Revegetation with Native Plants

The program opens with shots of excavators and bulldozers contouring soil at various hazardous waste sites near completion. The narrator begins.

Narrator: The cleanup is complete and any threat to the environment has been eliminated or lowered to acceptable levels.

So now what?

Essentially, what remains is a large tract of barren land with little ecological memory.

Land managers are now realizing that revegetating these sites with native plants can accelerate the time needed to restore a rich, self-sustainable ecosystem.

The title screen: *"Jump-Starting Natural Habitats: Revegetation with Native Plants"* fades on screen with music. The title then dissolves into shots of landscapers planting shrubs at a cleanup site as the narrator and Royal Nadeau of EPA's Environmental Response Team (ERT) provide more details.

Narrator: Although it seems like a logical choice, the concept of revegetating hazardous waste sites with native plants is relatively new. In the past, hyroseeding or laying sod was the accepted practice.

Royal Nadeau: Well, the EPA along with a number of other federal agencies have realized that the use of native species makes a lot more sense than using the standard, contractor's erosion control mix. They're realizing that some of the erosion control mixes have a shorter lifetime, whereas a native species will accomplish the same thing in terms of holding the soil in place and having a much longer life and will thrive under drought conditions.

Shots of the ERT workshop on revegetation are shown as the narrator continues

Narrator: Recently, EPA's Environmental Response Team hosted a workshop on native habitat restoration at Superfund sites. Classroom work was supplemented by field visits to cleanup sites where revegetation with native species is planned.

One of the leaders of the field tour was Steve Handel, a researcher for Rutgers University's Department of the Ecology and Evolution.

Shots of Steve Handel making a presentation are shown as he speaks:

Steve Handel: What we've got to do is sort of jump start the whole process of getting this community back and that can be done now with native plant nurseries.

Its not a full community because the soil is really not so great, its poorly drained. But you have the beginnings of a reasonably healthy habitat, albeit, some invasive plants moving in also, like some barberrys. This is an area which has tremendous ecological value in terms of a sponge for water during stormy periods, and of course it's a very high biomass.

Shots from the field presentation dissolve into shots of Steve Handel in a greenhouse lab at Rutgers. An interview sound bite follows:

Steve Handel: We're really interested in restoration of native communities. Native plants give us enormous ecological functions, they tend to be self-sustainable, and they require very little maintenance. So down the road, putting in native plants gives us a site which works well, requires minimal maintenance, and also looks good in terms of the landscape around these sites.

If you contrast this with just putting in grasses to stop soil erosion, you have a really rather dull habitat, which doesn't develop through time.

As the narrator continues, a graphic of an "Old World" map is shown. The perspective moves toward the "New World" as boats loaded with people and plants arrive on the shores.

Narrator: In the continental United States, European settlement is considered a benchmark for native plant species. With the immigration of people from around the globe came a multitude of plant species new to North America.

The graphic continues as the new plants begin to spread across the US. Some of the new plants begin to overgrow the native plants.

Narrator: Unfortunately, many of these exotic, or alien, species of plants, if given the right conditions, became invasive, spreading

rapidly without the controls that were present in their native habitats. In fact, some invasives become so persistent that monocultures develop, disrupting complete ecosysytems.

The graphic ends and dissolves into more shots of the revegetation field workshop being lead by Steve Handel. We heare Steve speak again

Steve Handel: This flower is multiflorus. This is a number 1 invasive species throughout the east coast. Its not native to North America. As long as this sweeps through the habitat, the hope for a native biodiversity is hopeless. Again, it sweeps through habitat, crowds out the native plants which we would like to see on site.

More shots of barren soil at clean-up sites are shown as the narrator continues. Shots of the team planting shrubs at the Green Pond Site follow.

Narrator: Soils at hazardous waste cleanup sites are often disturbed and devoid of established native vegetation, allowing invasives to gain an easy foothold on the fragile ecology. This liability can be used as an advantage however, if native plants are introduced to a site as soon as possible.

Through teaming agreements with agencies already experienced in native species revegetation, EPA is now embracing the practice full scale.

At an oil clean up site that threatened Newark, New Jersey's water supply, US Fish and Wildlife Service and Department of Agriculture's Natural Resources Conservation Service, assisted EPA with the selection and planting of over 900 trees and shrubs.

Mike Solecki, OSC at the site, is introduced and gives some details.

Mike Solecki: We want to keep it as natural as possible. Unlike some of the other projects that EPA is involved in where they kind of make a park land out of a destroyed area, we're actually going back and putting in the original species of plants that were in there. So by doing that we're actually bringing it back to its native condition.

More shots of the team planting shrubs are shown as the narrator and Christopher Miller of the Natural Resources Conservation Service describe the techniques.

Narrator: The site lies on a flood plain along a bank of the Pequenock River. The intra-agency partnership made choosing plants and materials best suited to prevent erosion while providing biodiversity easy.

Chris Miller: We were looking at it from a stabilization standpoint, so you know, choosing plants that would help hold the bank together, in addition to providing some habitat, some wildlife habitat, and incorporating plant species that would allow more diversity for the habitat and for stabilization and that were well adapted for this site.

Michael Horne of the US Fish & Wildlife Service is introduced and describes some of the wildlife at the site.

Michael Horne: As a matter of fact if you look around you can look in the river just off the site here and see trout and a variety of fish species swimming around. Migratory birds use the river here, actually these pooled areas right here on the site. But basically what we're doing is jump-starting the natural succession that would have occurred here, allowing species to kind of get a home quicker than they might normally if left on its own, to go naturally.

The final shot of the team planting shrubs slowly dissolves to a wide shot of the site later that summer. The title *"5 months later"* is superimposed over the image. The site is green and lush. We then see Royal Nadeau and Mike Solecki inspecting the plants. Royal then comments on the site.

Royal: Well, the site that we're at here today is a good indication of what you can get if you remove the contamination and sort of encourage nature with the introduction and planting of appropriate native species.

What we have here and around me are some shrubs that have been planted. Although what you see is mostly the herbs that have grown up within the interim. And this is good because the herb layer has provided shade to the shrubbery and has increased the survivability of the shrubs.

All the vegetation that you see here today represents above-ground material, but keep in mind that there's an equal amount of material that's in the soil itself. So that when this area floods in the spring, all the root systems are intact, and will keep the soil intact. So this uh, vegetation serves a great purpose in erosion control and protecting the quality of the water for the reservoir system for the City of Newark.

Shots of birds and animals are shown as the narrator and Steve Handel continue.

Narrator: Native plant communities also attract a more diverse and larger mix of animals**.** Encouraging wildlife to nest in newly established native plant communities can even stimulate additional native plant growth.

Steve Handel: We've also learned from some of our other experiments, that once native plants and shrubs get started, they bring in animals which themselves can bring in seeds of other species. For example in one engineered site, within one year we had birds bringing in seeds of over 20 native species. They bring in species and through time, year after year, the habitat gets richer and richer and a mix of species which is self-sustainable.

Shots of established native plant communities are shown as the narrator and Royal Nadeau detail the costs.

Narrator: This self-sustainability also has a positive impact on costs. Although it's more labor-intensive to plant native communities, in the long term the ecosystem becomes virtually maintenance-free.

Royal: Once you put down these native species, they may take a little bit longer to establish themselves, but obviously since they're adapted to the particular environment and climate that you're using them in, there's a better chance that they will thrive in the long term.

Beauty shots of native vegetation "through the seasons" are shown as the narrator and Steve Handel describe the visual benefits of native plants.

Narrator: Aesthetically, colonies of native plants just look better too. With the encroachment of suburbia and dwindling rural vistas, the opportunity to restore any area to a native habitat has great community appeal.

Steve Handel: We have a chance at Superfund sites in particular, of helping restore the traditional landscape of different parts of America. Many of our native habitats are very, very diverse. Meadows are filled with dozens of wildflower species which flower from the spring through the fall. This can be a tremendous appeal in a local community. Similarly later on as trees and shrubs move in you have a riot of colors and fruits which bring in wildlife. So in terms of just the beauty of our American landscape as well as ecological services, a mixed, rich community is really very appealing to our citizens.

A stock shot of the President signing a document is screened. Then a shot of Steve Handel working in his lab is shown while the narrator and Steve continue.

Narrator: An Executive Order on invasive species was also signed on February 3, 1999. One of the key points of the order calls for more research on invasive and native plant species.

Steve Handel: How do you start natural populations and make them persist? Scientists like myself in ecology and in related disciplines are doing a whole series of experiments and its a

national program to try to advise people, contractors, municipalities, federal agencies, in how to bring back the historic American landscape. We have to know more about how plants spread from place to place? What limits their reproduction? Is it just soil properties or the availability of native bees or dispersers?

Narrator: The Executive Order also mandates increased public education and awareness. For managers at hazardous waste sites, this means teaming with agencies already knowledgeable on native plant ecology.

Royal Nadeau: Well, the OSCs have many options that they can exercise if they really are interested in, in a re-vegetation effort or the use of native species. They can contact people within the EPA like the ERT, or they can go directly to the members of the, of the Regional Response Teams, where they can access talent from the NRCS and the Fish and Wildlife Service to help them out because both those agencies have planting lists of native species that are appropriate for their particular area.

More shots from the ERT native plant workshop led by Steve Handel are shown as the narrator and Steve wrap the program up.

Narrator: This distinct regional expertise, coupled with advances in research and a positive public perception, is making native plants the new standard for revegetation at former hazardous waste sites.

Steve: Together I think we can really take sites that are not only cleaned up, but then make them into something which we can all be proud of. We can take land, clean it up, and then make it lovely so that future generations won't even know that there was once an environmental problem on these sites.