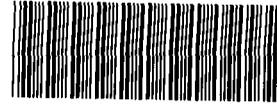


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MEMORANDUM

DATE February 7, 1996 5400 1

TO L E Woods, Ecology, Bldg T130C, X3378

FROM *M.B. Murdock*
M B Murdock, Ecology, Bldg T893B, X3560

SUBJECT STATUS OF NOXIOUS WEED CONTROL AT ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE - MBM - 013 - 96

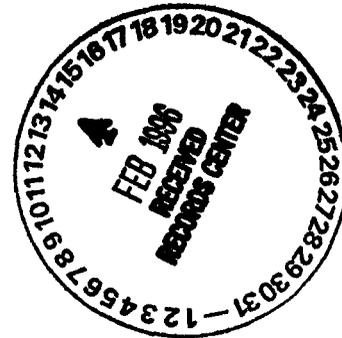
Attached is a status report on noxious weed control at Rocky Flats Environmental Technology Site (Site) This final draft of "Status of Noxious Weed Control at Rocky Flats Environmental Technology Site" incorporates your comments from the February 6, 1996 draft As we have discussed, the Site is deficient in not having an active weed control plan, and the noxious weed problems at the Site continue to worsen without control actions

Should you have comments or require further information, please call me at extension 3560

MBM mbm

Attachment
As Stated

cc
C S Evans
J D Krause
ERPD Records File (2)



ADMIN RECCRD

SW-A-004162

Handwritten marks at bottom left

STATUS OF NOXIOUS WEED CONTROL AT ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

BACKGROUND

The Watershed Management Plan (Plan) for Rocky Flats (DOE 1993) was written primarily as a surface water management plan, but also included plans for weed control and guidance for revegetation and erosion control at Rocky Flats Environmental Technology Site (Site). Under the Plan, target areas and species for initial weed control efforts were identified, and an herbicide application program was subsequently undertaken by the Surface Water Division, the group charged with the responsibility at the time. After a restructuring of responsibilities in 1994, the weed control functions were administered by the Ecology and Watershed Management Group. Revision and updating of the Plan was started prior to the transition to integrated Site management, and was to be completed in 1995. During the transition, however, work on this revision was stopped, and the Surface Water Group's work scope was significantly scaled back. Weed control, revegetation oversight, and erosion control oversight were unaddressed after re-scoping of Surface Water's responsibilities. These were the Plan functions into which Natural Resource Protection and Compliance Program (NRPCP) personnel had been matrixed. Responsibility for the herbicide application contract was transferred to Dyncorp, and funds for this contract were subsequently cancelled. No weed control activities, except mowing around buildings and along roadsides, were effected after May 1995.

Because NRPCP ecologists had been matrixed to support the Plan functions listed above, these personnel have continued to advise projects of the need for weed control planning as part of project planning. Without a formal Weed Control Program, however, little but stop-gap measures against new infestations can be accomplished.

The Original Weed Control Program

At the inception of the Plan, the contractor (EG&G) initiated and maintained an herbicide application contract that served the dual purpose of noxious weed control, and excess vegetation control for safety and security reasons. Since herbicide application is an expensive operation, and Site security was given the highest priority, the majority of the funding for this activity was usually consumed during weed control within the Protected Area and along roadsides of the Site. In addition to maintaining an herbicide application contract, Watershed Management personnel also interfaced with Colorado extension agents to arrange release of several biological control agents for some noxious weeds at the Site. Biological controls for musk thistle (*Carduus nutans*) and St. John's-wort (*Hypericum perforatum*) have been quite successful, but other species have not responded as well to biological control agents.

As the Site's Weed Control Program developed, DOE, RFFO (Cheryl Row) took an active part in the program, and in 1994 took the lead in organizing a local weed control coalition that included Jefferson County Weed Control personnel, Boulder County and Boulder City Open Space personnel, the Colorado Department of Transportation, Western Aggregates, Site personnel, and local weed control contractors. As a result of formation of this coalition, a cooperative spraying effort for diffuse knapweed (*Centaurea diffusa*) was undertaken in September 1994. The spraying effort on the Site had a visible effect, but unfortunately, since no further efforts were

made during 1995, this weed species has not only regained some of its lost ground, but it has encroached further onto the Site and infested new areas

After the 1994 growing season, the problem weeds that were originally identified in the Plan were reevaluated, and a revised weed control areas map was developed. Some species were dropped from the action list (musk thistle, gumweed [*Grindelia squarrosa*], and St Johns-wort). Species that had not been identified as problem species in 1992, but have greatly expanded since, were added. The new target weeds for 1995 were diffuse knapweed and dalmation toadflax (*Linaria dalmatica*). Weed control plans for 1995 had included a more intensive herbicide spraying effort for diffuse knapweed, as well as release of additional biological control agents to supplement some experimental populations released in 1994. Dalmation toadflax can be a difficult species to control since the waxy coating on the foliage protects plants from herbicides, and the plants spread via underground runners. The planned initial action against this species was early spring herbicide application to control the spread of scattered small patches. See Appendix A for weed control area information maps.

In 1995 herbicide application was started in the early spring when pre-emergents were applied within the PIDAS, at the Property Utilization & Disposal yard, around transformers, and along some firebreak roadsides. Planned herbicide application at selected dalmation toadflax locations was not started, and no further herbicide application work was done at the Site. Mowing of roadsides was revised to reduce the opportunity for prairie dogs to invade the Site, but roadside mowing was performed in the late summer.

Prior to suspension of the weed control efforts in 1995, there had been plans to enlist locally based U S Department of Agriculture weed control experts to help evaluate the Site's problem species, and to prescribe biological controls. This Site visit did not occur.

Current Weed Status

Although musk thistle and St Johns-wort have been well controlled by biological agents (insects), three other species continue to expand on the Site. Diffuse knapweed is becoming the most widespread noxious weed at the Site, followed closely by Canada thistle (*Cirsium arvense*) and dalmation toadflax. It is well known that noxious weeds are able to expand their range at astonishing rates, and that unchecked, some species can rapidly degrade natural habitats (WWCC 1995).

Uncontrolled infestations of diffuse knapweed have expanded outward from the initial problem areas along the western edge of the Site to include the Operable Unit 1 French Drain reclamation area, and No-name Draw east of the Landfill. Areas treated during spraying in 1994 still showed the effects at the end of the 1995 growing season, but the headwater areas of Rock Creek and Walnut Creek now have heavy infestations. Because this species is a "tumbleweed," a plant that breaks at the base and tumbles along with the wind, seed distribution mirrors local wind patterns. When the Site experiences heavy fall and winter winds from the northwest, as have occurred during late 1995 and early 1996, the potential for extensive expansion of the plant's range is great. There has recently been very high potential for seed distribution, as evidenced by large accumulations of the plants in all fencelines and brushrows at the Site. This is particularly evident along the western portion of the Site.

Dalmation toadflax does not have as aggressive a seed distribution strategy, and has not

expanded its range, to the same extent, at the Site during 1995. While this species does produce a copious seed crop annually, expansion of an established population is more often accomplished through extension of underground runners. This produces a dense stand of the species that chokes out surrounding vegetation, and considerably degrades the habitat. The largest problem area for dalmation toadflax is currently the eastern-most pediment on the ridge dividing Walnut Creek from Woman Creek (Whitetail Ridge). This infestation has become extremely well entrenched, and provides a seed source to any downstream areas to the east of the Site. The presence of this seed source so close to Site boundaries may cause problems for neighboring stakeholders. It is incumbent on the landowner with a noxious weed problem to attempt to control the spread of the species. Dalmation toadflax has been steadily establishing small "spot" populations in suitable habitat throughout the Site.

Canada thistle has become well established in wet meadow habitats at the Site. This plant has been identified as a problem by the U.S. Army Corps of Engineers during their wetlands delineations efforts in 1994 (COE 1994). ESCO Associates (ESCO 1994) and the Colorado Natural Heritage Program (CNHP 1995) have also identified this as a problem weed that is degrading wildlife and plant habitats at the Site. This species is a prolific producer of airborne seeds, and provides a seed source for any areas that are downwind. Winds in the late summer and early fall, when seed is ripe, are quite variable, and the Site therefore may be the source of infestations on adjacent lands in any direction from the Site. No biological control agents for this species have yet been successful at the Site. Herbicide application has had some success, but the species favors moist to wet habitats which are classified as "sensitive habitat" by Site ecologists. The Watershed Management Plan (DOE 1993) prohibits the use of herbicides in those areas.

Weed Control Requirements

Noxious weed control by federal agencies is required under the Federal Noxious Weed Act (P.L. 93-629). In addition to the federal act, noxious weed control is required under the Colorado Weed Management Act (H.B. 90-1175) and the Jefferson County Undesirable Plant Management Plan. To comply with these federal and local acts, the Site must reinstate a Weed Control Program as soon as possible.

Weed Control Strategies

Due to the sitewide nature of weed infestations at the Site, a single sitewide Weed Control Program is the only viable and cost-effective option for Rocky Flats. Such a Program will require cooperative planning between the organizations responsible for Site security, maintenance of roads and grounds, and ecologists who can identify problem areas and provide technical guidance. The Weed Control Program will require integration of all appropriate weed control methods including herbicide application, introduction of approved biological control agents, mechanical removal, manual removal, closure and revegetation of unnecessary roads, and possibly controlled burning.

An emphasis on identifying and implementing biological controls and controlled burning may be advisable since these are more cost-effective methods over the long-term. Once established biological controls are a self-sustaining system that will require only periodic supplementation. Controlled burning can have the added benefit of helping to restore the Site's native grasslands (particularly the rare tallgrass prairie community) while reducing some weed infestations (Stalling

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1996) Biological controls and burning will not work for all situations, however Herbicide application may be the best choice in some areas, or may be the preferred method for a first intensive control effort, followed by other methods (biological controls and burning) as maintenance methods Each weed control method may be appropriate for more than one location and species, however, ecological and environmental concerns will preclude the use of certain methods in some locations (e g , herbicide application in watercourses)

To implement an integrated sitewide Weed Control Plan will require re-scoping the responsibilities, designating which company/group will be responsible for which subcontracts (e g , herbicide application), which company/group will be responsible for specific actions, such as determining release site locations for biological controls or sites for prescribed burns, how the budgeting will be handled, and what role DOE, RFFO will play in coordinating interagency weed control efforts Establishment of a small working group of companies/groups that should be involved in the integrated Program would be the first step in the planning process The working group would include, at a minimum, a representative from each of the following groups DOE, the Integrating Contractor, Natural Resource Protection and Compliance, Plant Services (roads and grounds), Plant Security, Planning and Integration, ASAP, and other operations planners who have knowledge of future actions planned for the Site The Weed Control Program must be planned with consideration to current weed control problems, and future actions that may contribute to potential problem areas

Planning must address specific weed control policy for different classes of requirements Plant Security may require complete removal of vegetation in some areas, while ecological concerns would restrict any means of control but mechanical or manual removal in ecologically sensitive areas General policies originally introduced in the Plan are still applicable as far as areas restricted from herbicide application

Certain species may require a greater intensity of effort than in the past, with a corresponding increase in cost Control of Canada thistle, for example, may require revision The Watershed Management Plan (DOE 1993) prohibits use of herbicides in or on streams, and within 50 feet of the edge of major streams and ponds at the Site, but the greatest infestations of this species are in such areas, or other sensitive habitats General application of herbicides to this species is, therefore, almost impossible Intensive hand application of herbicide by wicking would be acceptable in these areas, but the labor-intensive work of this nature has been too costly to date With a greater budget, labor-intensive control methods could be accomplished Burning to reduce leaf litter around Canada thistle, a technique recommended by the U S Army Corps of Engineers (COE 1994) could also be considered DOE, RFFO would have final say on the level of effort that would be acceptable at the Site

NRPCP believes that it would be appropriate for the Integrating Contractor to identify appropriate participants in, and to initiate formation of, the weed control working group Once scope and responsibilities were defined, the Integrating Contractor could then approach DOE for a contract revision to address this compliance need

Weed Control Success Monitoring

The Plan originally provided for weed control success monitoring by Site ecologists matrixed to the Watershed Management Program Success monitoring was to use vegetation evaluation techniques established in the Ecology field procedures (EG&G 1995) as a means for comparing

treated problem areas to untreated problem areas. Since the redefinition of the Watershed Management Program after transition, however, this is not currently a scoped activity.

Subject Matter Contacts

DOE Cheryl Row, Kent Bracken
KH Larry Woods
RMRS Marcia Murdock

REFERENCES

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- CNHP 1995 Natural Heritage Resources of the Rocky Flats Environmental Technology Site and Their Conservation Phase II The Buffer Zone Final Report Colorado Natural Heritage Program Ft Collins, CO December 8, 1995
- DOE 1993 Watershed Management Plan for Rocky Flats Department of Energy, Rocky Flats Office Golden, CO April 1993
- EG&G 1995 EMD Operating Procedures, Volume V Ecology, 5-21200-OPS-EE Rocky Flats Environmental Technology Site Golden, CO 1995
- ESCO 1994 Report of Findings Ute Ladies'-Tresses and Colorado Butterfly Weed Surveys, Rocky Flats Buffer Zone ESCO Associates, Inc Boulder, CO September 13, 1994
- Stalling, D 1996 Forests, Fires and Elk Logging for Healthy Habitat Rocky Mountain Elk Foundation February-April 1996
- WWCC 1995 Situation Statement Weeds in the West, It's Time to Revisit and Update J Olivarez Program of Western Weed Coordinating Committee Denver, CO March 1995

FIGURE 2-1
**ROCKY FLATS PLANT
 MANAGEMENT AREAS**

LEGEND

-  PERIMETER INTRUSION DETECTION AND ASSESSMENT SYSTEM (PIDAS)
-  INDUSTRIAL AREA
-  BUFFER ZONE



**ROCKY FLATS PLANT
 WATERSHED
 MANAGEMENT PLAN**

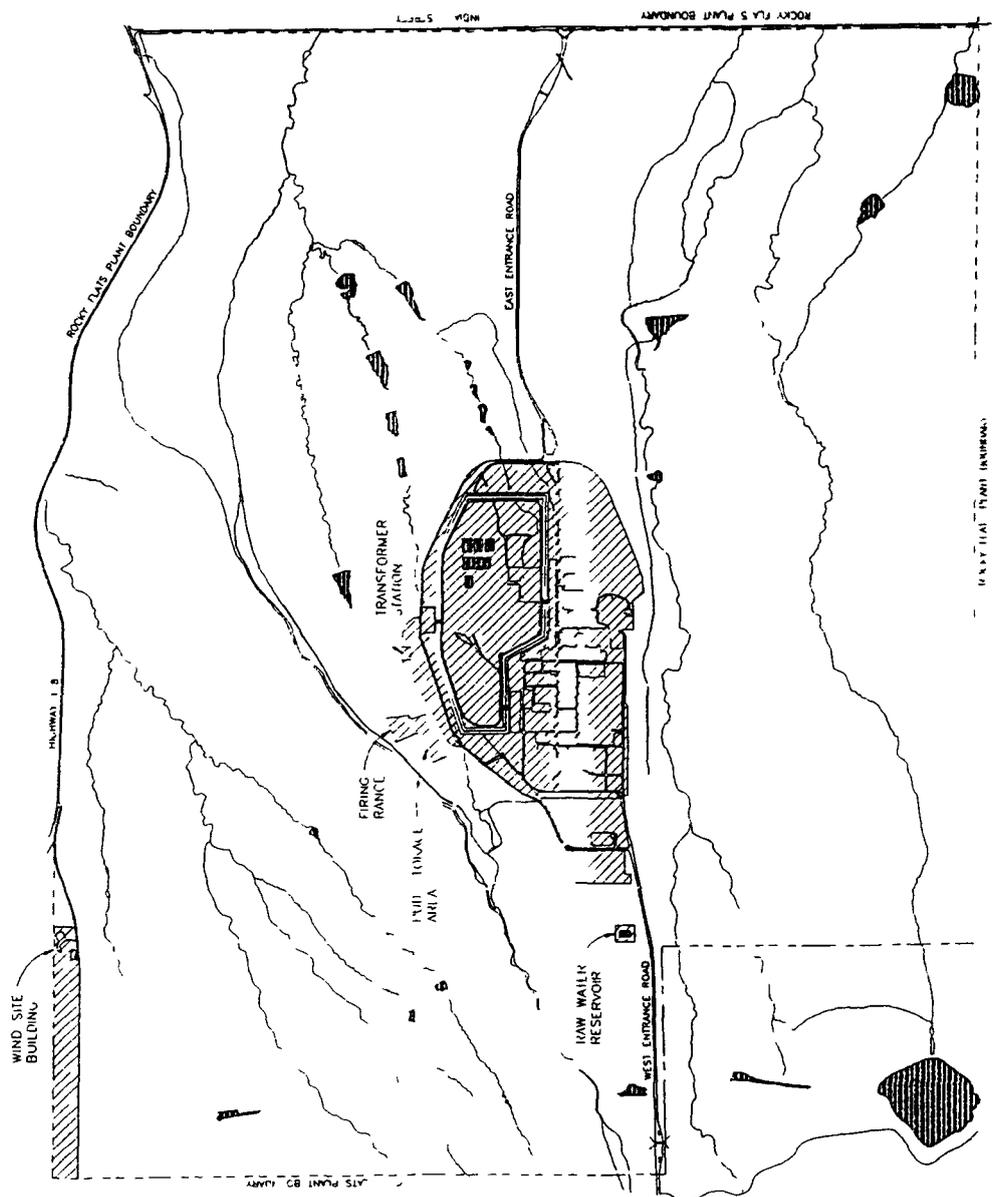
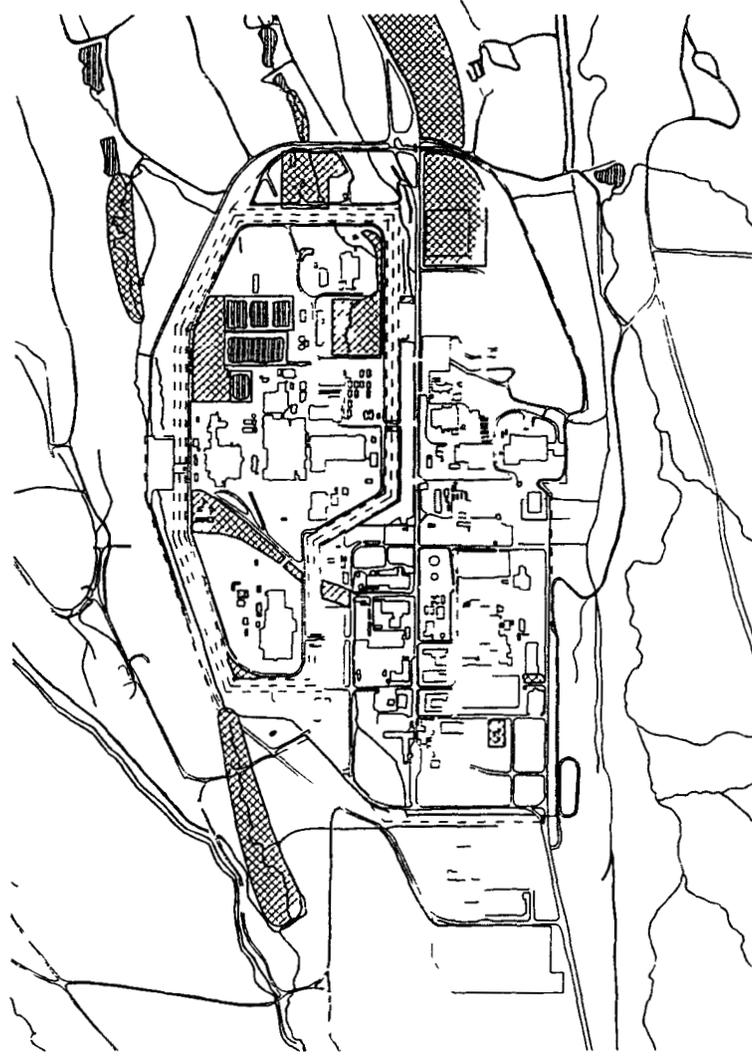


FIGURE 4.1
 HERBICIDE EXCLUSION
 AREAS WITHIN THE
 INDUSTRIAL AREA
 AT ROCKY FLATS



LEGEND



AREAS OF LIMITED HERBICIDE APPLICATION



HERBICIDE APPLICATION EXCLUSION AREAS
 (TYPICAL WIDTH 100 FEET)



SCALE
 1000 500 0 500 1000 FEET

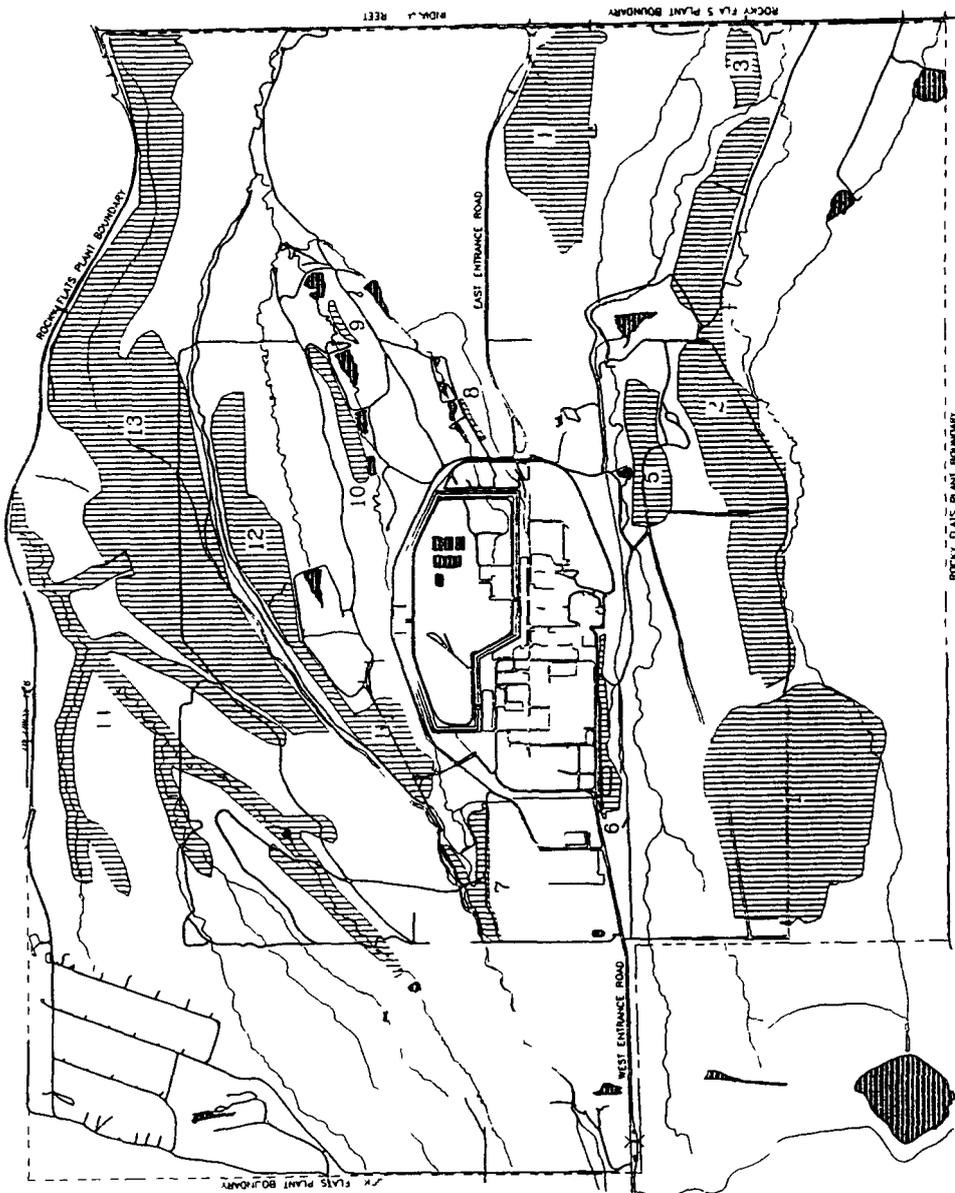
ROCKY FLATS PLANT
 WATERSHED
 MANAGEMENT PLAN

FIGURE 4.2
WEED MANAGEMENT
AREAS WITHIN
BUFFER ZONE
AT ROCKY FLATS

LEGEND

WEED MANAGEMENT AREAS	
AREA	ACRES
1	220
2	193
3	14
4	94
5	33
6	14
7	17
8	1
9	2
10	13
11	14
12	5
13	401
14	18
15	1

KEY	
CT	CANADA THISTLE
GW	GUMWEED
K	KOCHIA
W	WINDWEED
WT	WINDWHEAT
SJW	ST. JOHN'SWORT
I	LIGHT WEEDS/50 YD
II	INTERMEDIATE WEEDS/50 YD
III	HEAVY WEEDS/50 YD
IV	VERY HEAVY WEEDS/50 YD



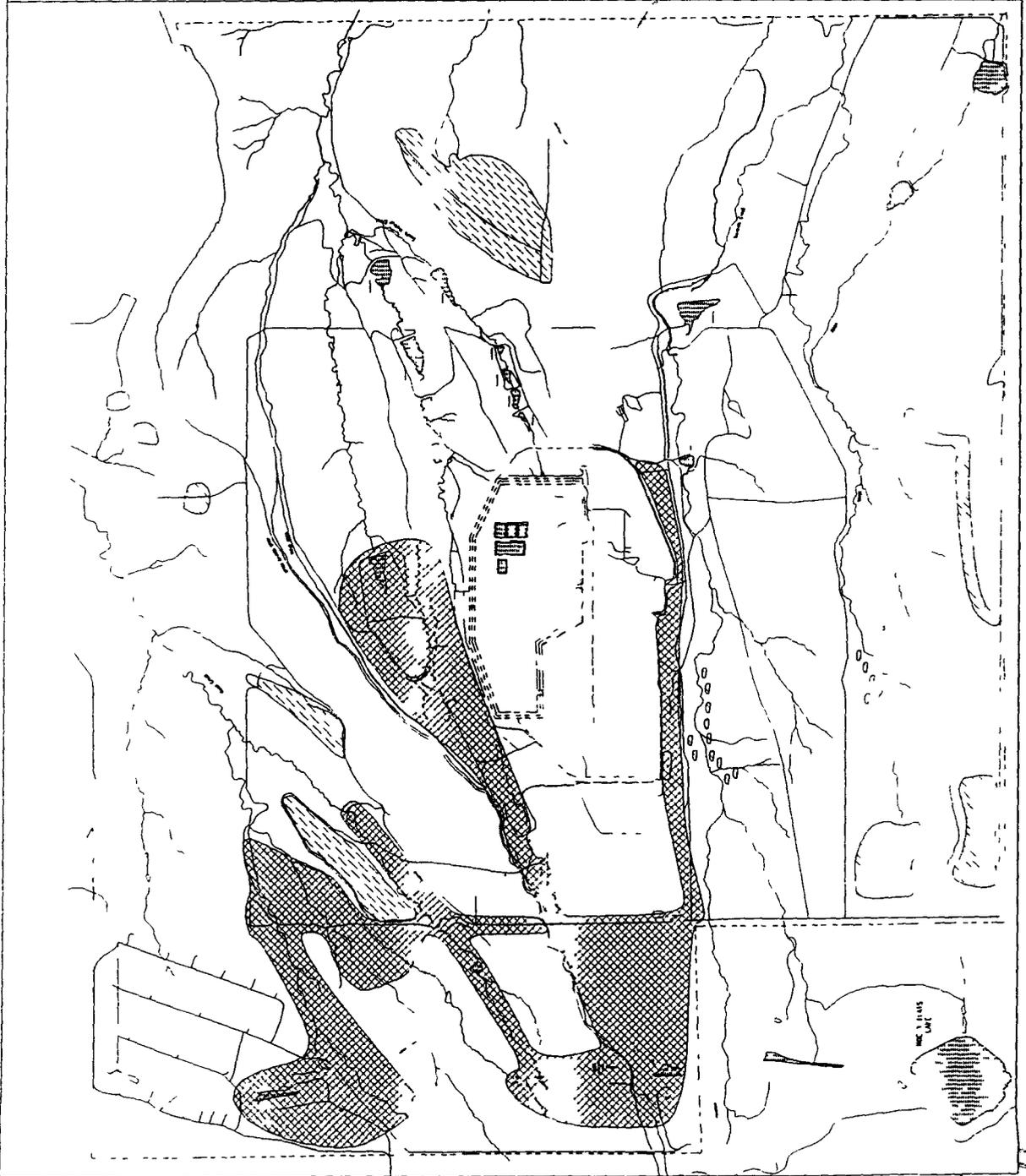
ROCKY FLATS PLANT
WATERSHED
MANAGEMENT PLAN

FIGURE 4-3
WEED MANAGEMENT
PROBLEM AREAS
WITHIN BUFFER ZONE
AT ROCKY FLATS

LEGEND

 Knapweed

 Dalmatian Toadflax



ROCKY FLATS PLANT
WATERSHED
MANAGEMENT PLAN

16/11