

# Environmental Impacts of Transmission Lines on Water Resources

## Overview

Detailed environmental studies indicate that transmission lines can negatively affect water resources, especially through construction impacts, soil disturbance, and changes in hydrology and pollution runoff.

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## Documented Negative Impacts on Water

### Water Pollution and Hydrology Changes

- Transmission line construction in wetland or riparian areas disrupts hydrological cycles, causing altered flows and degraded water quality in streams, rivers, and lakes.
- Tower placement and clearing corridors often change local drainage patterns, which may increase flooding risk and alter natural water movement underground and across the land.

### Soil Erosion, Sediment, and Agricultural Harm

- Removing vegetation and windbreaks to install power lines greatly increases soil erosion.
- Increased sediment runoff lowers water quality, fills in wetlands, and harms aquatic habitats. This effect persists for years after construction, especially where erosion controls fail.
- Compacted soils and soil mixing can increase surface runoff and reduce water infiltration, making aquifers and groundwater recharge less effective and reducing agricultural yields.

## Direct Contamination Risks

- Heavy equipment and soil excavation may expose buried contaminants or introduce new pollutants like oils, lubricants, and concrete washouts, which can leach into groundwater and nearby water bodies.
- Improper management during and after construction can result in pesticide, herbicide, and disease risk spreading through runoff to field drains and watercourses.

## Other Ecosystem and Water Quality Effects

- Loss of vegetative cover can raise water temperature and negatively impact aquatic life.
- Construction and operation of power lines routinely fragment wetlands, disrupt wildlife migration, and threaten rare aquatic species.
- In some cases, runoff and atmospheric deposition of pollutants linked with power infrastructure contribute to lake and stream contamination, algal blooms, and loss of oxygen in water, harming fish and other organisms.

## Summary Table

Negative Impact	Description
Erosion, sediment runoff	Lowers water quality, harms aquatic ecosystems
Hydrological cycle disruption	Alters water flows and drainage patterns; flooding risk
Pollution, contaminant runoff	Chemicals from soil, machinery, and vegetation kill aquatic life
Wetland loss, fragmentation	Habitat loss; higher extinction risk for rare species
Thermal pollution	Alters temperature, harms fish and oxygen levels
Compacted soils, poor recharge	Reduces aquifer recharge, increases field runoff

## Conclusion

Research consistently shows that transmission lines pose real risks to water quality, aquatic habitats, and hydrology, especially during and after construction and when large corridors are cleared or wetlands disturbed.

## Articles and Blogs

- **StopMPRP.com: "Environmental Impact of High-Voltage Transmission Lines"**
  - This advocacy site reports on how water pollution, erosion, sediment runoff, and hydrological disruption from transmission line construction and operation can harm streams, rivers, lakes, and wetlands. It highlights altered flows and degraded water quality as direct impacts of these projects, alongside effects on aquatic ecosystems.
    - <https://stopmprp.com/what-is-at-stake/f/environmental-impact-of-high-voltage-transmission-lines>
- **Wisconsin Public Service Commission: "Environmental Impacts of Transmission Lines" (PDF)**
  - This government brochure provides details on how high-voltage transmission lines can contribute to surface water pollution, as well as the regulatory protections for high-quality water sources. It discusses how construction practices may alter hydrology and increase contamination risk via point source pollution.
    - <https://psc.wi.gov/Documents/Brochures/Enviromental%20Impacts%20TL.pdf>
- **Nautilus Institute: "International Best Practices for Assessing and Reducing the Environmental Impacts of High Voltage Transmission Lines" (PDF)**
  - The report covers toxic pollution, including contamination from pesticides and leaks of equipment fluids (such as PCBs), as well as water pollution from construction and maintenance camps, soil compaction, and hydrologic changes in wetlands and riparian zones.
    - [https://www.nautilus.org/wp-content/uploads/2015/06/Env\\_Best\\_Practices\\_Williams\\_final.pdf](https://www.nautilus.org/wp-content/uploads/2015/06/Env_Best_Practices_Williams_final.pdf)
- **Scenic America: "The Environmental Impact of Power Lines"**

- This blog examines landscape and waterway impacts, highlighting how corridor clearance leads to erosion and runoff, disturbance of natural waterways, and changes in wetland hydrology, which result in loss of aquatic habitat and increased water pollution.
  - <https://www.scenic.org/2023/09/20/the-environmental-impact-of-power-lines/>
- **US EPA: "Electricity Delivery and its Environmental Impacts"**
  - EPA resources document how high-voltage transmission line corridors can disrupt forests, wetlands, and other natural ecosystems, specifically noting disturbance to water features, pollution, and aquatic habitat fragmentation from tower and access road construction.
    - <https://www.epa.gov/energy/electricity-delivery-and-its-environmental-impacts>
- **Sediver: "Pollution mitigation solutions for overhead line insulators" (PDF)**
  - The article discusses how pollution—both atmospheric and waterborne—can accumulate on transmission line hardware and insulators, leading to further contamination issues, especially in rain events and humid climates.
    - [https://www.sediver.com/wp-content/uploads/SEDOC18322- Pollution-mitigation-solutions-for-overhead-line-insulators-1.pdf](https://www.sediver.com/wp-content/uploads/SEDOC18322-Pollution-mitigation-solutions-for-overhead-line-insulators-1.pdf)

## Key Issues Covered

- Water pollution from construction runoff and corridor clearing
- Changes in hydrology, stream flows, and wetland function
- Contaminant leaks (pesticides, PCBs, lubricants) and point source water pollution
- Soil erosion and sediment transportation into waterways
- Wetland and riparian habitat loss, aquatic ecosystem fragmentation

**These sources provide first-hand accounts, scientific analysis, and advocacy perspectives on direct and indirect water-related harms caused by high voltage transmission lines.**

