NOXIOUS WEED SURVEY REPORT
GRMR OIL & GAS, LLC.
STOVER FEDERAL 9-12-1D and 9-12-1H WELL PAD & ACCESS ROAD

Cover Photo: Proposed access road to Stover Federal 9-12 well pad.

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INTRODUCTION

Rocky Mountain Permitting requested WestWater Engineering (WWE) to conduct a noxious weed survey for GRMR Oil and Gas, LLC's (GRMR) proposed Stover Federal 9-12-1D and 9-12-1H well pad and access road (Figure 1). The project area is located about 2.5 miles south of the Williams Fork River in the Bureau of Land Management's (BLM) Little Snake Field Office. The proposed project would be located in Moffatt County, CO in section 9, Township 4 North, and Range 90 West.

The noxious weed survey was conducted August 25, 2015. The objective of the survey was to identify species of vegetation and document occurrences of any Colorado noxious weed species.

PROJECT AREA DESCRIPTION

The project area is located in the Waddle Creek Oil Field area at elevations ranging from 6,750 to 7,000 feet (Figure 1). The proposed access road begins in Herring Draw and continues south to the proposed well pad location. The proposed well pad would be located along a ridge south of Herring Draw. The site occurs on the foothill toeslopes above farmland.

Vegetation within the project area is primarily sagebrush steppe and mountain shrub vegetation communities. A basin big sagebrush grassland mix occurs on the alluvial soils of Herring Draw. A Wyoming big sagebrush grassland mix occurs on the ridge and southwest facing slopes to the south of Herring Draw. The mountain shrub community occurs along the north facing slopes of Herring Draw and the slopes just north and just south of the well pad. The well pad sits in a Wyoming sagebrush park between the two mountain shrub slopes.

Wyoming big sagebrush and the mountain shrub communities are the two vegetation types most affected by the project. Both vegetation communities have significant infestations of several Colorado noxious weed species. Common plant species observed in the project area are described in Table 1.

Table 1. Common plant species occurring in the project area.

Scientific Name	Common Name	Abundance by Plant Community*	
		Sagebrush	Mountain Shrub
Grasses			
Achnatherum hymenoides	Indian ricegrass	xx	
Bromus inermis	Smooth brome	x	
Bromus marginatus	Mountain brome		xx
Bromus tectorum	Cheatgrass	xx	x
Elymus elymoides ssp. elymoides	Bottlebrush squirreltail	xx	
Elymus trachycaulus	Slender wheatgrass	xx	xxx
Hesperostipa comata	Needle & thread grass	xx	
Koeleria macrantha	Prairie junegrass	xxx	xx
Pascopyrum smithii	Western wheatgrass	xx	
Phleum pratense	Timothy		xx

Table 1. Common plant species occurring in the project area.

Scientific Name	Common Name	Abundance by Plant Community*	
		Sagebrush	Mountain Shrub
Poa pratensis	Kentucky bluegrass	xx	xx
Poa secunda	Sandberg bluegrass	xxx	x
Forbs			
Achillea millefolium	Common yarrow	x	xx
Antennaria rosea	Rosey pussytoes	xx	
Artemisia ludoviciana	Prairie sage	xx	
Astragalus ssp.	Milkvetch	xx	
Carduus nutans	Musk thistle	xx	x
Carex ssp.	Upland sedges	x	xx
Castilleja linariifolia	Indian paintbrush	xx	
Cynoglossum officinale	Houndstongue	xx	xx
Eriogonum umbellatum	Sulphur buckwheat	xx	
Lupinus ssp.	Lupine	x	xx
Machaeranthera canescens	Hoary tansyaster	xx	
Oxytropis ssp.	Locoweed	x	
Penstemon ssp.	Beardtongue	xx	xx
Phlox longifolia	Longleaf phlox	xx	
Sphaeralcea coccinea	Scarlet globemallow	xx	
Shrubs			
Amelanchier alnifolia	Saskatoon serviceberry	x	xxx
Artemisia frigida	Fringed sage		
Artemisia tridentata var. tridentata	Basin big sagebrush	x	
Artemisia tridentata var. wyomingensis	Wyoming big sagebrush	xxx	xx
Chrysothamnus viscidiflorus	Yellow rabbitbrush	xx	x
Gutierrezia sarothrae	Broom snakeweed	xx	
Krascheninnikovia lanata	Winterfat	xx	
Prunus virginiana	Chokecherry		xx
Purshia tridentata	Antelope bitterbrush	x	x
Quercus gambelii	Gambel oak		xx
Symphoricarpos oreophilus	Mountain snowberry	xx	xxx
Tetradymia canescens	Spineless horsebrush	x	

*Abundance:
xxx= High frequency with uniform distribution
xx= Moderate frequency: occurrence scattered throughout
x= Infrequent: only a small number of individuals noted

NOXIOUS WEEDS

Survey Methods

All survey tracks and field data were recorded using handheld Global Positioning System (GPS) receivers and locations were recorded as Universal Transverse Mercator (UTM) coordinates

(Datum: NAD 83, Zone: 13). Photographs were taken of the habitat, terrain, and biological features found during the survey.

Vegetation types were determined through field identification of plants, aerial photography, and on-the-ground assessment of plant abundance visible during the survey. Identification of plant species was aided by using pertinent published field guides (Whitson et al. 2006, CWMA 2013, Kershaw et al. 1998, Weber and Wittmann 2012).

An on-site botanical survey for Colorado noxious weeds was conducted on August 25, 2015 on approximately 2,500 linear feet of the proposed access road and 1.03 acres at the proposed well pad. The survey was conducted in accordance with Bureau of Land Management - White River, Little Snake and Kremmling Field Offices Standards for Contractor Inventories for Special Status Plant Species & Noxious Weed Affiliates, Field Season 2015 (BLM 2015). The survey protocol for noxious weeds requires a 100 meter buffer from the edge of the proposed disturbance for the well pad site and the access road. Approximately 6 miles of pedestrian survey transects were utilized to cover the survey area.

As required by BLM, a noxious weed survey includes all the species on the Colorado Noxious Weeds lists. Any weed species on the Colorado "A" and "B" noxious weed lists would have specific locations mapped. General locations of any weed species on the "C" list would be noted in the survey report.

Results

Observations

A total of seven species on the Colorado Noxious Weed List were observed within the survey area (Table 2). Locations for five of those species were mapped within the survey area (Figure 2). Cheatgrass and field bindweed were not mapped due to their widespread abundance. Noxious weed species are so widespread in the area around the access road and at the proposed well pad that it will be difficult to reclaim disturbed areas successfully. A description of the general location of the noxious weeds within the survey area is noted in Table 2.

Table 2. Descriptions noxious weeds observed in the project area.

Species Name	State Status*	Comment
Bull thistle *Cirsium vulgare*	B	This species occurred in and around the road crossing on Herring Draw.
Canada thistle *Cirsium arvense*	B	This species occurred along the edge of the wetland within the channel of Herring Draw.
Cheatgrass, downy brome *Bromus tectorum*	C	Cheatgrass was co-dominant with perennial grasses in the grassland and sagebrush areas on southwest aspects. It also was present in most of the sagebrush areas.
Dalmation toadflax *Linaria gentistifolia*	B	This species occurred in one location at the top of the north facing slope south of Herring Draw.
Field bindweed	C	This species occurred in a few areas on the edge

Table 2. Descriptions noxious weeds observed in the project area.

Species Name	State Status*	Comment
Convolvulus arvensis		north terrace of Herring Draw. Locations were not mapped.
Houndstongue, *Cynoglossum officinale*	B	This species was the most prevalent and widespread noxious weed. It occurred in dense stands under the mountain shrub canopy and was present throughout most of the mountain shrub community. It was also present within the sagebrush areas where thick patches were more isolated.
Musk thistle *Carduus nutans*	B	This species was also widespread within the survey area but occurred in smaller numbers scattered across the area. For the most part, it occurred in small patches of a few plants with only a couple large infestations that occurred along the edges between the mountain shrub and sagebrush types.

Recommendations

Due to abundance of noxious weeds in the area, reclamation of the location and surrounding area will be challenging. It is recommended that an aggressive noxious weed and integrated vegetation management plan is implemented in accordance with BLM standards. Activities associated with the project may promote conditions that facilitate the spread of invasive noxious weeds by introducing weed seed into the area on vehicles and equipment.

The application of a weed management plan for this project site is recommended to: 1) prevent the invasion and expanded range of noxious weeds; and 2) promote the establishment of desirable plant life upon rehabilitation of the well pad.

REFERENCES

BLM. 2015. Bureau of Land Management - White River, Little Snake, and Kremmling Field Offices (WRFO) DRAFT Standards for Contractor Inventories for Special Status Plant Species & Noxious Weed Affiliates, April 2015. Bureau of Land Management, White River Field Office, Meeker, CO.

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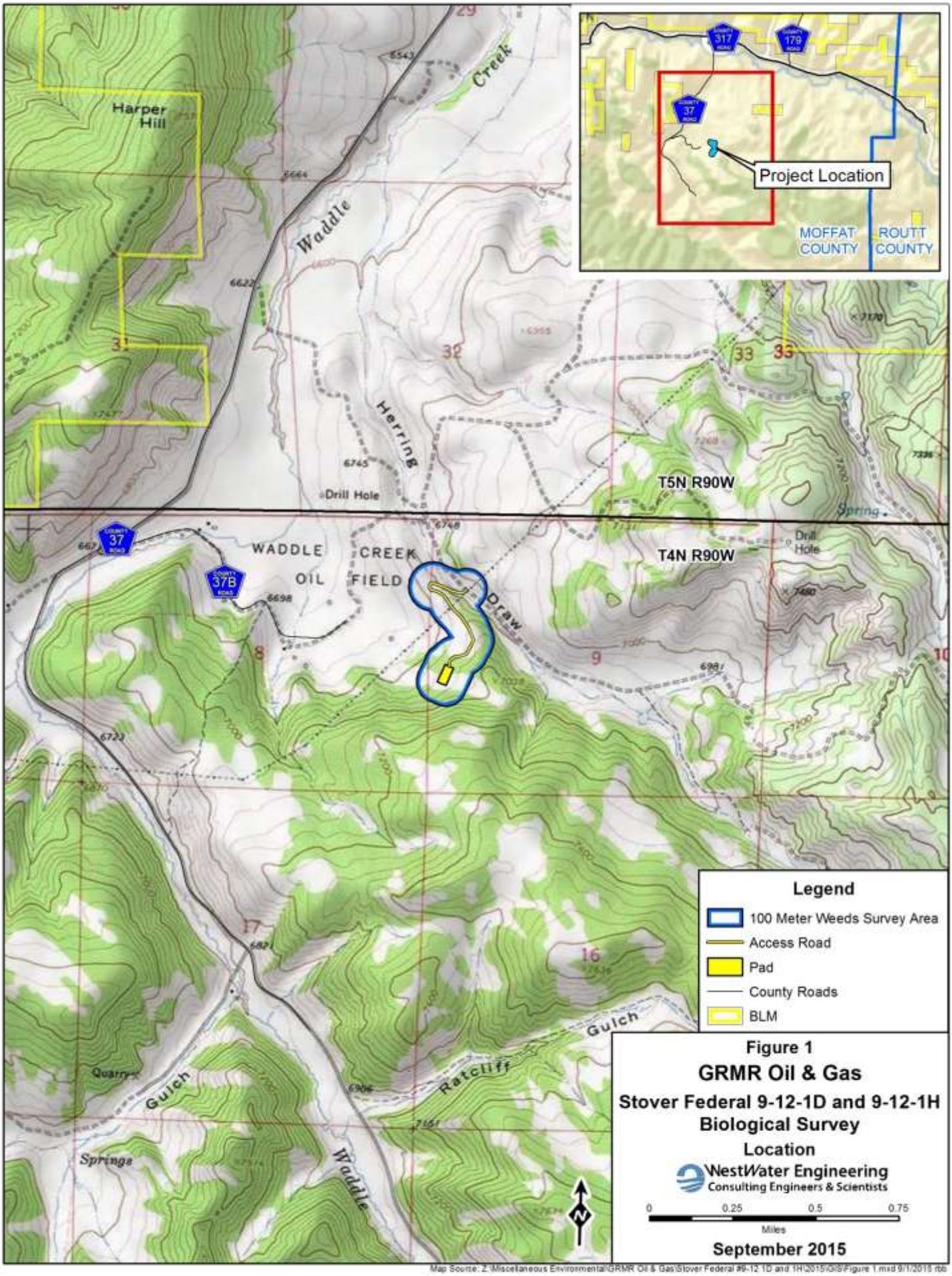

Map Source: Z:\Miscellaneous Environmental\GRMR Oil & Gas\Stover Federal #9-12-1D and 1H\2015\GIS\Figure 1.mxd 9/1/2015 rbb

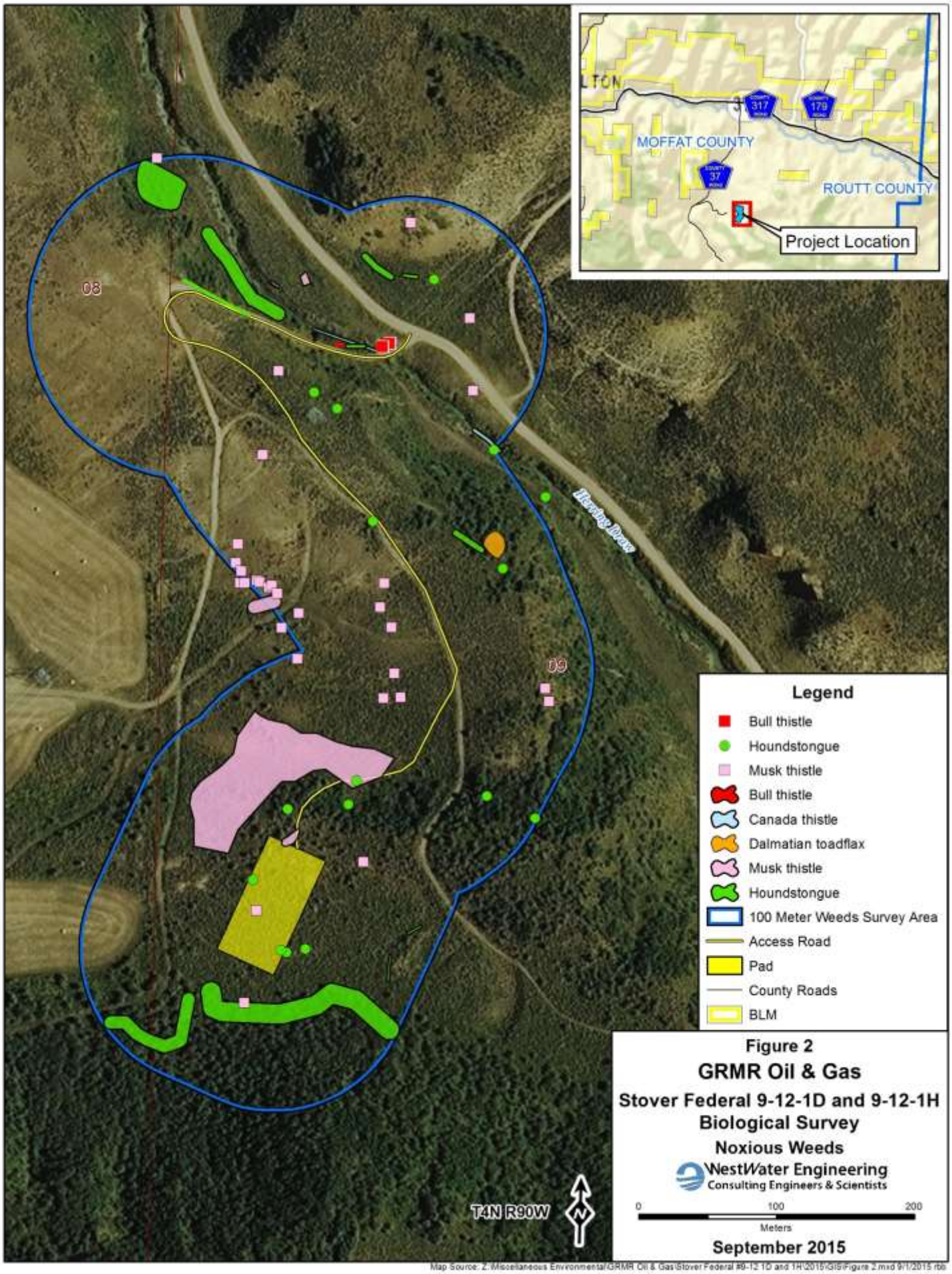

Figure 2

GRMR Oil & Gas

Stover Federal 9-12-1D and 9-12-1H
Biological Survey

Noxious Weeds

WestWater Engineering
Consulting Engineers & Scientists

September 2015

Map Source: Z:\Miscellaneous Environmental\GRMR Oil & Gas\Stover Federal #9-12-1D and 1H\2015\GIS\Figure 2.mxd 9/1/2015 rbb