

In developing permit requirements for point source discharges, green infrastructure alternatives can be included in antidegradation reviews and use attainability analyses.



## Water Quality Standards

This factsheet is the sixth in a series of six on integrating green infrastructure concepts into permitting, enforcement, and water quality standards actions.

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## Integrating Green Infrastructure Concepts into Permitting, Enforcement, and Water Quality Standards Actions

*This factsheet is the sixth in a series of six factsheets in the U.S. EPA Green Infrastructure Permitting and Enforcement Series ([http://water.epa.gov/infrastructure/greeninfrastructure/gi\\_regulatory.cfm#permittingseries](http://water.epa.gov/infrastructure/greeninfrastructure/gi_regulatory.cfm#permittingseries)). This series describes how EPA and state permitting and enforcement professionals can incorporate green infrastructure practices and approaches into National Pollutant Discharge Elimination System (NPDES) wet weather programs, including stormwater permits, Total Maximum Daily Loads (TMDLs), combined sewer overflow (CSO) long-term control plans (LTCPs), and enforcement actions. This series builds upon EPA's continued investment in green infrastructure and low impact development. Existing EPA authority, guidance, and agreements enable EPA Regions and state agencies to work with permittees to include green infrastructure measures as part of control programs.*

**For additional resources on green infrastructure, go to the EPA Green Infrastructure Web page:** <http://water.epa.gov/infrastructure/greeninfrastructure/index.cfm>.

**Key green infrastructure guidance issued to date can be found at:** [http://water.epa.gov/infrastructure/greeninfrastructure/gi\\_policy.cfm](http://water.epa.gov/infrastructure/greeninfrastructure/gi_policy.cfm).

## Introduction

Pursuant to Section 303 of the Clean Water Act (CWA), States and authorized Tribes establish water quality standards for the waters of their jurisdiction. Water quality standards include designated uses (e.g., swimming, wading, public water supply, habitat for aquatic species), water quality criteria (numeric and narrative expressions of the water quality characteristics needed to protect designated uses), and an antidegradation policy and implementation procedures.

The purpose of this factsheet is to describe how green infrastructure approaches can be considered as part of an Antidegradation Review or Use Attainability Analysis.

## Antidegradation

Antidegradation provisions are intended to protect existing uses and high quality waters, including outstanding national resource waters (sometimes referred to as Tier 3 waters) and water bodies where water quality is better than the criteria specified to protect designated uses (sometimes referred to as Tier 2 waters).

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In developing permit requirements for point source discharges, permit writers need to include requirements to ensure the discharges achieve water quality standards, including antidegradation provisions. For Tier 2 waters, if a permittee proposes a new or increased discharge, an Antidegradation Review or Antidegradation Demonstration must be completed.

An Antidegradation Review typically considers:

- A thorough alternatives analysis, examining whether reasonable non-degrading or less-degrading alternatives exist (i.e., whether allowing the lowering of water quality is "necessary");
- Social/economic importance of the new or increased discharge;
- Implementation of highest statutory and regulatory requirements for other point sources;
- Cost-effective and reasonable best management practices for nonpoint sources; and
- Public participation and intergovernmental coordination.

In many cases an antidegradation alternatives analysis for a new or increased point source discharge may focus on treatment technologies for the waste stream. The permittee and/or State or Tribe may arrive at a conclusion there is not an available/feasible treatment technology that could be used to better control the discharge (i.e., to avoid a new or increased discharge). However, there is a much wider

range of controls that permittees, States, and/or Tribes may want to consider in the alternatives analysis:

- Pollution prevention measures;
- Product substitution (e.g. substitution of less toxic substances);
- Reduction in scale of the project;
- Water recycling or reuse;
- Innovative treatment technologies (e.g., land application of wastewater);
- Seasonal or controlled discharge options to avoid critical water quality periods;

- Alternative discharge locations; and
- Green infrastructure controls on wet weather discharges.

Considering stormwater discharges and green infrastructure opportunities may reveal opportunities to reduce wet weather-related pollutant loadings that could potentially counterbalance some of the increases in the point source loadings. Where the biological health of a water body could be affected, green infrastructure solutions can help protect the hydrology and habitat of the receiving water and lessen the impacts of a new or increased discharge.



Rain barrels, pervious pavers, and vegetated areas designed to retain stormwater are all components of green infrastructure.

## Use Attainability Analysis

Whether a water body meets water quality standards can be affected by a wide variety of factors, including point and nonpoint source loadings, background conditions, geomorphologic factors, and land use. A designated use of a water body that is not being attained may be changed if the State or Tribe can demonstrate that attaining a use is not feasible.

EPA's regulations under the Clean Water Act (40 CFR §131.10(g)) identify six reasons or factors for changing a current use designation, which are summarized below:

1. Naturally occurring pollutant concentrations prevent attainment of the use.
2. Natural, ephemeral, intermittent or low flow conditions or water levels prevent attainment of the use.
3. Human caused conditions or sources of pollution prevent attainment and cannot be remedied without causing more environmental harm than leaving in place.
4. Dams, diversions, and other hydrologic modifications prevent attainment and it is not feasible to restore the water or operate the modification in a way that would result in attainment.
5. Natural physical features prevent attainment of aquatic life uses.
6. Controls more stringent than required effluent limitations or new source performance standards would be

necessary to attain the use and would result in substantial and widespread social and economic hardship.

A use attainability analysis (UAA) is a structured scientific assessment of the aquatic life and/or recreational (aka, "fishable and swimmable") beneficial uses of a water body given application of required effluent limits for point sources and implementation of cost-effective and reasonable management practices for nonpoint sources. (See 40 CFR §131.3(g))

Where a UAA is being developed or a designated use other than a CWA section 101(a)(2) use is being reviewed based on reason 6, it may be appropriate to conduct an alternatives analysis not unlike what is described above for antidegradation. There may be measures that could be taken to counterbalance point source loadings if the point source treatment needed to fully meet WQS may result in substantial and widespread social and economic hardship. There may be situations where restoring natural green infrastructure and creating new green infrastructure to trap pollutants and manage wet weather flows may allow designated uses to be attained and alleviate the pressure for downgrading a designated use. Also, green infrastructure practices, such as stormwater parks in distressed urban neighborhoods, may provide notable social and/or economic benefits.



The benefits of green infrastructure include not only water quality protection, but also a range of social and economic benefits associated with the integration of vegetation into the built environment.

### Green Infrastructure Permitting and Enforcement Series

*This series on integrating green infrastructure concepts into permitting, enforcement, and water quality standards actions contains six factsheets plus four supplemental materials that can be found at [http://water.epa.gov/infrastructure/greeninfrastructure/gi\\_regulatory.cfm#permittingseries](http://water.epa.gov/infrastructure/greeninfrastructure/gi_regulatory.cfm#permittingseries).*

#### Factsheets

1. Potential Challenges and Accountability Considerations
2. Combined Sewer Overflows
3. Sanitary Sewer Overflows
4. Stormwater
5. Total Maximum Daily Loads
6. Water Quality Standards

#### Supplemental Materials

1. Consent Decrees that Include Green Infrastructure Provisions
2. Consent Decree Language Addressing Green for Grey Substitutions
3. Green Infrastructure Models and Calculators
4. Green Infrastructure in Total Maximum Daily Loads (TMDLs)



For additional resources on green infrastructure, go to the EPA Green Infrastructure Web page: <http://www.epa.gov/greeninfrastructure/>.