

March 3, 1992

Dr. Allen B. Crockett
Technical Director, Environmental Services
The S. M. Stoller Corporation
5700 Flatiron Parkway
Boulder, CO 80301-5718

Dear Dr. Crockett:

This letter is written in documentation of the results of a field survey on the DOE Rocky Flats site conducted on March 2, 1992. Purpose of the survey was to ascertain the general suitability of three sites on the property to support the possible presence of the Diluvial Ladies' Tresses (Spiranthes diluvialis), a plant listed in January of this year as threatened by the U.S. Fish and Wildlife Service. Results were as follows:

Site OU-4. On this site of proposed tank construction, the bulk of the area is located on an arid south to south-east facing slope vegetated by Blue Grama (Bouteloua gracilis), Western Wheatgrass (Agropyron smithii), and Purple Three-awn (Aristida purpurea) along with locally heavy infestations of tumble knapweed (Acosta diffusa). This site is too dry to support Spiranthes diluvialis, which is usually found in wet soils in the company of a variety of mesic native and introduced grasses and forbs. At the OU-4 site, the slope and south-facing exposure, along with the dryland nature of the existing vegetation all clearly indicate the dry conditions. At the bottom of the slope, the drainage that will be crossed by supply pipe(s) is a dry and only intermittent channel, lacking species at all indicative of the level of moisture required for the presence of Spiranthes diluvialis. In summary, site OU-4 has no possibility for the occurrence of Spiranthes diluvialis.

South Interceptor Ditch (SID). Within the bottom of this manmade channel, the presence of perennial wetness is readily apparent from the widespread abundance of broadleaf cattail (Typha latifolia). In some parts, especially those further west, the cattails of the ditch bottom are replaced by heavy cover of introduced forage grasses such as Smooth Brome (Bromopsis inermis) and Timothy (Phleum pratense). These grasses are also common on the slopes of the ditch throughout its length. For the most part, these grasses may grow with sufficient vigor so as to shade the ground surface beyond the preferences of Spiranthes diluvialis, since there is no grazing or other processes active that would limit the height of grass growth. There exist periodically along the length of the ditch small areas of nearly level "terrace" topography at an elevation about a foot above the SID bottom. These sites may experience subirrigation in a manner consistent with the requirements of Spiranthes diluvialis. Likewise, above the SID, on the upper slopes where the thick cover of Rocky Flats alluvial gravels contact the underlying shales, various seeps occur, as they do under similar conditions at many locations in the Rocky Flats area. While some of these seeps support true wetland vegetation, including cattails, some are more moderately wet, and these may have the potential for the occurrence of Spiranthes diluvialis. In the portions of the bottom of the SID that are occupied by cattail there is no chance of the occurrence of Spiranthes diluvialis. Other areas showed evidence of infestation by tall weeds such as Canada thistle (Cirsium arvense); in these areas, there is little chance for the occurrence of the plant due to the

excessive shading associated with these tall weeds. In summary, the environs of the SID include certain small areas in which the necessary perennial moisture along with moderate competition from competing vegetation, leaves open the possibility, small though it may be, that Spiranthes diluvialis could occur.

French Drain site. This area is located above the eastern portion of the SID. At this site, extensive surface disturbance associated with on-going construction of a French drain has removed most of the vegetational cover. It is unlikely that any of the habitats present here were suitable for the occurrence of Spiranthes diluvialis because of the fairly steep slope, south-facing exposure, and lack of perennial high soil moisture at the surface. The exception to this lack of possible habitat might have been found where any of the afore-mentioned seeps provided suitable moisture conditions. It should be noted that the plant has not been found in hillside seep habitats and it is speculative that the plant might find conditions in such sites suitable. In summary, the French Drain site has already been disturbed, so there can be no direct knowledge of the occurrence of Spiranthes diluvialis; however, the disturbed area included none of the habitat in which the plant is known to occur.

It is suggested that the localities on the Rocky Flats site that have habitat most like that in which Spiranthes diluvialis is known to occur be surveyed at an appropriate time of year (late July through August) to ascertain whether the plant occurs under the "best" conditions that the area has to offer. Such sites would include the alluvial materials along the active and inactive channels of the major creeks of the site. If the plant is not found in these sites, a strong suggestion would be apparent that its occurrence on moist yet man-made sites such as the SID would be unlikely given no local supply of propagules. If the plant were found, the chance of occurrence on man-made sites might be considered to be substantially increased. It is also suggested that the SID be examined during a more suitable time of year to more directly address the presence or absence of the plant.

There was discussion of the possible impact on Spiranthes diluvialis, were it to be present, of burning the vegetation of the ditch to expose the sediments obstructing the flow of the ditch. To my knowledge there is no direct information on the effect of burning on Spiranthes diluvialis. However, inasmuch as it is a plant associated with grassy vegetation in a semiarid environment, it seems probable that it has regularly experienced fire; given the moist nature of Spiranthes diluvialis habitat, any burns probably occurred during the dormant season.

If you have any questions regarding the results of the survey, please call me.

Sincerely,



David L. Buckner, Ph.D.
Plant Ecologist