14804

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MEMORANDUM

To: Michael Guillaume

From: Sam Bamberg

Date: July 16, 1992

Re: Results of the monitoring of the status and present conditions of vegetation on Remedial Action Program acreage on Jefferson County Open Space Land.

A mid-summer monitoring of the vegetation conditions on the revegetated remediation lands was completed on July 16, 1992. The purpose of the monitoring was to determine:

- germination success and growth of plant species sown in Fall 1991
- growth and abundance of weed species during the present 1992 growing season as compared to native species, and effects of last year's mowing
- extent of reinvasion of the remediation areas by prairie dogs
- areas with poor germination or establishment
- present status of the revegetation activities determined during the 1991 season's program

The areas were monitoring by general observations and walking of portions of the remediation strips. Plant species composition, and the vigor and growth of vegetation was noted. General releve plots were examined for cover by dominant species, and the total numbers and types of species in the plot were recorded. The relative abundance of native grasses and perennials compared to weedy flora was observed. Seedling germination and growth of the seed mix plant species were noted in the areas sown last fall.

The weather this spring and early summer has been favorable for plant growth with abundant soil moisture, and good spacing of rainy periods. The vegetation has responded with abundant germination and growth of annual and weedy vegetation, and with good flowering and seed set of most cool-weather species and perennial grasses, forbs, cactus and shrubs. Recent summer rains will also provide soil moisture for the warm season grasses, and the late flowering shrubs and forbs.

The results of the monitoring are as follows:

Germination success and growth of plant species sown in Fall 1991
Seedlings of some of the grasses were noted in the less rocky areas in which weed control had been effective by mowing. The grasses noted were western wheatgrass, big bluestem, blue grama, and sideoats grama. The seedlings were small, but had good survival and were developing well due to the favorable growing season. The seedlings were not abundant, and in some areas were sparse due to the competition with the more aggressive weedy species. Other seedlings observed that were in the plant seed mix were purple prairie clover, blue flax, and rabbitbrush. There should be more evidence of germination and growth of the seeded species after this seasons rains and favorable growing conditions.

Growth and abundance of weed species as compared to native species
The weedy species had good germination and growth in many areas of the remediated land due to the generally good conditions for plant growth. Weeds were still dominant in the more rocky and disturbed soils of north areas and in a few portions of the southern areas. The last year's weeds had produced a large crop

of seeds that acted as a seed source for this year's crops, and the mowing last summer occurred too late to control this. Many of the weeds are persistent perennial or biennial species that are difficult to eradicate in one season. The most abundant weeds were musk thistle, canada thistle, field bindweed, mullein, cheatgrass, ragweed, and smooth brome. The proportion of weedy vegetation varied from almost pure stands of weeds in sloping, disturbed, and prairie dog infested areas, to fairly evenly proportioned stands of a mixed native and planted species to weeds. The most successful native competitors for the weed species were western wheatgrass, slender wheatgrass, fringed sage, globemallow, yucca, and hairy goldenaster. Of the plant species sown last year in the seed mix, western wheatgrass was the best competitor for the weedy species.

Reinvasion of the remediation areas by prairie dogs

Prairie dogs were again common in most of the remediated lands by the mid-summer monitoring period, including areas just east of Indiana Street. The number of prairie dogs was still reduced compared to last year, and many of the burrows were inactive. Some of the invading prairie dogs were digging new burrows and included some different areas that were not occupied last year. The effects of the prairie dogs was not as evident, but could have been masked by the rank growth of much tall vegetation, particularly such weeds as musk thistle and mullein which the prairie dogs were not cutting down. The reduced population of prairie dogs had allowed much better plant growth over much of the remediated acreage.

Areas with poor germination or establishment

The most evident areas with poor germination and growth of native species were those areas that had (1) sloping and rocky surfaces, (2) vigorous weedy vegetation which produced abundant seeds, and (3) previously been heavily grazed by prairie dogs. A combination of these factors has produced areas which are very slowly reverting to native species, or are still composed almost entirely of weedy species. Monitoring of these areas this summer showed that very few of the desirable native plant species sown this past year were able to germinate and survive where the three factors listed above were dominant. It was estimated that about 25% of the northern and about 10% of the southern area had little native vegetation, and were mostly weeds.

Present status of the revegetation activities

The most persistent and obvious problem remains the numerous and abundant weeds which dominate some areas and are still abundant over much of the remediated lands. Native or desirable plant species are becoming established slowly in many portions of the areas, and the proportion of this type of native vegetation will increase as these young plants become established. Natural plant succession on previously disturbed sites, such as railroad grades and borrow areas for dam and reservoir construction, cultivation for crops, or after heavy livestock grazing, has shown that native species generally take 25 to 40 years or more to become reestablished. The length of time to reestablish a desirable vegetation type depends of the original disturbance (longer for soil plowing or tillage), the subsequent management of the disturbed area, and the specific weather patterns for a number of years. The time required to promote a desirable and stable plant vegetation type can be reduced by effective management. The most important is to prevent further disturbance of the soil surface, and allowing natural succession by native species to replace the weeds.

Depending on the results of the continuing monitoring, the following activities or procedures are recommended for future management and promotion of desirable vegetation communities:

- weed control by periodic mowing and selective application of pre-emergent herbicides
- reseeding selected areas that had poor germination or establishment of seeded species
- continued prairie dog control in the remediation areas, if reinfested from the surrounding uncontrolled populations
- continued protection from disturbances

The remediation lands should be assessed yearly for native plant establishment, and to determine how to promote more natural plant succession to a less weedy plant community. The goal should be longer range plans (3 to 5 years, and 5 to 10 years) and to promote establishment of a stable, more natural grassland vegetation.

Engineers
Planners
Economists
Scientists

January 20, 1992

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Mr. Michael Guillaume
EG&G Rocky Flats
P.O. Box 464
Golden, CO 80402-0464

Dear Michael:

As discussed, I have enclosed a copy of the *Summary Report, 1991 Revegetation Activities, Jefferson County Remediation Lands.* The *Summary Report* includes recommendations for further work at the site in 1992 for your reference. All field work is now complete and this is the concluding report for our work under the revegetation contract.

Please call if you have any questions. It has been a pleasure working with you.

Sincerely,

CH2M HILL

Philip Tscheschke

Philip Tscheschke
Project Manager

DEN/ROCKY9/005.51/nkm
Enclosure
cc: Greg Williams/IT Corporation
Sam Bamberg/RA Consultants
Joan Miller/CH2M HILL, Denver
File

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