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Controlling Erosion at Landfill Sites

In Hydroseeding, Weather Matters (A Lot)

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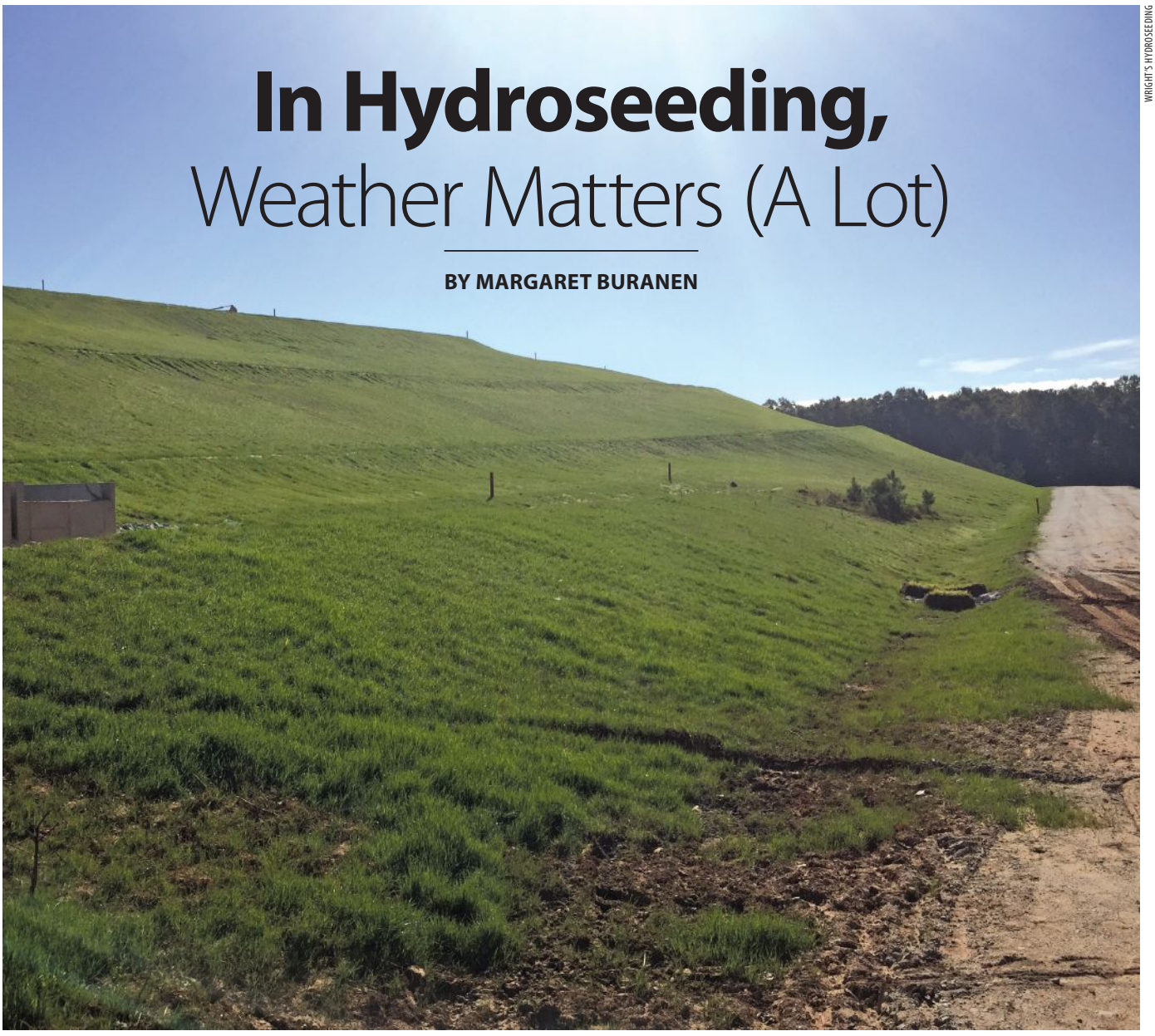

WRIGHT'S HYDROSEEDING

Weather can be a hydroseeding contractor's friend or foe. It can make a job much easier or much more difficult. It played a role in each of the following varied projects done by leading hydroseeding companies across the country.

The UPMC Lemieux Sports Complex near Pittsburgh, PA, is the home of the Pittsburgh Penguins professional hockey team. The sports complex is also the first part of an innovative development that will eventually have other sections including a hotel, restaurants, and retail and office space.

The development is called Cranberry Springs. Located in Cranberry Township, PA (about 20 miles from Pittsburgh), the property covers 90 acres.

The sports complex itself covers about 20 acres. Erosion control work on the part of the property adjacent to the sports complex was done by Fossil Rock Services, located near Butler, PA.

The company does erosion and sediment control installation and maintenance projects, particularly related to Utica and Marcellus Shale energy sites. Most of its projects are within a 250-mile radius of Pittsburgh and Butler, in Pennsylvania, New York, West Virginia, and Ohio.

Most of the Lemieux UPMC Sports Complex project was done in late 2014. The final portion of the work on this section was finished in 2015.

Tom McConnell, general manager for Fossil Rock Services, says the most challenging aspect of the job was "coming up with a mix that the owner desired [and that would be suitable for the site]."

For the grassy sections, a yard lawn seed mixture was used. It contained a mix of Bluegrass and perennial rye grass. A nurse crop was not needed on these areas.

He adds, "We were walking a fine line to meet the Pennsylvania Department of Natural Resources' erosion control requirements and letting the wildflowers take over."

Native wildflower seed, Flat Toe Tolerant Wildflower Mix, was used on the project. It is tolerant of the

herbicide Plateau, which will be applied annually for maintenance. The seed was supplied by Ernst Conservation Seeds of Meadville, PA, the largest producer and distributor of native wildflower seeds in eastern North America.

Along with the seed, the mixture included 450 pounds per acre of 10-20-20 fertilizer and 450 pounds per acre of lime. On a small section of 2–3 acres, 70-30 hydromulch was added. No straw was used.

The lime applied to balance the pH of the soil was Profile Products' NeutraLime, which comes in both dry and liquid formulas. Profile's Flexterra was also included to keep seed and the rest of the mixture in place.

"We used a fair amount of the Flexterra. It gave the protection needed," says McConnell. He admits to being surprised at "how well the Flexterra held up through winter with minimal vegetation [established]. We had a couple of washouts, but overall it was fine."

A nurse crop of annual ryegrass was used only on the areas that received wildflower seed. It was applied at the rate of 30 pounds per acre. Dutch white clover was also seeded, at the low rate of 5 pounds to an acre.

The seeding was done from October to November. McConnell says the weather was getting cold, "but there was enough time and warmth to get the annual ryegrass and some clover growing."

Topsoil was added to the existing soil onsite. "It was not the greatest for planting," notes McConnell.

All of the slopes were at a grade of 2 to 1. "We had to address erosion control issues first and foremost, and then address the desires of the owner," explains McConnell. "We couldn't wait that long for the stand to come in."

Initially planted in November, the wildflowers were mostly warm-season-growing plants. None of them came up until June of the following year.

The Fossil Rock Services' crew used a Finn T-120 HydroSeeder on the first part of the project and then finished with a C330, High Output hydroseeding machine made by Epic Mfg.

McConnell likes the Epic's spray distance. "We get 300-plus feet. That much spray is a tremendous advantage."

He adds, "We've never had it clog up. It's totally hydraulic. The fiber mulch grinder takes the bale and cuts it off before it goes into the tank. That decreases downtime and increases productivity."

McConnell mentions something else that increased productivity and saved money on this job: the unexpected presence of a secure construction water meter. Having water conveniently available at the site meant "not having to go find water or pay to have it tanked in."

McConnell says that the hydroseeding work at the Lemieux UPMC Sports Complex produced a good result. "It came in pretty decently. We were late with applying the Plateau. There were a lot of native weeds when we sprayed in August."

There was one surprise among the favorable results. "Hydroseeders live by the cutoff date for planting. In Pennsylvania, it's October 15. We were later than this on some parts," says

McConnell. However, "what we planted last actually came up best in the spring. It was full-blown dormant."

Hydroseeding a Landfill

Wright's Hydroseeding of Fayetteville, GA, hydroseeded the Safeguard Landfill in Fairburn, GA. Work on the 17-acre site began the Saturday of Labor Day weekend and ended September 21, 2015.

"We were in and out and we didn't work every day, using a five-man crew," says Mike Wright, owner of the firm.

The biggest challenge of the project was "the terrain and terraces. The work required dragging a lot of hoses," he says.

In some sections, the slopes measured 2 to 1. Profile Products' Flexterra was used on about 9 acres of the project.

"It's expensive, but it's good. With the amount of rainfall we had, it did an exceptional job," says Wright.

In some areas, the work went more quickly than in others. Where soil had been removed by the construction crew, Wright's workers were able to use it as a cap later. The soil at the landfill was Georgia's famous red clay.

The landfill site was seeded with native grasses, including fescue, Bermuda, Bahia, and lespedeza. No nurse crop was needed. Wright's seed supplier is Landscape Depot of Fayetteville, GA.

Wright used Triple 19 fertilizer from Beaty Fertilizer of Cleveland, TN. Liquid lime and Flexterra were also in the hydroseeding mixture.

No straw was used. For an extra degree of erosion control, a permanent turf reinforcement mat (TRM) from

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Western Excelsior was put in place.

For hydroseeding projects, Wright—who bought his first Finn HydroSeeder in 1987—relies on two Finn T-90 HydroSeeders. "I've been very pleased with the Finn equipment. We also have one of their strawblowers," he says.

He adds, "I like their dependability. The agitation and pump units are great. We get good distance spray with them."

Finn's T-90 HydroSeeder offers 800-gallon working tank capacity for mid-size hydroseeding projects. This machine features hydraulically controlled paddle agitation and liquid recirculation. Operator controls are located at both the front and rear of the unit. The T-90 can discharge material up to 180 feet from the tower.

Wright is pleased with how this project turned out. "We pushed through the rain. It slowed the project, and we moved the dates later. Now you'll see a beautiful stand of fescue that anyone would like to have in their yard. All of the inspections passed," he says.

Wright earned a degree in agronomy from the University of Georgia, but "got tired of that." He switched to commercial farming, which included some erosion control tasks. From farming, he moved to full-time erosion control work.

Seeding at an Air Base

Selfridge Air National Guard Base in Harrison Township, MI, is home to the 127th Wing of the Michigan Air National Guard. A joint Department of Defense and Department of Homeland Security installation, Selfridge also hosts units from all branches of military service.

The base includes facilities for military personnel and their dependents, including a soccer field. A running path circles the soccer field. Both were hydroseeded by John Gillett, the owner of Seed Guy Hydroseeding in Port Huron, MI.

The project was done at the end of August 2013. "It was a three-day job," says Gillett.

"Vegetation was established that fall. We had a month and a half of growing season."

Weather during the work was not a factor, as rainfall was normal. It wasn't exceptionally wet before the project started, nor was there an extended fall afterward. Slope was not, of course, a factor on this playing field or running path, which were made as level as possible.

When Gillett does hydroseeding work on a site that will not be irrigated—as was the situation with the soccer field and running path at Selfridge—he uses Moisture Manager, the private label version of Hydretain.

"Using Moisture Manager gets it established 30% faster than if you don't use it," declares Gillett.

Made by Ecologel Solutions of Ocala, FL, Hydretain is a patented blend of liquid humectant and

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hygroscopic compounds that attract free water molecules from the air within the soil matrix. This vapor would otherwise be unusable by plants and would eventually be lost to evaporation.

Hydretain aggregates this moisture back into a liquid form, efficiently transferring it to plant roots. Whether new vegetation is at risk because of water restrictions or lack of rainfall, Hydretain/Moisture Manager can provide the moisture needed at this critical stage of growth.

The seed used for both the soccer field and running path was a 50/50 blend of Bluegrass and turf-type perennial ryegrass, "typical seed mixture for athletic field use," says Gillett.

"Seldom do we use an annual rye as a nurse crop, only in cold weather where it isn't warm enough for regular germination," explains Gillett, whose seed suppliers are John Deere and La Crosse Seed in La Crosse, WI.

Besides the seed, water, and Moisture Manager, the hydroseeding mix on this project included a nonbranded mulch of 20% wood fiber and 80% paper cellulose. Fertilizer in a ratio of 18-24-12 from John Deere was also added.

No straw or blanket was needed. The sandy, loam type soil with clay subsoil didn't require a soil amendment.

"Guar was already included in the mulch. The land was flat, so we didn't need to add a tacifier," explains Gillett.

A landscaper for 20 years, Gillett got into hydroseeding because "I wanted to downsize and specialize in one thing." He uses two Finn HydroSeeders, 300- and 3,000-gallon models. He has also fabricated his own hydroseeding equipment.

Wildfires, which have increased in California in recent years, were burning up or damaging the wooden electric poles. Subsequent power outages were adding to the cost of supplying power.

Replacing Utility Poles

After the large number of wildfires in 2007, San Diego Gas and Electric Co. realized it had to replace existing wooden electric poles in San Diego County, CA. Despite the high cost of new steel poles, the replacements would save money in the long run.

Wildfires, which have increased in California in recent years, were burning up or damaging the wooden electric poles at a rapid rate. Subsequent power outages were adding to the cost of supplying power to commercial and residential customers.

Steel electric poles are resistant to fire damage. Eventually they will replace all of the wooden poles throughout San Diego County.

"There will be more projects coming up, over the next three years, budgeted for in increments," says Rob McGann, owner of Hydro-Plant, the San Marcos, CA, company that did the hydroseeding work on the first section of the overall project.

After the old wooden electric poles were replaced in the first section in San Diego County, McGann's crew of two hydroseeded in the disturbed areas around them. The crew's work lasted from August to mid-September of 2015.

Some of the poles are located in isolated, rural areas. Others are near developed, residential sections. All of the poles are situated on land to which San Diego Gas and Electric Co. owns the rights of way.

"We did 10 pole sites," says McGann. "They varied from 500 square feet up to 15,000 square feet. Some of the smaller ones had only three poles."

The most challenging part of this hydroseeding project was "the tough access. The area was mountainous, with ravines. We use a tractor for access, which one guy drives. The other crew member drives the water truck," explains McGann.

He adds, "Just getting the equipment in required using some strategy."

Good logistical planning was a factor in making work easier on this project. "It helped to know what to expect each day so the job could go forward without delay," says McGann.

Weather was not a serious problem during work. "It was mainly hot and dry, even though we had some freaky storms," he says.

Despite being prepared for it, wildlife didn't pose a problem either. "We really didn't see any wildlife. The utility company is required to have a biologist [consulting on the project]. The biologist scouts out the area before the crew starts working."

California's drought has adversely affected hydroseeding projects that specify the use of native seeds. "Our seed suppliers are suffering. Most of the native seed they collect is [growing] in the wild [where it is entirely dependent on rainfall], so native seed is in short supply," says McGann.

Another reason for the shortage of native seeds is that "housing developments are now where there used to be wildflowers," he adds.

Seed substitution is sometimes done. "We let the biologist know if something is not available," explains McGann. "Then he orders a substitute seed or just the remainder of what is available."

For this project, McGann relied on native seeds from his main supplier, S&S Seeds of Carpinteria, CA. Chaparral, small fescue, California brome, California barley, and sage grub were among the native shrubs and grasses planted.

Annual wildflower seeds were added to the diversified seed mix to use in areas that were more visible to the public.

The wildflowers included golden yarrow, western blue-eyed grass, California poppy, lupine, and California sunflower.

McGann says the most challenging part of the job was "just getting the equipment in. That meant using some strategy and some schedule changing when we had some rain."

The slopes in the areas that were hydroseeded were "short, about 5 feet tall, and no more than 2 to 1," he says.

Part of the hydroseeding work was made easier because "they had staging areas that were very large, flat, and wide open. We were shooting off of the truck. That meant we could get in and do the job quickly," explains McGann.

Soils in the areas that Hydro-Plant's crew hydroseeded varied from solid granite to decomposed granite to some areas with clay. "There were also some alluvial areas, spillouts from arroyos, with loamy soil, but the same seed mixture was used here, too," says McGann.

Soil amendments were not added. "They didn't want to take the chance of adding any weed seed," notes McGann.

McGann uses hydroseeding and mulching machines manufactured by Bowie. His Imperial 3000 model is for larger projects and the Victor 1100 is for smaller jobs.

On the Bowie Hydromulchers, McGann likes "the tank configuration and the pump—the way they are designed. The guys in the crew are used to working with them."

Straw was applied on some critical areas by another company, which also does the site grading and installs wattles. McGann says the sites around the new steel electric poles will be monitored for damage by herbivores.

WRIGHT'S HYDROSEEDING

Hydroseeding at a Georgia landfill site

"Deer, rabbits, and squirrels could be a problem. They like to eat newly emerging plants," he says.

Rain on the Course

Pacific Rim Hydroseeding of Valley Center, CA, has worked

on several golf course projects recently. From the end of July until the end of October 2015, co-owner Don Smith was involved with hydroseeding at the 18-hole course in East Falmouth, MA.

"We had planned to do the entire 18 holes, but there are four holes left. We'll go back in the spring and do those last four," says Smith.

The reason those four holes weren't hydroseeded was because of the project's main challenge: the weather. It rained. A lot.

"Weather was a major factor on this job. It would rain and then it would thunderstorm. We would get two and a half inches of rain in three hours," recalls Smith.

Consequently, "it was tough to keep it in place. The rain flow would turn into rivulets, a spiderwork effect, and dam up. I tried BFM [bonded fiber matrix], mulch, and guar—nothing would hold with that amount of rain in so short a time. We had to recut and redo. When we go back in the spring, we'll probably have to touch it up a bit."

The seed used on the golf course's rough was a blend of rough mix—perennial rye with Bluegrass and hard fescue. The outer roughs were planted with hard fescue and Bluegrass.

The tees were seeded with 100% ryegrass. Seaside bent grass was used for the fairways. The greens were planted with Penncross bent grass. Both brands of seed are sold through various national dealers.

The hydroseeding mix included 100% wood fiber, applied at the rate of 2,000 pounds per acre. Guar gum was also included at a rate of 100 pounds per acre.

Soil on the Cape Cod course was "sandy, silty, with a lot of rock. It was almost a coastal bluff type," says Smith.

Troon Golf was the designer of the golf course. Construction was done by Heritage Links Golf.

Pacific Rim uses a Finn T-60 HydroSeeder and a Bowie 1100 hydroseeding machine. For this job Smith used the smaller Finn machine.

"We were able to get around the course easily because we could stay on the [golf] cart path. You don't get the quantity of work done [using a smaller machine], but it's a one-person operation."

Drought is affecting hydroseeding work in other ways besides shortage of native seeds. Smith says that with the subsequent water restrictions, vegetation is dying on golf courses. Pacific Rim is scheduled to redo several courses that it hydroseeded earlier.

As these varied projects show, weather is a tremendous factor in any type of hydroseeding work. Shifting climate patterns of recent years, especially as related to the availability of water, will ensure that when it comes to hydroseeding, weather always has to be taken into account. **EC**

Margaret Buranen *writes on the environment and business for several national publications.*

See page 32 for a further look into hydroseeding equipment.