

Northern View Tract
of the Dragon Run Nature Preserve
Management Plan

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I. Purpose of the Management Plan

A Conservation Easement was entered into by Dragon Group, LLC and the State of Delaware on August 27, 2004. The Dragon Group, LLC was required by the Army Corps of Engineers to enter into a Conservation Easement as a condition of permit number CENAP-OP-R-200301849-57. Specifically, page 7 of the permit states:

“6. Prior to the construction of any work authorized by this permit, the permittee shall execute a Conservation Easement with the Delaware Department of Natural Resources and Environmental Control, Division of Parks and Recreation. This easement shall encompass approximately 34.8-acres as shown on the “Record Major Subdivision Plan for Northern View”, four sheets, dated December 19, 2003; sheet 1 last revised July 20, 2004, sheets 2-4 last revised June 14, 2004; prepared by Karins Associates, Newark, Delaware. The dimensions of the conservation area shall be defined by the bounds shown in the Conservation Easement Note shown on sheet 1 of the above cited plan.”

The Office of Nature Preserves shall develop a Northern View Tract of the Dragon Run Nature Preserve Management Plan within one year of execution of this document. The management plan is subject to the approval of the Natural Areas Advisory Council and Dragon Group, LLC. Management actions would be conducted by the Office of Nature Preserves or a contracted agent and paid for from the Management Fund.

It is the purpose of this management plan to assure that the Conservation Easement Area (CEA) will be retained forever in its natural and scenic condition as a Nature Preserve as provided in the Conservation Easement dated August 27, 2004 and to prevent any use of the CEA that will significantly impair or interfere with the Conservation Values of the CEA. J.I. Schwartz Builders, as Grantor of the Conservation Easement, has committed to confining the use of the CEA to such activities as are consistent with the purpose of the Easement. See Appendix 1 for the full Conservation Easement.

II. Description

Preserve Overview

The Northern View Tract of the Dragon Run Nature Preserve is located in central New Castle County on the north side of Dragon Run and west of Delaware City. The Nature Preserve is located within the Red Lion Hundred and is bounded by State Route 1 to the west, Route 13 to the east, Wrangle Hill Road to the north, and Kirkwood Saint Georges Road to the south. The Preserve contains 34.8 acres of upland forest and wetlands within the Dragon Run Natural Area.

The Nature Preserve is bisected by Mullins Road, an interior road within the Northern View development. The Preserve is comprised of two units, the northern section just to the north of Mullins Road, and the Dragon Run section, just to the south of Mullins Road.

III. Environmental Resource Description

A) *Nature Preserve boundaries*

The Dragon Run Nature Preserve boundaries on the Northern View Tract encompass the majority of the forested lands within the development. See appendix 2.

B) *Natural Areas Inventory boundaries*

The Dragon Run Natural Area encompasses the riparian forest associated with Dragon Run. The headwaters of Dragon Run start approximately 5.8-miles to the west in the Pencader Hundred. The Dragon Run Natural Area starts approximately 1.2 miles from the headwaters and incorporates the riparian lands eastward towards the Delaware Bay.

C) *Habitat Types*

1. Forest

The Northern View Tract of the Dragon Run Nature Preserve contains approximately 21.6032-acres of forest; 12.4775 of mature forest and 9.1257 of young forest. The northern section of the Nature Preserve contains 5.5839-acres of mature forest while the Dragon Run section of the Nature Preserve contains 6.8936-acres of mature woods. 5.8857-acres of young forest covers the remaining areas of the northern section of the Nature Preserve while 3.24-acres is found in the Dragon Run section of the Preserve.

The northern section of the Nature Preserve contains good quality palustrine forested wetlands which occur on the floodplain of an unnamed tributary to Dragon Run. The canopy primarily consists of red maple (*Acer rubrum*) and green ash (*Fraxinus pensylvanica*). The shrub layer is dense with a mix of sweetpepper bush (*Clethra alnifolia*), highbush blueberry (*Vaccinium corymbosum*), arrowwood (*Viburnum dentatum*), and winterberry holly (*Ilex verticillata*). The herbaceous layer is primarily composed of skink cabbage (*Symplocarpus foetidus*), with a diversity of fern species, notably crested shield fern (*Dryopteris cristata*). The upland buffer to this stream corridor is quite narrow, and as a result, non-native invasive species have intruded into this narrow upland edge.

The Dragon Run section of the Preserve is a high quality scrub-shrub/emergent wetland that is likely the result of beaver activity. High water from beaver dams have drowned and killed trees that would otherwise dominate the site. The site is now composed of a mix of wetland shrubs [winterberry holly, and common alder (*Alnus serrulata*)], and broad-leaf aquatic herbs [arrow arum (*Peltandra virginica*), and water willow (*Decodon verticillata*)]. The upland buffer along this section of Dragon Run is very narrow and consists of non-native species and weedy, native generalists. See appendix 2.

2. Wetlands

The Nature Preserve contains 21.9764-acres of palustrine emergent, scrub-shrub, and forested wetlands. The majority of the 9.6236-acres of forested wetlands are located in the northern section of the Nature Preserve associated with the unnamed tributary of Dragon Run.

The 9.3020-acres of scrub-shrub and 3.0508-acres of emergent wetlands are located in the Dragon Run section of the Nature Preserve. See appendix 2.

D) *Waterbodies*

The Northern View Tract of the Dragon Run Nature Preserve contains Dragon Run as well as an unnamed tributary to the north to Dragon Run. See appendix 2.

E) *Rare Species*

Based on limited site visits with State biologists and zoologists, as of the date of this plan there are no rare or threatened plant, animal or natural community elements known from this site.

F) *Topography*

The topography of the Nature Preserve varies between 10 and 50 feet. The north western border of the Nature Preserve adjacent to State Route 1 rises to 50 feet and the Preserve slopes downward towards the unnamed tributary and Dragon Run to 10 feet above sea level. See appendix 2.

G) *Soils*

A majority of the soils in the preserve are made up from Nanticoke and Mannington soils, which are very frequently flooded and Sassafras soils, which are found in moderately eroded areas with 10%-15% slopes. The remainder of the soils include Downer Sandy Loam, Greenwich Loam and Reybold Loam associated with slopes from 2%-10% grade. See appendix 2.

H) *Adjacent Land Uses*

The Nature Preserve lies between two major highways and major residential developments have recently been constructed to the east and west, and residential development is slated for lands across Dragon Run to the south. Adjacent to the northern section of the Preserve is a DART facility and recently this location has been identified as a County composting site for yard waste.

IV. Site Management

A) *Environmental Management*

1. Invasive Species

The majority of invasive species are located on the edge of the Nature Preserve. They include, but are not limited to, multiflora rose (*Rosa multiflora*), oriental bittersweet (*Celastrus orbiculata*), autumn olive (*Elaeagnus umbellata*), common privet (*Ligustrum vulgare*), Japanese honeysuckle (*Lonicera japonica*), and mile-a-minute (*Polygonum perfoliatum*). Greenbriar is a

native plant, but in certain areas within the Preserve it is facilitating the growth and matting of non-natives such as Japanese honeysuckle. There are some vine issues in small areas of the Preserve as well; mostly poison ivy and grapevine. These areas will need to be managed to prevent the grape vine from pulling down on trees.

Poison sumac located in the northern section of the Preserve on the edge of the mature forest should be left alone. The canopy will close, but the plant should still persist. There is rich woody vegetation adjacent to the stormwater outlet also located in the northern section of the Preserve. This woody vegetation occurs throughout the weedy upland edge. It is recommended that after removal of the invasive species tulip poplars should be planted at a high density.

Phragmites australis is primarily limited to the scrub-shrub and emergent wetlands along the Dragon Run section of the Preserve. It is fairly intolerant of water with moderate to high salinity levels. However in the areas where it does occur, it often forms a dense monoculture. Dead stems are somewhat resistant to decay, with the previous seasons stems often remaining upright among a thick layer of dead stems from previous years. This not only limits the ability of other plant species to grow in older, dense stands but creates a very real fire hazard. A natural or man-made fire that starts in these dense *Phragmites australis* stands has the potential to spread to nearby upland areas if not quickly contained. The close proximity of private residences to *Phragmites australis* stands on the Nature Preserve probably places them at risk in the event of a wild fire.

It is the goal of this management plan to manage the Northern View Tract as a high quality Coastal Plain stream corridor with adjacent native forests by:

- Reducing invasive species
 - Through Control of woody invasives in the upland forest using hand cutting and stem application of Garlon 3A herbicide (vines and small shrubs) and basal bark treatment with Garlon 4 (large shrubs and trees).
 - Control of *Phragmites australis* in the scrub-shrub/emergent wetlands of Dragon Run using spray application of wetland approved form of Glyphosate (Aquastar) herbicide.
- Replanting as appropriate
 - Tulip Poplar along upland edge on northern portion of property
- Keeping “nuisance” animal species under control
 - Only trapping beaver if activity poses a hazard or threat to neighboring properties to be determined by the Office of Nature Preserves
 - Through adding resident Canada Goose eggs. This activity requires a State permit

2. Conservation Easement

A) Permitted Uses

(A) Grantor may restore and enhance the CEA's natural features or any ecological system, in consultation with the Office of Nature Preserves, Division of Parks and Recreation, Department of Natural Resources and Environmental Control.

(B) Loam, peat, gravel, soil, rock, sand, or similar material may be excavated or removed for authorized cultural resource activities, with prior written approval of Grantor and the Office of Nature Preserves, subject to applicable State and Federal regulations. Cultural artifacts found on the CEA shall be conserved, studied and/or stored by agreement of Grantor and the Office of Nature Preserves.

(C) Recreational activities shall be primarily limited to hiking, photography and nature study, consistent with maintaining the character of the Nature Preserve.

(D) Research and scientific activities are allowed and shall be compatible with the purpose of the Conservation Easement. Such activities shall be considered on a case-by-case basis by Grantor and the Office of Nature Preserves.

B) Restrictions

(A) No signs, billboards or outdoor advertizing structures shall be placed or maintained on the CEA; except for a reasonable number of signs for resource protection, safety, boundary identification, management, interpretation of natural and cultural areas, identification of occupant, and for such other purposes with prior written approval of the Office of Nature Preserves.

(B) No building, structure, improvement, communications tower or facility, utility line or conduit, shall be constructed in, on or above ground within the CEA.

(C) No dumping, depositing, abandoning, discharging or releasing of any gaseous, liquid, solid or hazardous waste, substances, materials or debris of whatever nature on, in, over, or under the ground or into surface or ground water shall occur; except as permitted by law.

(D) No loam, peat, gravel, soil, rock, sand, or other material shall be deposited, placed, excavated or removed from the CEA; nor shall there be made any change in the general topography of the land except for material associated with erosion control, habitat enhancement, authorized cultural resource activities, or public health and safety issues.

(E) There shall be no removal or destruction of trees, shrubs, wildflowers or other vegetation, or animal species; except for control of diseases, pests, non-native species, and noxious weeds; for safety purposes; and for proper management of species and natural communities.

(F) Intentional introduction of non-native, non-indigenous plant and animal species is prohibited; except for the management of species and natural communities associated with prior written approval of the Office of Nature Preserves.

(G) There shall be no collecting of wild animals, fossils, minerals, or cultural artifacts; except for scientific and nature study and in accordance with applicable State and Federal regulations.

(H) There shall be no use of pesticides, herbicides, insecticides or other chemicals, except as may be necessary for the purposes set forth in subsection (E) above. If the natural balance of the area is threatened, control measures may be employed that are compatible with the maintenance of the natural features and consistent with the purpose of the Conservation Easement.

(I) Motorized vehicles and bicycles are prohibited in the CEA; except for activities associated with subsection (E) above.

(J) No other acts, uses or discharges shall be allowed which adversely affects fish or wildlife habitat or the preservation of land or water areas on the CEA.

(K) Any other use of or activity in the CEA which would materially impair the Conservation Values, unless necessary for the protection of the Conservation Values that are subject to the Conservation Easement, are prohibited.

C) Monitoring

Monitoring shall include at a minimum an annual inspection to be initiated by the Office of Nature Preserves after prior written notice is provided at least 48 hours in advance to Grantor.

If restoration of the Conservation Values is necessary, such details will be agreed to between the Grantor and the Office of Nature Preserves; see appendix 3 and 4 for a list of appropriate plant species and suppliers.

B) Community Use

The Northern View Tract of the Dragon Run Nature Preserve is considered to be private open space whereby it is for the enjoyment of the Northern View development community; not the general public. Recreational activities shall be limited to passive activities such as hiking, photography and nature study, consistent with maintaining the character of the Nature Preserve. No motorized vehicles or bicycles are permitted.

In consultation with the Office of Nature Preserves the community may:

- restore and enhance the Northern View Tract's natural features
- initiate cultural resource activities
- initiate research and scientific activities

V. **Budget**

A) Sources of Funding

Dragon Group LLC established a \$50,000 Nature Preserve Management account and a \$10,000 conservation easement monitoring fund. In addition, once a Homeowners Association is created, then each residential lot is assessed an annual fee of \$25.00 to assist in the long-term management of the Nature Preserve.

Environmental management costs, up to \$40,000, would be paid from the nature preserve management account. \$10,000 would be retained by the Division of Parks and Recreation for ongoing Nature Preserve management monitoring. Once the \$40,000 is expended, then any additional or ongoing costs would come from the Homeowner Association fees.

B) Representative Costs

- Invasive species control efforts
- Tulip Poplar planting
- Shrub planting
- Fence repair/maintenance
- Hazardous tree removal survey
- Baseline Heritage surveys