

After the Drilling Comes the Pipeline

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Broader View Weekly, October 24, 2008

Once an energy company has deemed the wells in a location capable of commercial production, they'll need to build gathering pipelines to convey the gas to market. These pipelines will cross a number of parcels and even landowners not involved in a drilling unit may be affected by pipeline construction.

There are a number of things landowners can do to ensure that their croplands and improved fields are restored properly and that impacts on forests are minimized. "Before you sign a lease, make sure you understand everything," John Lacey told the Tioga County Landowners Group last month. Speaking to a crowd of nearly 100 at Tioga Center High School on September 23, Lacey drew on his more than 40 years of experience working as an agriculture land resource specialist. He complemented his slide show with an exhibit of posters and field inspection tools.

"You need to understand more than lease language about gas royalties and well drilling," Lacey said. "You need to understand your land resource, its limitations and your long-term land management objectives." Landowners must consider such things as pipeline routing and the kind of land restoration they'll need.

Up until the 1970's the pipeline companies didn't show much concern for the land they used. Farmers were left with bare land that would not produce crops, eroded roads and fields and, too often, pipelines buried so close to the surface that they had to take the land out of cultivation for fear of hitting the gas pipeline. Strong lobbying efforts by farmers, Soil and Water Conservation Districts (SWCD), the Farm Bureau, and the Land Improvement Contractors of America (LICA), helped establish standards that address safety concerns and crop productivity.

Know Your Soil

"When you have a working landscape through which a pipeline will travel, you must understand your long-term land management plan," Lacey said. "You must also have a good understanding of your soils and the way they drain to help minimize avoidable impacts and maximize your land's restoration."

Showing cross sections of the Allegheny Plateau's glaciated soils, Lacey described what lies beneath our feet. The Allegheny Plateau, which covers much of west-central and northern Pennsylvania, the southern tier of New York, and a portion of northeast Ohio, is anything but flat. The valleys are made up of gravelly soils that tend to drain well; the hills are covered with a topsoil layer that is – in some places – as thin as 8 inches.

To protect this topsoil layer during construction, the crew strips it and stockpiles it in a temporary berm immediately outside the construction zone. Beneath the topsoil layer is

subsoil, a silty-clay soil with low fertility known as “fragipan”. The most important thing to know about fragipans is that they are impervious: pour water onto soil and it percolates downward until it hits the fragipan – then it begins to flow horizontally. If you dig a five-foot deep trench for a pipeline, water flowing horizontally along the fragipan layers will seep laterally and always collect in the backfilled trench - the path of least resistance - creating chronic drainage problems for the field.

Mitigation Considerations

A good mitigation program takes into account soil structure and drainage needs, as well as the contours of your land, Lacey said. In cases involving small gas gathering pipelines, “gravity flow” drainage line can be laid along one bottom-corner of the gas pipeline trench during construction, decreasing the chances that water will pool in the field above. Large transmission pipelines mean deeper land disturbance. For these, interceptor drain lines should be installed the season following pipeline completion, once the trench fill is settled and major surface seeps have emerged.

“Soils are non-renewable on the human time scale,” Lacey emphasized. Therefore it is critical that pipeline projects are done right, using up-to-date technology. Many of the problems he has observed have resulted from a misunderstanding of both soil drainage qualities and regional climate. Pipeline consultants reading soil surveys available from the local SWCD may not realize that a “moderately drained” soil type refers to the root zone for crops, not the depth required for pipeline excavation.

Add to that the fact that New York receives abundant precipitation – an average of 3 inches/month. This makes it difficult to find an extended period of time sufficient to construct a pipeline when the soils aren’t excessively moist, Lacey said. Winter months may be a good time for pipeline construction in Canada, but our New York soils are subject to periodic “thaws” that makes them too wet and vulnerable for the type of traffic that pipeline work requires.

Pipeline Construction

The best places to put a pipeline are those areas least used, Lacey said. Old pastures and shrubby areas are better locations than cultivated fields or improved rotation pastures and the well-managed forests that will be timbered. But with modern mitigation practices, pipelines have been put through fields with a minimum of long-term impacts.

“When the restoration is done by the book, farmers should see an even growth of their crop the following year,” Lacey said. Even so, mitigation projects should always include a two-year period for inspecting the results of restoration and fixing any remaining impacts.

“Once you punch through a soil profile, the drainage of wet seeps into a trench never stops,” Lacey reminded landowners. He suggested that people look at a high-strength drain line, with the engineering code: AASHTO - M252; it contains more resins and can take the extra weight of up to a 5-foot backfilled trench.

Continued Monitoring and Inspection

Lacey emphasized that whether it is a pipeline or a well going in, the landowner must take ownership in the oversight of the project. “Inspection is critical,” he said. This means making sure the right stuff gets used – checking the numbers imprinted on the drainage pipe, for example. It means documenting in writing and photographs, anything that looks wrong, such as piling rock on the topsoil berm, or using your topsoil instead of subsoil to pad the pipeline and fill in the trench.

Landowners need to continue monitoring and inspecting the restored construction site for at least a couple of years, because soil can settle, creating depressions, and wet spots may show up later. “Know who the environmental manager during the pipeline construction is,” he said. “If there are problems, this is who you contact. But,” Lacey added, “Your best safety net is the gas lease and right-of-way document you wrote with the needed protections.”

Editor’s Note: See related article, Restoring the Land after Gas and Wind Energy Activities, on page .