TREE AND SHRUB PLANTING JUSTIFICATION

BACKGROUND LITERATURE

William A. Weber, Professor of Natural History, and Curator of the Herbarium at the University of Colorado Museum, performed a botanical inventory of the Rocky Flats Plant (RFP) in 1974 (Weber, et al., 1974), and concluded that "*in prehistoric times, the Rocky Flats pediment must have been more densely tree covered than it is now.*" Dr. Weber based this determination on the persistent presence of species that he considers "*distinct forest elements*" in ravines and gulches on RFP. These "forest elements" include species such as ponderosa pine, Douglas-fir, river birch, ninebark, and forbs such as spring beauty, false Solomon's seal, and false lily-of-the-valley.

Dr. Weber reported that "*Rocky Flats may once have been like a gently sloping pediment covered with pines, with openings of grassland supporting a remnant of the mid-western mid-grass prairie.*" Forest burning, timber cutting, and overgrazing have virtually eliminated trees from most areas of RFP. This has opened the area to the effects of winds that have blown away topsoil, evaporated soil moisture, and prevented reestablishment of trees. When the buffer zone was purchased, the effects of overgrazing were quite evident. The baseline characterization (DOE, 1992) reported that the native vegetation has significantly recovered, and the areas below the pediments, or mesas, now exhibit characteristics of a healthy native prairie ecosystem. This report also found that ponderosa pine and Douglas-fir, both montane species, were becoming reestablished in isolated stands on the mesas.

Reports from the early 1900s (Vestal, 1914, and Ramaley, 1908) indicate that the mesa areas (the gently sloping areas just east of the foothills, and west of the ravines) in the vicinity of RFP were forested with pine savannahs. These savannahs were populations of scattered pines that varied in density across the mesa crests. The pine stands were denser on the north sides of the crests due to the more favorable moisture conditions there.

Currently, ponderosa pine and Douglas-fir are found along the escarpments of Rock and Woman Creeks, and in depressions around rockpiles and outcrops where there is protection from the wind. In these protected areas, seedlings were able to survive, and several age-classes of trees have become established on the mesas of Rocky Flats.

These evergreens are heavily utilized by buck mule deer, in preference to deciduous trees, for rubbing the velvet from their antlers and for dominance displays, and thus they play a very important role in the reproductive cycle of the deer at RFP. This phase of the male breeding activity is crucial to the reproductive success of the species.

In his report, Dr. Weber also recommends the use of shelterbelts and contour planting to help reduce wind erosion. *"We would recommend that every effort be made to obtain the advice of experts in shelterbelt development and contour planting, and to obtain funding for a comprehensive plan to reshape the landscape of the plant environs and to establish both topographic and vegetational buffering against wind erosion."*

The background literature leaves little doubt that in the opinion of recognized experts, Rocky Flats was once partly forested, and that tree and shrub planting is an appropriate and recommended practice.

PAST PROMISES TO THE PUBLIC

The NEPA documentation, in the form of the Environmental Statement (ES) developed for the buffer zone land acquisition in the early 1970s, indicated that shelter belts would be added to upgrade the aesthetic quality of the area, control erosion, and improve wildlife habitat. Newspaper articles (Denver Post, 1972 and 1973) written at the time also documented these commitments. Members of the environmental community have copies of the ES and newspaper articles, and have stated their intentions to ensure that DOE lives up to the commitments made prior to the land acquisition.

- Excerpt, page 2 of Environmental Statement: Land Acquisition RFP Colorado, April 1972:

  "This buffer zone would serve as an undeveloped open area (i.e., "greenbelt") around the existing industrial facility. Preservation of such an undeveloped area would be desirable in the potentially high-density residential area and would be in line with recommendations of the Colorado State Environmental Commission. This greenbelt would preserve and enhance the ecological state of the land. Shelter belts would be added in the form of alternate rows of shrubs, bushes, and trees. These shelter belts should upgrade the aesthetic quality of the area, significantly decrease wind and water erosion, encourage increased growth of vegetation, and provide shelter for animal life."

- Excerpt, page 16 of Environmental Statement: Land Acquisition RFP Colorado, April 1972:

  "The addition of sheltering vegetation within portions of the acquired land should act to upgrade the aesthetic quality of the area, decrease wind and water erosion, encourage increased growth of vegetation, and provide shelter for animal life."

- Excerpt, Denver Post Article October 25,1972.

  "The buffer zone, the AEC has said, will be developed as a greenbelt around Rocky Flats, preserving and enhancing the ecological condition of the land. Shelter belts will be added to upgrade the aesthetic quality of the area, decrease wind and water erosion, encourage growth of vegetation and provide a haven for animal life the AEC said."

- Excerpt, Denver Post Article December 2, 1973

  "The buffer zone, the AEC has said, will be developed as a greenbelt around Rocky Flats, preserving and enhancing the ecological condition of the land. Shelter belts will be added to upgrade the

aesthetic quality of the area, decrease wind and water erosion, encourage growth of vegetation and provide a haven for animal life the AEC said."

- Excerpt, Letter from James R. Nicks (Assistant Area Manager for Administration, AEC) to James F. Fisher (Executive Director, North Jeffco Metropolitan Recreation & Park District), November 14, 1974

  "Our commitment to preserve the buffer zone land as an undeveloped greenbelt is unchanged."

OTHER CONSIDERATIONS

The tree and shrub planting proposed for RFP is exactly the type of planting that was recommended by Dr. Weber, and that was promised in the NEPA documentation for the Buffer Zone land acquisition. The plantings would provide habitat diversity, reduce wind-related soil erosion and associated contaminant transport, and control drifting of snow at the east entrance and at Indiana street. Planting would be done in areas where native prairie grassland species are not well established. The work would be done in cooperation with the Colorado State Forest Service, at minimal cost.

The initial tree and shrub planting operations involve several experimental plots to evaluate different methods of planting and nurturing for a variety of species. These plantings and the long-term monitoring of these plantings will allow more efficient planning and implementation of large-scale future plantings when they are required. Mitigation planting will have a greater likelihood of success once suitable methods and appropriate species have been established.

The aesthetic and habitat value of the trees and shrubs would increase significantly over time, much as interest accumulates in a bank. The aesthetic improvements to the east entrance would aid in attracting private enterprise to the plantsite, and future plantings could be targeted to improve the aesthetic value of other areas of the plantsite and buffer zone where it is needed. This area is also in the public view, and the

addition of small groups of trees and shrubs will give visual reinforcement that RFP is enhancing the ecological diversity and improving habitats as promised in the ES for acquisition of the buffer zone lands (USAEC, 1972).

The habitat value provided by the plantings will help to offset damages done to the natural resources by past contaminant releases and by future remediation activities. Proactive efforts such as the proposed plantings will be viewed favorably by Natural Resource Trustees when they determine injuries to natural resources as part of a Natural Resource Damage Assessment for RFP. This should reduce the amount of damages that are assessed.

The plantings should have significant public relations value, and will be a clear indication to the public that DOE is taking positive steps toward environmental restoration. Recent conversations with local landowners during routine field work indicate that the local population is very much aware of the promises made in the ES, and that there is constant scrutiny of RFP activities. The general public will be more impressed by visible habitat enhancement such as tree planting than by "invisible" enhancement such as planting native grasses in disturbed areas. While reestablishment of native grasses, where appropriate, is a necessary goal for remediation and mitigation, it is not a process visible to the public. Tree and shrub planting will help improve the public perception of cleanup activities at RFP.

Carefully planned future plantings can benefit the mission of the plant by providing living windscreens that will help reduce wind-related soil erosion and contaminant transport from planned remediation areas, thereby improving air quality during remediation activities. Living snow fences could also reduce delays in remediation work by reducing snow drifts in critical areas. Wetland mitigation efforts may require the use of living snow fences to increase snow accumulation in drainage areas critical to mitigation wetlands.

The Colorado State Forest Service has indicated that there is a great deal of interest, within their organization, in the RFP tree and shrub planting

project. The Colorado Division of Wildlife (CDOW) has also expressed approval in this project, and has suggested that cottonwood trees be planted around watercourses in future years to enhance habitat value for eagles and other raptors utilizing the area. The CDOW has also stated that small clumps, or shelterbelt plantings, dispersed over RFP would provide extremely valuable protection, from summer sun and winter winds, for the deer population. It would also provide a greater diversity of habitat for use by migratory birds and resident wildlife species.

The proposed plantings will not interfere with future land development options at RFP. Even if part of the buffer zone is eventually used for commercial development, tree and shrub planting will increase the aesthetic and actual value of the property, without interfering with alternative land uses.

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