

WATERWAYS (2000, R2001, R2007, R2020)



Policy Statement

The American Society of Landscape Architects believes waterways and their associated watersheds are vital to ecosystem health, societal well-being, and economic stability. Clean, healthy waterways support rich aquatic and terrestrial diversity and include significant heritage and recreational resources. The Society supports the protection, rehabilitation, and enhancement of waterways and their corridors through collaborative planning, design, and management. ASLA advocates for policies at all levels that ensure waterway resilience, integrity, function, and enjoyment.

Rationale

The importance of waterways is broad and multi-faceted, from cultural, spiritual, and historical factors to being critical from an economic standpoint, including agriculture, transportation, recreation, and tourism. For example, river-related recreation and tourism contribute over \$97 billion annually to the United States economy.ⁱ [<https://www.americanrivers.org/rivers/>] The complexity of managing these roles requires a collaborative and far-reaching approach. However, holistic planning, design, and management of these resources can be challenging due to jurisdictional boundaries and political parameters.

Waterways include rivers, canals, streams, creeks, lakes, ponds, estuaries, marshes, and intracoastal waters. The growing understanding of hydrological systems also emphasizes the importance of underground and ephemeral waters. Floodplains and other waterway ecosystems are critical components for recharging groundwater and protecting potable water supplies.

Clean water is vital to public and environmental health and is best managed and protected at a watershed level. Floodplains and other waterway ecosystems are important in recharging groundwater and protecting drinking water quality and quantity. “Clean water” is more than safe drinking water. It also includes protection from water-borne disease, water for irrigation of crops, water-related recreational uses, and access to fish and seafood that are free of contaminants and safe to eat. Clean, accessible waterways attract new capital investment and support existing facilities and uses. Common threats to water quality include:

- chemical pollution (runoff, infiltration, or discharge)
- storm water systems
- agriculture
- fertilizers and insecticides
- organic pollution (including carbon- based chemicals, manure, sewage, and septic systems)
- erosion and sedimentation
- thermal pollution
- solid wastes and debris
- harmful bacteria

Climate change has and will continue to exacerbate these threats. However, healthy, functioning ecosystems, especially the waterways that are vital to other ecosystems, are important to climate regulation at global and local levels.



Waterways have historically determined the location and character of many American cities and remain an integral part of each community's history and identity. Increased community engagement in protecting waterways, the ever-rising popularity of greenways and blueways, and the successes of water-based urban spaces demonstrate how strongly the public values waterways and their access to them.

The most comprehensive attempt at protecting our waterways was the Federal Water Pollution Control Act of 1972, currently the Clean Water Act. At its core is the mandate to restore and maintain the appropriate chemical, physical, and biological quality for the diverse waters of the United States. "Waters of the United States" is a politically-determined regulatory term for a subset of our waterways that fall under federal jurisdiction, and are generally limited to waters that could be used for interstate commerce, their tributaries and adjacent wetlands. The United States Environmental Protection Agency (EPA) regulates the discharge of pollutants into waters of the United States. Amendments to this act and other laws and policies at federal, state, and local levels attempt to address our evolving understanding and needs. Most states and many municipalities have enacted their own regulations that provide greater levels of protection and address regional priorities for management of their waterways.

National and state programs have designated thousands of miles of waterways for various levels of protection, but often such designation does not adequately address the impacts created by adjacent and upstream land uses. Understanding waterways as part of larger systems has not always been reflected in national and local regulations and management. As a result, waterway planning, acquisition, and protection from adjacent land uses often remains more a goal than a reality.

Many waterways are cleaner than they have been in the past due to public outcry and demand. However, in 2009, the EPA reported that 46% of river and stream miles were in poor biological condition and 1 in 4 river and stream miles lacked healthy shoreline vegetation, thus making the waterways more vulnerable to flooding, pollution, erosion & sedimentation, and other problems.ⁱⁱ Waterways provide more ecosystem services than any other ecosystem type.

"In their review of the value of the world's ecosystem services, Costanza et al. (1997) found that floodplains were the second ranked ecosystem type, behind only estuaries, in terms of their per-hectare value to society. Despite representing less than 2% of Earth's terrestrial land surface area, floodplains provided approximately 25% of all "terrestrial" (i.e., non-marine) ecosystem service benefits. Other researchers have attempted to quantify the benefits provided by floodplains. For example, Sheaffer et al. (2002) estimated that replacing the services provided by functioning floodplains (e.g. through constructed features) would cost approximately \$150,000 per hectare."ⁱⁱⁱ

Waterways should be managed from a multi-use approach, including scenic and cultural values, wildlife resources, and recreational potential as well as appropriate industrial, agricultural, and commercial development potential. The acquisition of land, prohibition of construction in floodplains and wetlands, the establishment of greenways, blueways, and trail linkages are tools that will help to protect and promote waterways. These tools can have economic significance by stimulating heritage tourism in the historic towns along waterways, improving recreational access, and supporting appropriate development.

Planning for an entire watershed, designation of appropriate land uses near waterways and management of upland vegetation as well as riparian buffers to protect streambank erosion and filter adjacent agricultural runoff is required to protect water resources. These



also aid in better regulating runoff and flooding, enhancing base flow, limiting nutrient loading from point and non-point sources and enhancing recharge of affected aquifers.

Landscape architects play key roles in protecting waterways and addressing threats to waterways while facilitating appropriate uses that are cost efficient and creative. Expertise in ecologically-based land use planning, design, and management at many scales makes landscape architects eminently qualified to address many of the complexities of waterway issues. Professional expertise includes:

- stormwater management
- rehabilitation of damaged ecosystems
- flood resiliency
- minimizing erosion
- increased water quality
- land use planning and management
- facilitating transportation, commercial fishing, and recreational opportunities

Pressures and threats to waterways will continue to increase; consequently, wise planning, design, and management will become even more crucial as we try to manage resources in light of expanding development and demands. Shifting and growing populations, failures of existing infrastructure, climate change, and other factors also come into play. Over the past 50 years, heavy downpours and storms have increased in intensity and frequency, resulting in devastating flooding and damage. These often occur in areas that were previously considered safe and/or appropriately designed and managed.

“In the 21st century, floods have caused more property damage and fatalities in the U.S. than any other type of natural disaster. As the climate changes, bringing more frequent and intense storms and floods, the communities living near streams and rivers and on our coasts are increasingly at risk; and increasing numbers of communities are turning to natural storm and flood management as more sustainable, effective, and cost-efficient approaches....”^{iv}

Development, land use, and management will inevitably change. “The average 100-year floodplain is projected to increase 45 percent by the year 2100, while the annual damages from flooding are predicted to increase by \$750 million.”^v

Landscape architects will play a vitally important role in creatively addressing environmental challenges while helping meet multiple goals. For example, green infrastructure for stormwater management mimics ecological processes to help protect, restore, and enhance hydrologic systems (including floodplains, wetlands, and waterways) while meeting human needs. Additionally, these efforts provide numerous benefits, ecologically, culturally, and economically. The EPA and other entities recommend green infrastructure as an important component to help manage both localized and riverine flooding.^{vi} Landscape architects will be powerful allies in meeting coming challenges. “Green infrastructure projects have great potential to reduce flood risks for people while maintaining or restoring the diverse benefits that river-floodplain systems provide. With climate change, population growth and aging dams and levees contributing to rising flood risk, green infrastructure solutions can play a key role in increasing communities’ safety and resilience to floods.”^{vii}

Resources:

<https://www.americanrivers.org/rivers/>
<https://www.rivers.gov/wsr-act.php>



<https://www.epa.gov/laws-regulations/summary-clean-water-act>
<https://www.americanrivers.org/threats-solutions/clean-water/>
<https://www.nrdc.org/stories/6-ways-you-can-help-keep-our-water-clean>
https://www.cdc.gov/healthywater/drinking/public/water_sources.html
<https://www.awra.org/>

ⁱ <https://www.americanrivers.org/rivers/>

ⁱⁱ https://www.epa.gov/sites/production/files/2016-03/documents/fact_sheet_draft_variation_march_2016_revision.pdf

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[https://www.conservationgateway.org/ConservationPractices/Freshwater/HabitatProtectionandRestoration/Documents/A Flood of Benefits - J.Opperman - May 2014.pdf](https://www.conservationgateway.org/ConservationPractices/Freshwater/HabitatProtectionandRestoration/Documents/A%20Flood%20of%20Benefits%20-%20J.Opperman%20-%20May%202014.pdf)

^{iv} <https://medium.com/naturally-stronger/full-report-naturally-strong-d3459c2d521a>

^v <https://www.epa.gov/green-infrastructure/manage-flood-risk>

^{vi} <https://www.epa.gov/green-infrastructure/green-infrastructure-design-and-implementation>

^{vii}

[https://www.conservationgateway.org/ConservationPractices/Freshwater/HabitatProtectionandRestoration/Documents/A Flood of Benefits - J.Opperman - May 2014.pdf](https://www.conservationgateway.org/ConservationPractices/Freshwater/HabitatProtectionandRestoration/Documents/A%20Flood%20of%20Benefits%20-%20J.Opperman%20-%20May%202014.pdf)