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Pipeline to be built in winter

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MONTEREY — Brrrr.

Think of a steady job in 20- to 30-degree wind chills all day long outside, and you get an idea of Dominion's pipeline construction strategy.

It's almost enough to cool you down during a heat wave.

A detailed winter construction plan suggests Dominion expects to avoid soil erosion and water pollution impacts by working in subzero conditions during the winter of 2017-18.

Construction is scheduled to begin next spring, subject to permits and authorizations, and continue through the fourth quarter of 2018. All facilities are anticipated to be placed in service in the fourth quarter of 2018.

"With this schedule, construction activities in the winter season will be required," Dominion stated in reply to a set of federal regulators' directives July 18, updating construction, restoration and mitigation plans to reflect the scope of the proposed Atlantic Coast Pipeline and supply header projects.

The company anticipates updates to the migratory bird plan and the karst terrain assessment, construction, monitoring and mitigation plan next month.

Since originally filing applications Sept. 18, 2015, Dominion has substantially changed the filed routes to avoid or minimize environmental and land use impacts, resolve construction issues, and address landowner or stakeholder requests, where feasible.

For this latest filing, Dominion updated the proposed construction footprints to incorporate the results of ongoing field surveys and to address various Federal Energy Regulatory Commission questions.

The following is a compilation of Dominion's report to FERC.

Winter construction plan

Before construction starts, Dominion would conduct environmental and safety training for company and contractor personnel. The training program would focus on the plan and procedures; other construction, restoration, and mitigation plans, including this winter construction plan; and applicable permit conditions.

In addition, the company would provide large-group training sessions before each work crew begins construction, with periodic follow-up training for groups of newly assigned personnel.

Snow would be removed from work areas to expose soils for grading and excavation. Snow removal would be limited to active construction areas and areas needed to maintain access to construction rights of way.

Snow would be bladed or pushed to the edges of the right of way with a motor-grader, snowplow, or bulldozer, and stockpiled within the right of way, or in temporary workspaces. Snow would not be bladed off the right of way.

The bladed equipment on the motorgrader, snowplow, or bulldozer would be fitted with a "shoe" to minimize impacts on the underlying soil and vegetation.

Alternatively, in the event of extreme snow events or significant drifts, and with landowner permission, snow may be blown off the right of way using industrial blowers mounted to construction vehicles.

Snow would be removed from the working and spoil sides of the right-of-way prior to topsoil segregation and grading to prevent mixing snow with excavated spoil.

Restoration measures

Alternative methods would be implemented in frozen soil conditions, should these conditions be encountered during construction.

In agricultural lands, topsoil would be removed and segregated from the trenchline, and the spoil side of the construction right of way, with the exception of areas directly beneath snow stockpiles.

In open uplands, including pasture and hay fields, topsoil would be removed and segregated only with the exception of limited areas where grading is necessary to create a level work surface.

Topsoil typically would be removed using a step blade attached to a bulldozer. Alternatively, Atlantic and Dominion Transmission may remove topsoil in frozen conditions by ripping with a grader or heavy disc or by using a pavement excavator to pulverize the topsoil and allow for conventional removal.

The method of topsoil removal would be determined by the construction manager based on site-specific conditions, including depth and extent of frost penetration into the soil.

The method selected would be the best available for retaining soil and root structure within the excavated topsoil to the extent practicable. Segregated topsoil would be placed on the construction right of way adjacent to stockpiled snow. Subsoil excavated from the trenchline would be stockpiled separately from topsoil in the area immediately adjacent to the trench. Soils excavated while frozen may slump if they thaw. To prevent mixing topsoil and subsoil if slumping occurs, Atlantic and DTI would cover the topsoil in mulch, which would create a barrier between topsoil and subsoil. Trenching, lowering-in, and backfilling operations would be scheduled to minimize the exposure time of excavated spoil material to freezing conditions and to reduce the potential for snow accumulation in the trench.

Appreciable accumulations of snow in the trench (generally greater than 12 inches in depth) would be removed before installing the pipeline. Backfilling operations would begin after the pipeline is in the trench.

In upland areas, the trench would be backfilled with subsoil. Depending on the extent of frost penetration in topsoil piles, however, the topsoil may be stockpiled over the winter for replacement during the following spring when it can be worked and contoured.

Stockpiled subsoil would develop a layer of frost penetration, the thickness of which would depend on water content, temperature, wind, and snow cover conditions. Prior to backfilling, frozen material would be skimmed off the top of the subsoil pile to provide access to underlying, unfrozen subsoil for backfilling.

The unfrozen subsoil material would be backfilled over the pipeline first, followed by the frozen subsoil material.

If frozen subsoil exhibits lumps or sharp edges that could damage the coating on the pipe, the construction manager would determine appropriate backfill measures. They may include using mechanical shakers or grinders to break up frozen subsoils before backfilling, or in extreme cases, using sand padding around the pipe.

If sand padding is used, it would be obtained from an upland commercial source and used in upland areas only.

In certain limited areas, such as graded slopes and road and railroad crossings, subsoil (in addition to topsoil) may be stockpiled over the winter for replacement during the following spring.

In these areas, Atlantic and DTI would ensure there are adequate gaps between the topsoil and subsoil piles to allow water to drain between the piles during the spring thaw and prevent mixing the soils.

Signs would be installed to differentiate between the subsoil and topsoil piles. Where topsoil is stockpiled over winter, Atlantic and DTI would cover the pile in mulch and crimp the mulch or install mechanically-fastened erosion control fabric over the stockpile to prevent losing topsoil during the winter and the spring melt or other warming event.

Gaps would be installed within soil piles based on an assessment of drainage patterns to allow water to drain off the right of way during the spring thaw, and berms or water bars would be installed to prevent water flow down the right of way.

Where final grading and restoration cannot be completed due to frozen conditions, the right of way would be left in a roughened condition to reduce the potential for erosion during the spring melt.

In upland areas, a slight subsoil crown may be left over the pipeline to account for settling as backfilled soils thaw. If a crown is left over the pipeline, breaks would be installed to allow water to drain across the right of way. Atlantic and DTI would install erosion and sedimentation control devices, but would not reseed during frozen conditions.

Winter theory

In areas where topsoil replacement is delayed to the following spring due to frozen soil conditions, or in areas where seeding is delayed due to seeding period restrictions, Atlantic and DTI would mulch disturbed areas in non-cultivated uplands. Final cleanup would be performed once the ground is fully thawed and the topsoil stockpiled over winter has dried sufficiently to allow it to be worked without causing excessive compaction and/or rutting.

The schedule for final clean-up would be determined based on ground conditions, but the company anticipates activities would resume in the spring or as soon as extended periods above freezing occur. Final cleanup and restoration would include grading, topsoil replacement, and reseeding.

In wetlands, construction in winter months may minimize impacts because construction would occur outside of the wet seasons in areas where sustained frozen conditions occur along the pipeline routes.

In winter conditions, frozen soils may provide stability for construction equipment and help prevent sloughing of the pipe trench, which could occur in warmer seasons due to saturated conditions.

Construction across wetlands would be conducted in accordance with procedures, except that snow berms (rather than silt fences) may be installed as temporary erosion control devices to prevent sediment migration. If snow is not available, or if melted runoff may undercut snow berms, other temporary erosion control devices, such as silt fence, coir logs, or filter socks, would be installed. Regardless of the initial method used, silt fence would be installed on the approaches to wetlands prior to the spring run-off or warm winter periods.

Winter construction may minimize impacts on waterbodies because construction would occur outside of the wet seasons in the areas crossed. This may avoid or minimize the potential for increased turbidity within waterbodies as well as impacts on fisheries.

Contours of the bed and banks would be restored as near as practicable to preconstruction condition.

Additional measures, such as installing erosion control blankets, would be implemented to stabilize the bed and banks of the waterbody before the return of water flow or the spring melt.

Dominion would use stream gauge data from the U.S. Geological Survey to determine the highest anticipated flows during the time of each waterbody crossing.

In the absence of stream gauge data, engineers would estimate the highest anticipated flows based on the width of the waterbody at the ordinary high water mark, the depth, existing flows at the time of the crossing, and the weather forecast at the time of the crossing.

As a contingency, the company would stage additional materials (flume pipes and erosion control devices) at the crossing in the event that the volume increases due to an unexpected precipitation event or snow melt.

The duration of most in-stream construction activities, i.e., 24 hours for minor waterbodies and 48 hours for intermediate waterbodies (excluding blasting), would minimize the exposure time for increased flows due to a unexpected precipitation event or snowmelt.

If thick ice is encountered on waterbodies at the time of construction, the ice would be removed where required for safe construction and placed outside of the waterbody on the spoil side of the right of way.

Erosion control

Temporary and permanent erosion and sedimentation control measures would be implemented depending on ground conditions. Environmental inspectors would verify the measures are appropriate for the weather conditions.

The following measures would be implemented in order for erosion control devices to be effective throughout the winter and able to withstand the runoff that accompanies spring thaw and snow melt conditions:

• Temporary erosion control devices (silt fences in non-frozen conditions or straw bales, straw logs, or snow berms in frozen conditions) during topsoil stripping and grading to prevent the movement of disturbed soils.

• In non-frozen conditions, temporary slope breakers consisting of mounded and compacted soil would be installed during clearing and grading.

In frozen conditions, temporary slope breakers would not be installed during initial clearing and grading because soils would be frozen and not subject to erosion. However, temporary slope breakers would be installed before the spring thaw. In cultivated lands, temporary slope breakers would be placed across the right of way. Breaks would be installed in snow and topsoil piles where intersected by the temporary slope breakers to promote water flow off the right of way during melting periods. When restoration resumes the following spring or summer, the breakers would be removed; the topsoil stockpiled over winter would be replaced; and silt fences would be installed.

The company says the slope breakers would form the basis of permanent slope breakers. Energy dissipating materials, such as stone rip-rap, would be installed at the outlet end of slope breakers as required by site conditions. Erosion control devices would be inspected and repaired as necessary to be functional for spring runoff.

If an erosion control device is located in an area that is not accessible due to weather conditions or saturated soils during spring thaw, the company would request a variance from the FERC.

Requested variances would depend on specific circumstances and site conditions, but would likely be related to the timeframe associated with installation, repair, or maintenance of erosion control devices.

Mulch would be applied to topsoil stockpiled over winter. In pasture and hayfields, temporary slope breakers would be removed if requested by landowners.

Mulch would likewise be applied to disturbed areas in non-cultivated uplands in areas where topsoil replacement is delayed to the following spring or summer or in areas where seeding is delayed due. The company would condition the construction right of way for planting including preparing seedbeds.

Spring thaw

When possible, construction during spring thaw would be avoided or minimized to reduce or avoid impacts. However, in the event that the construction is required, measures would be implemented to prevent soil mixing, rutting, and compaction. Contractors would work only in well drained, dry sites and/or frozen areas until conditions improve. They would use equipment best suited to existing ground conditions, such as low ground pressure equipment. The contractors would install mats along the travel lane where soils are excessively wet and rutting is occurring to prevent mixing topsoil and subsoil.

Contractors may use frost driving measures, such as snow packing, to increase the load bearing capacity of the ground to remove equipment off, but not as a condition to allow construction to continue.

The frost driving measures would be implemented in the early morning or evening to take advantage of colder temperatures.

If native materials become unsuitable for frost driving, such as mud resulting from snow melt, timber equipment mats would be used to create a driving surface.

When ground conditions are frozen, construction in problem areas would be postponed until evening or early morning.

If the inspector and construction manager determine muddy conditions are severe and rutting occurs, work would be suspended until conditions improve. The inspector would monitor, report, and initiate repairs in problem areas associated with spring thaw. If the measures do not allow for suitable soil conditions, contractors would suspend construction in problem areas until soil conditions are suitable.

Timber removal

The company would hire independent, third-party timber specialists to complete inventories of timber along the pipeline routes and in other construction areas for public crossings and for private lands as warranted or requested by landowners. On federal and state lands crossed by the proposals, inventories would be done by or under the direction of the appropriate land managing agency.

The specialists would evaluate forested land to determine species composition and diameter and provide a current market value estimate for merchantable timber on the property.

Landowners or land managing agencies would be compensated for the loss of that timber based on stumpage board footage and tree species.

Typically, Atlantic and DTI would purchase and take ownership of the timber, unless another agreement is reached with the landowner or land managing agency. Timber on USFS lands would be paid for and disposed of at the discretion of the forest officer in charge.

Monongahela National Forest in West Virginia and George Washington National Forest in Virginia have standards and guidelines applicable to timber removal. A timber removal plan has been written to conform to the standards and guidelines contained within the resource management plans of the respective national forests, the company said in its filing.

Timber removal timing restrictions in Virginia for migratory birds are March 15 to Aug. 15 and for bats, April 1 to Nov. 15. While Atlantic and DTI would comply with these restrictions to the extent practicable, tree clearing on select would be required in the spring and summer of 2017. Atlantic and DTI would consult with the U.S. Fish and Wildlife, U.S. Forest Service, and state/ commonwealth wildlife agencies about additional or special requirements or mitigation for tree clearing in this period.

Wherever possible, mechanical harvesting would be employed. “Feller bunchers,” which are mechanized tree harvesters that can cut and gather several trees at once, would be used to cut trees on slopes with up to 50 percent grade.

The feller bunchers would pile trees, allowing them to be transported to larger collection areas

Log cranes and logging shovels would load trucks, feed grinders, handle stumps, place environmental mats, build bridges, and aid in the overall safe handling of materials and rigging.

Skyline logging would be used in some areas because of steep terrain, limited access, and the alignment of the route. Alignment is critical in all cable systems.

The pipeline company would seek extra workspace authorization, if necessary, to locate portions of cable systems beyond the construction rights of way.

Helicopter logging is typically employed in remote areas with rough terrain. Timber is generally felled by hand cutters with chain saws. One advantage of helicopter logging is the ability to safely remove timber on remote slopes where no roads exist. Flying logs to existing roads creates less soil disturbance and requires fewer person-hours. Logs are flown to the nearest timber landing for transport. During log transportation, helicopter flight paths typically would be along the pipeline rights of way. The helicopter can also provide ambulatory service, if needed, as well as help with fire patrol and delivering equipment and crew to the field.

Mitigation measures

Atlantic and DTI would implement several additional measures to reduce or minimize impacts associated with timber removal, including installation, inspection and maintenance of temporary erosion control devices.

Debris entering a waterbody as a result of felling and yarding timber would be removed as soon as practical and would be placed outside the 100-year floodplain where feasible.

Logs and slash would not be yarded across perennial streams unless fully suspended, nor would logs be dragged across waterbodies. Logs and slash may be hauled by truck over temporary bridges. During logging and clearing, the direction of log or slash movement would be conducted to minimize sediment delivery to waterbodies.

Logs firmly embedded in the bed or bank of waterbodies that are in place prior to felling and yarding of timber would not be disturbed unless they prevent fluming, damming, or trenching operations.

Landings for clearing would not be located in wetlands or streams, and, where feasible, logs yarded out of wetlands or riparian areas would be skidded with at least one end suspended from the ground to minimize soil disturbance.

Timber cleared from the pipeline rights of way or other work areas that would be used for in-stream or upland wildlife habitat diversity structures would be stored on the edge of the rights of way or in temporary workspace areas for use during restoration.

Before clearing, environmental inspectors would flag existing snags; these would be saved as mitigation to benefit primary and secondary cavity nesting animals. Other large diameter trees on the edge of the work spaces would be flagged to save/ protect as green recruitment or habitat/ shade trees, where feasible.

George Washington National Forest prescribes advanced harvesting methods such as cable or helicopter may be used on sustained slopes greater than 35 percent. Log landings would be located outside of riparian corridors as would equipment serviced for harvesting and hauling.

Unless otherwise authorized, log landings would be ripped to a depth of 6-8 inches to break up compaction and to ensure soil productivity and the successful reestablishment of vegetation. Skid trails would cross riparian corridors only at forest-designated crossings. If crossing a perennial or intermittent stream is unavoidable, temporary bridges would be used.

All streams would be crossed as close to a right angle as possible. Stabilization of skid trails would occur as soon as possible after use to minimize downslope soil movement.

Skidding trees would be directed in a manner that prevents creating channels or gullies that concentrate water flow to adjacent streams.

Temporary stream crossings associated with timber harvest operations would be removed and rehabilitated.

Dips, waterbars, or other dispersal methods would be constructed and maintained to direct stormwater off skid trails and reduce potential sediment flow to streams. Designated trails would not be used as skid trails. If visible within a 100-foot zone of concern from level 1 and 2 travel ways and use areas, slash would be removed, burned, chipped, or lopped. These treatments would result in an average slash height of two feet off the ground.

Blasting in karst topography

In accordance with Dominion's karst monitoring and mitigation plan, the following procedures would be implemented in areas of karst terrain:

• Blasting would be conducted in a manner that would not compromise the structural integrity or alter the karst hydrology of known or presumed habitat for federally listed threatened and endangered species in the subterranean karst environment, such as the Madison cave isopod.

• Excavations would be inspected for voids, openings or other telltale signs of solution (karst) activity.

• If rock removal intercepts an open void, channel, or cave, construction activities would cease in the vicinity of the void, channel, or cave until a remedial assessment is performed by a qualified geologist or engineer with experience in karst terrain.

• Explosives would be limited to low-force charges designed to transfer the force only to the rock that is designated for removal.

• If the track drill used to prepare holes for explosive charges encounters a subsurface void larger than six inches within the first 10 feet of bedrock, or a group of voids totaling more than six inches within the first 10 feet of bedrock, then explosives would not be used until a subsurface exploration is conducted to determine if the voids are connected to a deeper karst structure.

The subsurface exploration would be carried out with track drill probes, coring drill, electrical resistivity, or other techniques capable of resolving open voids in the underlying bedrock. If a track drill or coring rig is used, then all open holes would be grouted shut after the completion of the investigation, the company said.