

Menu of Adaptation Strategies and Approaches

Developed for forested watersheds

Strategy 1: Sustain fundamental hydrologic processes.

- Approach 1.1: Maintain and enhance infiltration and water storage capacity of forest soils.
- Approach 1.2: Maintain and restore hydrologic connectivity.
- Approach 1.3: Maintain and restore stream channel form and function.
- Approach 1.4: Maintain and restore floodplain connectivity.
- Approach 1.5: Maintain and restore forested wetlands and lowland areas.

Strategy 2: Maintain and enhance water quality.

- Approach 2.1: Moderate surface water temperature increases.
- Approach 2.2: Reduce export and loading of nutrients and other pollutants.
- Approach 2.3: Reduce soil erosion and sediment deposition.

Strategy 3: Maintain or restore forests and vegetative cover.

- Approach 3.1: Maintain or restore forest and vegetative cover in riparian areas.
- Approach 3.2: Promptly revegetate areas after disturbance.
- Approach 3.3: Maintain or improve the ability of forests to resist pests and pathogens.
- Approach 3.4: Prevent invasive species establishment and remove existing invasive species.
- Approach 3.5: Prioritize and maintain unique habitats for refugia.
- Approach 3.6: Enhance species age classes and structural diversity in forests.
- Approach 3.7: Identify, maintain, and enhance important habitats for fish and wildlife.

Strategy 4: Facilitate forest ecosystem adjustments through species transitions.

- Approach 4.1: Favor or restore native species that are expected to be adapted to future conditions.
- Approach 4.2: Establish or encourage new mixes of native species.
- Approach 4.3: Disfavor species that are distinctly maladapted.
- Approach 4.4: Introduce species that are expected to be adapted to future conditions.
- Approach 4.5: Move at-risk species to locations that are expected to provide habitat.

Strategy 5: Accommodate altered hydrologic processes.

- Approach 5.1: Manage systems to cope with decreased water levels and limited water availability.
- Approach 5.2: Enhance the ability of systems to retain water,
- Approach 5.3: Adjust systems to cope with increased water abundance, and high water levels,
- Approach 5.4: Respond to or prepare for excessive overland flows (surface runoff).

Strategy 6: Design and modify infrastructure to accommodate future conditions.

- Approach 6.1: Reinforce infrastructure to meet expected conditions.
- Approach 6.2: Reroute or relocate infrastructure, or use temporary structures.
- Approach 6.3: Incorporate natural or low impact development into designs.
- Approach 6.4: Remove infrastructure and readjust system.



Source: Shannon et al, 2019. *Adaptation Strategies and Approaches for Forested Watersheds*. Climate Services.
<https://doi.org/10.1016/j.cliser.2019.01.005> **More information:** forestadaptation.org/water

A supplemental topic to be used in the *Adaptation Workbook decision-support framework* – Swanston et al, 2016.
Forest Adaptation Resources: climate change tools and approaches for land managers, 2nd edition.
<http://www.treesearch.fs.fed.us/pubs/52760> **More information can be found at** www.forestadaptation.org/strategies