

A Citizen's Guide to Ecological Revitalization



What Is Ecological Revitalization?

Ecological revitalization is the process of returning a contaminated site to a natural environment, similar to the one that existed before the property was developed. The development of a property for industrial, commercial, and other uses can displace the plants and animals living there and disrupt the ecology (the ways these organisms interact with each other and their environment). Returning a meadow, forest, or wetlands to the property can restore the habitats and other natural characteristics of the area. This process can “revitalize” or give new life to a community with the creation of a new park, natural recreational area, or nature preserve.

How Does It Work?

Returning a site to a natural environment will involve different approaches, depending on the property and how it was altered during development and use. Ecological revitalization first requires an understanding of the plant and animal species, soil types, weather, and other characteristics of the site, both past and present. This may involve looking at old photographs and maps of the site, visiting nearby natural areas, and talking to local residents to get a better idea of what needs to be done. Ecological revitalization is most successful when considered during site cleanup. Common steps include:

- Demolition of buildings and other infrastructure.
- Regrading the ground surface to remove or create slopes.



- Bringing in fertile soil or adding nutrients and other natural materials, also known as “amendments,” to existing soil to help plants grow.
- Creating or restoring wetlands and natural stream channels.
- Planting native trees, grasses, and other vegetation.
- Reestablishing wildlife.

The links between soil, plants, and wildlife, including birds, insects, and even microscopic organisms are an important part of ecological revitalization. For example, many native flowering plants in the United States rely on bees, bats, hummingbirds or other “pollinators” that feed on nectar to help them reproduce and spread.

The purpose of ecological revitalization is to provide an environment where both plants and animals can thrive.

Is Ecological Revitalization Safe?

When properly planned and managed, ecological revitalization is very safe. If there is any chance that contaminated soil or groundwater will remain at the site, EPA will combine revitalization with cleanup methods that isolate contaminants from people, plants, and wildlife. For instance a protective cap may be placed over contaminated soil or a vertical engineered barrier may be placed around the contaminated soil or groundwater. (See *A Citizen's Guide to Capping* [EPA 542-F-12-004] and *A Citizen's Guide to Vertical Engineered Barriers* [EPA 542-F-12-022].) Revitalization also can be conducted with methods that continue to actively clean up contamination.

How Long Will It Take?

An ecological revitalization project may take anywhere from a few months to several years. The time it takes to reestablish natural habitat will depend on several factors. For example, it may take longer where:

- Plants have a long life cycle and take longer to reach maturity.
- Unfavorable weather for seed germination or plant growth (such as drought) occurs.

- Plants that are eaten by animals or insects must be replaced.
- Stream channels must be restored or must be stabilized to prevent severe erosion, or if habitats, such as wetlands, need to be built from scratch.
- Soil conditions such as temperature, nutrient levels, and microorganism populations must be modified.

These factors vary from site to site.

How Might It Affect Me?

Generally, ecological revitalization does not cause much disruption to the surrounding community. Initial work may involve grading or tilling the soil with earth-moving equipment. Residents and businesses near the site may hear equipment noise or detect odor if the soil is mixed with natural amendments, such as compost, manure, and yard/wood waste. Airborne dust can be controlled by watering down the soil.

Why Use Ecological Revitalization?

Ecological revitalization is usually used with soil and groundwater cleanup methods to improve the condition of a contaminated site. It is most successful when the process starts during site cleanup. Ecological revitalization is often conducted to reclaim lost land and transform an eyesore into an attractive environmental resource for the community. It can help isolate or remove contamination from people and wildlife and can also reduce soil erosion. Revitalized sites help create wildlife habitats, improve air and water quality, and provide added green space for parks, recreation, and nature preserves. Returning contaminated sites to beneficial use can lead to increased property values, recreational centers, and protected open space in what are often densely developed areas.



Superfund site before and after ecological revitalization.

Example

Not long ago, the Army Creek Landfill in Delaware, was filled to capacity with tons of trash that contaminated nearby Army Creek and local water supply wells. After the site was cleaned up and a protective cap built over the remaining lightly contaminated soil, EPA planted grasses, wild flowers, and other native plants to provide resting and feeding habitats for migrating birds. Bird boxes were installed along the creek to encourage nesting, and gooseberry was planted as a food source.

The site is mowed once a year during the fall so that bird habitats are not disturbed during nesting season. The tall grass throughout the spring and summer provides shelter for birds and other small animals as well as seeds and an attractive habitat for insects, another source of food for birds. EPA also built wetlands to provide habitat for many species of plants, animals, and birds. Ecological revitalization transformed the site into a vibrant wildlife enhancement area for the community.

For More Information

For more information about this and other technologies in the Citizen's Guide Series, visit:

www.cluin.org/remediation
www.cluin.org/products/citguide
www.cluin.org/ecotools

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