Wildlife and Environmentally Friendly Hydraulic Erosion Control Products (HECPs)

Introduction

Wildlife and environmentally friendly hydraulic erosion control products (HECPs) have and continue to be a focus of the Erosion Control Technology Council (ECTC). ECTC is a leading industry organization home to top manufacturers of erosion and sediment control products, component suppliers, material distributors, and test laboratories. ECTC members are dedicated to advancing the knowledge, experience, and expertise of erosion and sediment control. The non-profit organization's mission is to develop performance standards, uniform testing procedures, and guidance on the application and installation of HECPs, rolled erosion control products (RECPs), and sediment retention fiber rolls (SRFRs). ECTC recently expanded their reach to other technologies as well and they promote the use of erosion and sediment control products through industry leadership and education in the hope of making a substantial contribution to the science of erosion control and environmental preservation.

A Sustainable Approach to Erosion Control

In the realm of erosion control, innovation continually brings forth solutions that not only address practical challenges but also align with environmental stewardship. Erosion control can be divided into two categories: temporary and long-term. For temporary erosion control, once vegetation is established, there should be minimal remnants left of the erosion control measures. One such advancement in temporary erosion control is the emergence of HECPs. These products have advanced the way we approach soil erosion control challenges, and some are sustainable and offer benefits for wildlife and the environment.

Figure 1 HECP being sprayed onto a steep slope

What is an HECP?

HECPs are a class of erosion control measures that are applied as a slurry to soil surfaces. This slurry typically contains a combination of water, fibers, tackifiers, and other additives designed to create a protective layer over the soil. The function of HECPs is to prevent soil erosion, facilitate vegetation establishment, and a few HECPs contain formulations to enhance overall soil health. The HECP slurry application provides uniform coverage, even distribution of seed, and adherence to the soil surface, when properly installed by an experienced applicator, which reduces potential impacts of erosion even in challenging environments. HECPs are designed to integrate with soil and support vegetation growth, providing temporary erosion control while some also meet requirements related to wildlife compatibility and environmental considerations.

From a regulatory standpoint, the 2022 EPA General Construction Permit Guidelines were updated to encourage wildlife friendly methodologies for erosion control. The U.S. Fish and Wildlife Service recommends using erosion control methods that use natural fiber or 100 percent biodegradable materials, such as loose weave biodegradable netting RECPs or non-netting solutions which include HECPs.[1]

HECPs and the Absence of Microplastics

One of the most notable environmental advantages of HECPs is their ability to prevent the introduction of microplastics into ecosystems. Bio-based and biodegradable HECPs address this issue by breaking down naturally without leaving harmful residues. This benefit is particularly critical given the increasing awareness of the negative impacts of microplastic pollution on wildlife and ecosystems. However, it is important to note that some HECPs may still contain synthetic components that are not fully biodegradable, as well as chemical components, some of which lack full transparency. These components should be thoroughly evaluated to ensure they are appropriate for site specific conditions and objectives.

Biodegradable Nature of HECPs

HECPs are most often crafted from bio-based materials that are both biodegradable and environmentally friendly. This means that once their functional life is over, they naturally decompose without leaving harmful residues. The use of renewable or recycled resources in HECP production further underscores their sustainability.

Soil Building Components

A few HECPs available today contain natural soil health and soil building components. These natural hydraulic biotic soil amendments (HBSAs) technologies are not fertilizers, or pH adjustment elements, but natural components that restore denuded soils and enable natural nutrient cycling long-term, providing an alternative to short-term amendments or topsoil amendments. These wildlife friendly HECPs are particularly beneficial for applications where prior land use has depleted the vegetation supporting ability of the substrate, such as mine reclamation, wildland fire restoration or retired agricultural sites.

Efficiency and Workforce Reduction

A key advantage of HECPs is their ability to simplify erosion control processes by combining the application of seed, soil amendments, and erosion control measures into a single step. This integrated approach has the potential to reduce installation time and lower fuel consumption associated with jobsite activities. While actual time savings may vary depending on site conditions and project complexity, HECPs can contribute to improved overall efficiency by minimizing labor requirements and simplifying material handling, making them a practical and potentially cost-effective option for erosion management.

Figure 2 HECP being sprayed onto a sloped surface

Wildlife-Friendly Technology

Outdated erosion control methods have been documented to pose environmental risks (example discarded tires for riverbank reinforcement) or posed entanglement risk for animals such as snakes, fish, reptiles, and even large ungulates. The uniform application and biodegradable nature of HECPs support environmentally responsible erosion control and can provide benefits to wildlife by preserving water quality, fostering vegetation growth, and helping establish native habitat.

Diverse Range of HECPs for Site Specific Needs

HECPs are used to reduce the effects of soil erosion and accelerate revegetation during and after construction projects. The benefits of these products in limiting soil loss and reducing sediment load to waterways are well documented and undeniable. Biobased products such as wood mulch are widely used and are becoming more prevalent. HECPs hold features that make them best suited for given erosion control applications. Installers and specifiers are encouraged to consult manufacturers specifications to apply the correct HECP for site conditions.

Support for Native Seed Species

Some HECPs may be compatible with native seed species, as well as turf grasses, which germinate more rapidly. The application within a slurry allows for evenly dispersing the differently shaped and sized native seeds. These products provide an ideal medium for the growth and establishment of indigenous plants, which are crucial for maintaining local ecosystems. By promoting the use of native species, HECPs may help in preserving regional biodiversity, and supporting pollinators.

Enhancing Soil Health and Water Holding Capacity

HECPs contribute positively to soil health by increasing organic matter content. This organic matter is vital for soil fertility, structure, and microbial activity. Moreover, HECPs enhance the soil's water holding capacity (WHC), ensuring that moisture is retained for longer periods. This is particularly beneficial in arid and semi-arid regions where water conservation is critical. Soil health and WHC are important parameters for vegetation growth and erosion control.

In conclusion, HECPs represent a formidable option in erosion management and environmental conservation. Their eco-friendly attributes make them an ideal choice for sustainable development. Moreover, their support for native species and contribution to soil health further underscore their environmental benefits.

About

ECTC members are committed to providing Wildlife and Environmentally Friendly HECPs and other technologies. Please contact ECTC to learn more about ECTC's members, tools, services, and sustainable solutions for controlling soil erosion. In addition, there is a complete toolbox of specifications, CAD files, installation videos, fact sheets, etc. online at www.ErosionCouncil.org website.

[1] https://www.epa.gov/npdes/construction-general-permit-threatened-and-endangered-species