

Pennsylvania FFA
Environmental/Natural Resources
Career Development Event: Soils

2019 Team Scenario

A natural gas company has proposed building a pipeline across Pennsylvania to service Marcellus shale gas production in northern and western PA. This new pipeline will cover 165 miles through several counties. The pipeline construction will provide a major boost to the local economy and clean energy to the region. However, many residents are concerned about potential adverse effects of pipeline construction on the region's soils and ecosystems. The proposed pipeline route will traverse ridge and valley and Appalachian plateau geomorphic regions, crossing highly productive agricultural soils in some valleys, forested mountains with thin, sandy and rocky soils, poorly drained soils on concave ridge slopes, numerous wetland areas, and heavy clay soils in some valley areas. Your team has been contracted by the County Commissioners in several counties to assess the potential impacts on soil quality, and to develop guidelines for construction and soil reclamation that will minimize adverse effects on soils and provide for the most rapid recovery to their preconstruction condition. You must also develop a system for fair compensation to farmers for potential yield loss due to construction activities.

Typical pipeline construction sequence consists of removing all vegetation from a 60 feet wide right of way, excavation of a trench for the pipeline that is 10 feet deep and 5 feet wide, laying the pipeline, backfilling the trench, and finally planting the disturbed area with crops in agricultural areas or forage/meadow species in non-agricultural areas. Vehicular access to the pipeline for maintenance and repair does not allow planting woody species over or beside the pipeline. Machinery used in trench excavation, backfilling and pipe laying typically weighs from 40 to 60 tons.

Your team must:

1. Identify potential impacts on soil quality (both topsoil and subsoil) including: soil structure, compaction, soil hydrology, soil erosion, and soil productivity.
2. Identify potential impacts on agricultural, forest, and wetland ecosystems
3. Propose steps to be taken before, during, and after construction to minimize these negative impacts and to provide for the most rapid possible recovery of soils and ecosystems to their pre-construction condition.
4. Propose a system that will determine yield loss in agricultural fields and provide fair compensation to the farmers who work those fields.

