

Environmental Impacts of Pipeline Construction

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Climate Change

- Greenhouse gas emissions:
 - GHG emissions could result from construction of the pipeline (construction vehicles, and equipment; land clearing; electricity usage).
 - GHG emissions could result from operation of the pipeline (electricity for pump station power; fuel for maintenance and inspection vehicles).
 - Impact on GHG emissions of potential releases.
 - Have these potential impacts been assessed?
 - What is the magnitude/amount of these releases?
 - Has a lifecycle analysis been completed- from raw materials through production to end of life?

Climate Change

- Need to also assess how predicted climate change can affect the pipeline:
 - E.G. Longer/warmer summers- could this affect the pipes via heat stress?
 - Would there be an increased risk of, or severity of, fires if there was an accidental release?
 - More freeze/thaw cycles with soil expansion and contraction- could this affect pipes?

Water Resources

- How many waterbodies would be crossed, and what types?
- Impacts to headwaters maybe especially detrimental because they are “delicate” ecosystems.
 - Will headwaters be impacted? How many? How severely?

Water Resources

- The pipeline plans have pipes being constructed via open-cut methods.
 - This could impact the stream via increased sedimentation, changes in stream morphology, changes in stream flow and reductions during construction.
 - Have these impacts been studied and quantified? Has stream substrate been taken into consideration (substrate vs bedrock)?
 - Has horizontal directional drilling been considered and its impacts analyzed?
 - Could future climate change (e.g. storms of increased intensity) lead to exacerbated erosion and future pipe exposure or damage?
 - Stream channels migrate over time- could this lead to exposure/failure of the pipeline?

Water Resources

- Open-cut or HDD will result in disturbance to stream beds and/or stream banks.
 - Would open-cut installation cause release of “encapsulated” contamination from streambeds?
- Stream banks/riparian zones often contain wetlands which can be severely impacted via disturbance.
 - How will this disturbance be minimized or mitigated?
 - Stream beds/banks need to be restored to pre-construction conditions.
 - Specialists need to be used for this work, not general contractors, with the most current, and site specific, methods being used.
 - Does riprap along stream banks alter the stream geomorphology or does it have other impacts?
 - Tree canopy/tree clearing along a stream/row of the pipeline can affect stream temperature and erosion- how will these impacts be avoided or minimized?

Water Resources

- Accidental Releases:
 - How would the release of natural gas or product affect stream ecosystems, most importantly stream organisms?
 - How big of an area could be affected and how many people would be affected?
 - How would you compensate or mitigate for a release?

Wetlands

- Construction activities can impact wetland functions, especially through disturbances to vegetation and soils.
- Wildlife that are dependent on wetlands can also be negatively impacted through loss of habitats.
- Permanent loss of wetlands will result when those lands are replaced with fill.

Wetlands

- The following should be considered:
 - Will the proposed project result in conversion of wetlands from one type to another?
 - How can this be avoided/minimized?
 - How much wetland area will be permanently lost?
Can this be successfully “mitigated” through wetland replacement or banks to result in a wetland of equal or higher quality?
 - Even if temporary disturbance is “mitigated” or “minimized” how will soil compaction from construction vehicles affect the wetlands’ function?

Threatened or Endangered Species

- Impacts to open space often result in deleterious effects on vulnerable species, especially threatened or endangered species.
- Many of these species rely on freshwater or wetland habitats and disturbance or loss of these habitats can severely impact these species.
 - Do we know what T&E species will be affected or are in the project area?
 - Has a T&E assessment been completed by an “outside” group?
 - Has the USFWS developed a Biological Opinion for the project with recommended conservation measures and mitigation for unavoidable impacts?

Geology and Soils

- Pipeline construction has the potential to impact soils and the geology of the area must be carefully considered to prevent pipeline failure.
 - What is the geology of the area in which the pipeline will be laid?
 - NJ has karst geology and the potential for sinkholes, erosion, etc. Will the pipeline cross karst geology and how will it be protected.
 - NJ has faults. Will the pipeline cross any faults? Are they active? How will it be protected against land movement, if any?
 - NJ has areas of unconsolidated sediments; similar questions.
 - What are potential impacts to aquifers and drinking water wells if there is failure? How far would the product move?
 - Is there a plan in case of subsidence? How to prevent pipe failure? How many people would be impacted by failure?

Geology and Soils

- Construction can lead to a loss in native soils and/or a decrease in the productivity of the soils.
 - What are the expected impacts to soils?
 - How will the loss of native soil be minimized?
 - How will soil erosion into surface waters be minimized?
 - Will native soils be stockpiled for reuse? How will these soils be protected to minimize wind/water erosion?
 - How will construction impact soil productivity, especially through compaction?
 - How will groundwater tables be affected if soils are compacted and/or the geology altered that could affect permeability and recharge?

Terrestrial Vegetation

- One the biggest impacts of constuction is to terrestrial vegetation.
- Of most concern is loss of habitat, loss of species diversity, and replacement of native species with invasives or non-natives.
- Changes in vegetation can also have micro-climate effects or larger scale impacts if there is significant change in vegetation.
- Have the following been considered:
 - Will the disturbance affect local climate?
 - Will it contribute to climate change?
 - Will it affect the ecosystems ability to respond to climate change or make it more susceptible to climate change?
 - How will any change in vegetation impact wildlife, esp T&E species?
 - Will there be a change in local hydrology with changes in vegetation?
 - Will the disturbance alter soils in terms of nutrient storage and will this result in needing more fertilizers?
 - What will be done to prevent the establishment of non-natives or invasives and their replacement of native species?
 - How long does revegetation take before the area is restored to pre-disturbance status?

Wildlife

- Construction can have serious impacts on wildlife.
- Impacts can result from loss of habitat; habitat fragmentation; mortality due to construction and operation, stress or avoidance, increased susceptibility to predation, loss of food resources; loss of breeding habitats.
 - What wildlife species may be impacted by the pipeline?
 - How extensive are the expected changes in habitat? How will these be minimized?
 - Has the developer worked with an outside agency, e.g. USFWS to identify at risk species and assess potential impacts?
 - Will there be a loss of food resources, breeding habitat, or increase in habitat fragmentation?
 - How will impacts from construction and operation be minimized in order to reduce direct or indirect mortality?