cost a local IDDE program. Since then, CWP has assisted more than two dozen communities with implementing the guidance in the manual and has continued to refine and improve IDDE protocols based on this experience. A recent focus of CWP's assistance to communities on IDDE has been to quantify pollutant loads from illicit discharges so that communities can ultimately take credit for eliminating potentially significant sources of nutrients and bacteria. Therefore, CWP's work has supported the proposed inclusion of illicit discharge removal as a credited practice in the Chesapeake Bay Program's Watershed Model.

Project Highlight: Targeting Outfall Screening Based on Pollution Risk in Baltimore County

Review of Municipal Codes and Ordinances

In 1998, CWP developed the *Better Site Design Handbook* to provide guidance to communities seeking to use local development rules to ensure better conservation of natural areas and prevention of stormwater pollution. The handbook outlines 22 principles for more water quality-friendly development and provides a detailed rationale for each principle. The manual comes with a Codes and Ordinances Worksheet (COW), which provides a standardized scoring system for communities to evaluate their own local regulations against the 22 benchmark principles. The COW is used as a tool for reviewing local development regulations to identify code changes that reduce impervious cover, conserve natural areas and manage stormwater runoff. CWP has used the COW to review codes and ordinances in more than 124 communities and recently made revisions to the tool so that it can be used to identify potential barriers to use of green infrastructure practices.

CWP provides services to local governments that include: code and ordinance reviews related to site design, stormwater, urban tree canopy and other topics; engaging the community in a local site planning roundtable process to come to consensus on regulatory changes; developing model ordinances; and providing training and assistance related to review and revision of local regulations.

Project Highlight: Building Tree-Friendly Policies in the City of Charlotte

QUALIFICATIONS FOR SELECTED CWP SERVICES

Clean Water Certificate Training (CWC) Program

CWP's CWC Training Program for workforce development, the first environmental program in the nation to receive ANSI National Accreditation Board (ANAB) accreditation, teaches participants stormwater installation and maintenance skills and job-readiness competencies so they can secure living-wage jobs in the stormwater industry. The goals of the CWC Training Program are to:

- Provide the stormwater industry access to an "on the job ready" workforce,
- Expand the skilled stormwater industry workforce to help meet the demand for stormwater installation and maintenance, and
- Increased opportunity for individuals in low-income communities, under or unemployed individuals to secure a living wage job leading to financial stability

Through this program, CWP partners with workforce development programs to help connect program graduates with a network of stormwater industry employers. Launched in Baltimore in 2017, the CWC Training Program has also been implemented in New Orleans, LA, Kansas City, KS, Richmond, VA, and Cincinnati, OH.

Project Highlight: Life-Changing Green Jobs Program Launches in Baltimore

Stormwater Design Manuals and Regulations

CWP has been a national leader in developing stormwater management manuals and design criteria at the state level. The specific design criteria are adapted to the climate, topography and regulatory environment of each state. Our manuals share some common elements, including: design methodology and computation procedures; detailed BMP specifications; a cogent and logical process for incorporating low-impact development (LID) and green infrastructure practices into the states' compliance systems; web-based tools; and an extensive stakeholder input process. CWP has led or had a significant role in the development of stormwater design manuals for the states of Maryland (2000), New York (2001), Vermont (2002), Minnesota (2005), West Virginia (2012), Virginia (2013), District of Columbia (2013), South Carolina (2015), Georgia (2008 and 2015), and Delaware (2016), and a regional manual for several counties in the Southern Lowcountry region of South Carolina (2020). CWP also co-authored BMP design specifications for the Commonwealth of the Northern Marianas Islands and Guam in 2010 as well as a guidance document for implementing LID practices in the Pacific and Caribbean islands in 2014. In addition to developing design criteria, CWP has assisted states with other aspects of their stormwater management programs, including developing guidance on stormwater BMP maintenance for New York, updating the District of Columbia's Erosion and Sediment Control Manual, developing guidance for New Jersey on incorporating green infrastructure into long term control plans, and developing guidance manuals for West Virginia and Massachusetts on developing offsite stormwater compliance programs.

CWP's work on state manuals in Delaware and Virginia also included review and revision of the stormwater regulations. In Virginia, CWP developed the Runoff Reduction Method, an innovative approach to crediting the pollutant removal and runoff volume reduction performance of stormwater BMPs, as a compliance tool for the Virginia stormwater regulations. CWP subsequently assisted several Virginia localities with developing and/or revising their stormwater ordinances. CWP has also assisted the Town of Bluffton, SC with stormwater ordinance revisions, developed an ordinance for construction and post-construction stormwater management, to be used as a model for other municipalities in the Caguas/Rio Grande watersheds in Puerto Rico, updated the Guam erosion and sediment control regulations, assisted Florida with a review of their stormwater regulations, and assisted New Castle County, DE with their Drainage Code updates.

Project Highlight: Innovative Stormwater Management in the District of Columbia