R/W REVEGETATION PLAN

GOALS

- E&S CONTROL
- Wildlife Habitat
- Aesthetics

Vegetative Components

- Mix of native and non native grasses and legumes

- Erosion and Sedimentation

Native grasses and herbs

- Habitat enhancement
- At the Districts/Park request

Non native legume mix

- Food Plots
- At District Request

SHRUB PLOTS

- Spaced every 200 feet
- 5 Groups
- Enhance Habitat
- Temporary Work Space

Conifer Planting

- Temporary work space

- 6 X 6 Spacing

Habitat Enhancements

- Timber Rattle Snakes
- Allegheny Wood Rat
- Where Appropriate
- Where Materials are Available

Wetlands

- No Seeding
- Top soil stock piled
- Top soil replaced and left to see naturally

Stream Crossings

- As required by DEP
- Planted with shrubs and trees
- Protected with woven wire fence as required

Barricades

- Rock Barricade
- Gates (painted black and yellow)
- Road crossings and access roads

RIGHT OF WAY REVEGETATION PLAN
General Right of Way Construction

- Right of Way Projects across lands managed by DCNR have the potential to disturb sizable acreage. The revegetation goals of this disturbed acreage are erosion and sedimentation control, wildlife habitat and aesthetics. The following revegetation plan provided by DCNR will address the revegetation goals.
- General Right of Way Construction
- There are four vegetative components to the plan: native and non native mix of grasses and legumes mix in the disturbed pipeline ROW, clumps of shrubs within the pipeline and work area, a native mix of grasses and herbs(district request) and a non-native legume mix (district requests).
- In addition, basking areas and habitat for the Timber Rattlesnake and the Allegheny Woodrat will be created where appropriate throughout the pipeline corridor whenever materials are available, and at the discretion of the onsite biologist and the District Forester/Park Manager or their designee. For timber rattlesnakes, the available rocks will be piled on the disturbed side of the ROW or on the south side if both sides are disturbed. In order to create basking habitat, the rocks should be placed in piles, with large flat rocks laid horizontally. The crevices created will allow the snakes to thermo regulate, or to retreat if threatened. Conifers **should not** be planted near these created basking areas to avoid shading the rocks. Elsewhere throughout the pipeline corridor, wood rat habitat can be created by placing the rock material adjacent to existing, forested rock areas found next to the temporary workspace. Some conifers can be planted near the created woodrat habitat, but deciduous, mast-producing trees such as chestnut oak are more desirable. Additional tree and shrub species suitable for wood rat restoration will be provided by the Ecological Section of PA Bureau of Forestry

DISTURBED ROW REVEGETATION STRATEGY

- The native and non native grass mix is the main component of the revegetation plan and will be used for cover and stabilization in the disturbed ROW.
- In order to establish a quick cover for stabilization and reduce the chance for invasive species to establish, a cover crop will be mixed in with the native and non native grass mix mix. The cover crop will either be oats if the seeding takes place in the spring or (prior to June 15th) or grain rye if the seeding takes place in the fall (after June 15th). This can be applied at the same time with the mix below and can be done with the hydro seeder. The cover crop should be applied at one (1) bushel/ acre Seeding needs to be completed as soon a possible. Optimum seeding times are before mid-April or after mid-September if possible for the best chance of successful established cover. No permanent seeding should be conducted between June 30th and August 31stunless agreed to by the District Forester/Park Manager or their designee. District Forester/Park Manager or designee may substitute annual rye grass for cover crop.

Seed Mixes

- **Areas with Less Than 15% Slope**
- Lime 3 tons per acre
- Fertilizer 500 pounds of 10-20-20 per acre
- Orchard Grass 3 pounds per acre
- Little Blue Stem 2 pounds per acre
- Purple top 2 pounds per acre (Tridens flavus)
- White Clover 8 pounds per acre
- Timothy 4 pounds per acre
- Canadian Wild Rye 2 pounds per acre
- Deer Tongue 5 pounds per acre
- Partridge Pea .5 pounds per acre
- Black-eyed Susan .5 pounds per acre (Rudbeckia hirta)
- Annual Rye Grass 5 pounds per acre (Delete if using spring oats or grain rye)

- **Areas with Greater Than 15 % Slope**
- Lime 3 tons per acre
- Fertilizer 500 pounds per acre
- Orchard Grass 6 pounds per acre
- Indian Grass 3 pounds per acre
- Purple Top 3 pounds per acre
- Switch Grass 2.5 pounds per acre (Blackwell Variety)
- River Bank Rye 1.5 pounds per acre
- White Clover 8 pounds per acre
- Timothy 5 pounds per acre
- Deer Tongue 8 pounds per acre
- Black-eyed Susan .5 pounds per acre (Rudbeckia Hirta)
- Partridge Pea .5 pounds per acre

TEMPORARY WORK AREA REVEGETATION STRATEGY

- The temporarily disturbed work area will be revegetated with conifers and pockets of shrubs. The conifer species include white pine (*Pinus strobus*), Pitch pine (*Pinus rigida*), Virginia Pine (*Pinus virginiana*) (south of route 80) and Red Pine (*Pinus resinosa*) (north of route 80). Conifers will be planted on the disturbed side of the ROW when it parallels an existing ROW and on both sides when the ROW does not parallel an existing pipeline. The conifers will be planted in a staggered fashion at approximately 6' by 6' spacing.
- Pockets of shrubs will be planted approximately every 200 feet on the side of the ROW where disturbance has taken place. These plantings will comprise approximately 200 square feet 10' X 20'). Each pocket will be planted with 10 -15 shrubs using seedlings.). Shrub Group Plantings will be alternated along the right of way. These plantings will need to be fenced to protect from damage by browsing herbivores. Fencing will consist of 8' woven wire fence. Posts, fencing, other materials, seedlings and labor will be provided by the company constructing the pipeline. Fencing requirement may be waived by the District Forester/Park Manager or designee.

Shrub Groups

- Group 1 Hawthorn/Crabapple group
- Washington Hawthorn (Crataegus phaenopyrum)
- American Sweet Crabapple (Malus coronaria)
- Cockspur hawthorn (Crataegus crus-galli
- Large-seed Hawthorn (Crataegus macrosperma)
- Frosted Hawthorn (Crataegus pruinosa)
- Dotted or White Hawthorn (Crataegus punctata)
- Sargents Crabapple (Malus sargentii)
- Toringo Crabapple (Malus toringo)

- Group 2 Serviceberry Group
- Shadbush (Amelanchier arborea)
- Smooth Shadbush /Allegheny Amelanchier laevis)
- Low Junebuch (Amelanchier stolonifera)

- Group 3 Mast Producing Group
- Black Locust (Robinia psuedoacacia)
- American Mountain Ash (Sorbus Americana)
- Black Haw Viburnum (Viburnum prunifolium)
- American Hazelnut (Corylus Americana)
- Dwarf Chinquapin Oak (Quercus prinoides)
- Scrub Oak (Quercus

Group 4 Black berry/Rasberry Group

Rubus allegheniensis
Rubus argutus
Rubus Canadensis
Rubus occidntalis
Rubus strigosus

- Group 5 Host Group
- Black-haw (Viburnum prunifolium)
- Nannyberry (Viburnum lentago)
- Highbush blueberry(Vaccinium corymbosum)
- New Jersey Tea (Ceanothus americanus)
- Black chokeberry (Photinia melanocarpa)
- Bush Honeysuckle (Diervilla lonicera)
- Pinxter-flower (Rhodendronpericlymenoides
- Staghorn sumac (Rhus typhina)

RIGHT-OF-WAY ACCESS POINTS

- Where the ROW crosses public use roads or other access points a barricade of boulders or a fence constructed of material approved by the District Forester/Park Manager or their designee will be placed on both sides of the access edge. This barricade will consist of boulders and rocks of sufficient size, piled to deter the use of the ROW by ATVs and other motorized vehicles. A coniferous screen of red pine, white pine, pitch pine and Virginia pine will be planted behind this barricade. The screen will be approximately 20 feet in width and will constitute three rows of trees with staggered plantings at approximately a 6’ by 6’ spacing. This screen will actually be an extension of the ROW edge plantings.

Food Plot Mixes

- Non Native Grass and Legume Mix for Hebivores
- Ladino Clover 2lbs/acre
- White Dutch Clover 2 lbs/acre
- Alsike Clover 2 lbs/acre
- Birdsfoot trefoil (norcen variety) 9 lbs/acre
- Oats or wheat 2 bushels/acre
- Use oats in spring and wheat in the fall
- Lime at 3 tons per acre
- Fertilize with 10-20-20 at 500 pounds per **acre**

- Native Grass and Herb Mix
- Native Grass and Herb Mix
- 20% Little Bluestem PA ecotype (*Andropogon scoparius*)
- 10% Big Bluestem variety “Niagra” (*Andropogon gerardii*) (genetic origin is NY)
- 15% Virginia Wild Rye PA ecotype (*Elymus virginicus*)
- 10% Indiangrass PA ecotype (*Sorghastrum nutans*)
- 10% Deertongue variety “Tioga” (Panicum clandestinum)
- 5% Switchgrass variety “Shelter” (*Panicum virgatum*) (genetic origin is WV)
- 5% Partridge Pea PA ecotype (*Chamaecrista fasciculata*)
- 3% Showy Tick Trefoil PA ecotype (*Desmodium canadense*)
- 5% Ox-eye sunflower PA ecotype (*Heliopsis helianthoides*)
- 2% Autumn bentgrass PA ecotype (*Agrostis perennans*)
- 2% Woolgrass PA ecotype (Scirpus cyperinus)
- 3% Soft Rush PA ecotype (Juncus effusus)
- 5% Pennsylvania smartweed PA ecotype (*Polygonum pensylvanicum*)
- 5% Common Milkweed PA ecotype (*Asclepias syriaca*))
- The recommended seeding rate is 15 lb/acre

Stream Crossings

- As part of the PA DEP permit process, specific streams impacted by the construction of a natural gas pipeline right of way will be planted for canopy coverage with trees and shrubs or just shrubs. A list of streams will be provided at the start of the project. Plant material will be from stock native to the Allegheny Ridge and Valley Region (central Pennsylvania), the Allegheny Plateau Region (western Pennsylvania). These plantings need to be protected from browsing herbivores with an eight (8) foot woven wire fence. This fencing requirement may be waived by the District Forester or designee. **The use of tree shelters is prohibited unless approved by the District Forester/Park Manager.**

- Planting Stock for Stream Crossing
- Black Willow (Salix nigra)
- Black Chokeberry (Aronia melanocarpa)
- Winterberry (Ilex Verticilata
- Silky Dogwood (Comus amomun)
- Red Maple (Acer Rubrum)
- Yellow Birch (Betula Lutea)
- White Oak (Quercus Alba)
- Tulip Poplar (Liriodendron tulipifera)
- Easter Hemlock (Tsuga Canadensis)

TREE AND SHRUB PLANTING NOTES

- Trees and shrubs are a ***perishable*** crop. Keep in a cool dark place until planted. Ideal temperature would be 33 - 40 degrees F for up to two weeks.
- Keep seedling roots moist at all times. Do not expose seedling roots to sun or wind as drying the tiny fibers on the roots will make seedling survival nearly impossible. These fibers are responsible for up taking water and nutrients to the seedling. If they dry out, essential elements cannot be transported.
- A tarp or covering must be used to protect seedlings during transporting.
- Seedlings should be planted by May 15 and within two weeks of seedling pickup from nursery. The planting date may be extended if weather conditions (cold and wet) permit.
- Use buckets or planting bags to carry seedlings while planting. A bit of water in the bottom of the bucket is helpful to keep seedlings moist.
- Seedlings should be planted at the same depth which they came out of the nursery beds. Look for coloration changes or slight swelling at the root collar.
- Seedlings should be planted no more than 30 degrees from the vertical with the root collar at the surface and the roots straight down. (horizontal or “j” roots are not acceptable). The seedlings will expend energy to straighten themselves as they grow, and this expanse of energy would best be reserved for future use.
- No root pruning is permitted by the contractor.
- All debris (tree wrappers, rubber bands, etc.) must be removed from the site by the contractor.
- Balling or twisting of roots to accommodate the planting hole is prohibited.
- Extreme care shall be taken so roots are not forcibly pushed into the planting hole with any tool, which might cut or injure the root.
- Seedlings must be planted tightly with no air pockets around the roots. Conifer seedlings that can be pulled out of the ground, before the needles break off when three to five needles are pulled will be considered as improperly planted and not acceptable.

A copy of the Erosion and Control Plan must be submitted to DCNR. DCNR does not approve E&S plans. This copy is for information only.