

**MJ Ranch
 “OTTO JENSEN PLACE”
 CONSERVATION PLAN
 Modified 11/6/2009**

UNIT DESCRIPTION

The MJ Ranch is located in Sublette County, Wyoming 17 miles south of Boulder on Hwy 353 in the Muddy Creek Drainage. The ranch is approximately 2,778 acres and consists of a combination of deeded land, state land, and BLM land. It is part of a larger operating unit that includes leased private land (Routh & Grace Jensen Places), BLM allotments (Square Top Common Allotment and individual permits), a FS allotment (Silver Creek/East Fork Common Allotment), and other private lands owned by the Jones' nearby (Cowley Place) and in the Farson area. The fenced ranch acreage by land ownership is summarized below:

The private acreage by landuse is summarized below:

Landuse	# of Landunits	Acres
Headquarters	2	9
Irrigated Hay/Aftermath Grazing	3	632
Irrigated Pasture	2	54
Range	8	2083
TOTAL	14*	2778

* - Irrigated Pasture & Range are combined in 1 land unit.

The ranch is managed most recently as a cow/calf operation for 200-250 pairs, although recent numbers were as high as 600 pairs. It typically provides fall, winter, and spring calving pastures to the larger operating unit from approximately October 1st to May 15th. In addition, it provides late spring, summer, and early fall pasture for 15 horses. Historically, the ranch was a stand alone homestead unit that supported a cow/calf operation plus draft horses and bulls.

LAND UNIT SUMMARY

FIELD #	FIELD NAME	LANDUSE	ACRES
1	Bull Pasture	Range	37
2	BLM Pasture/East 160	Range	663
3	Weaning Shed Pasture	Range	203
4	Pivot Meadow	IH/P	130
5	Pivot Pasture	Range	526
6	Pivot	IH/P	233
7	Gravel Pit Pasture	Range	192
8	Main Meadow	IH/P	269
9	South of Main Meadow	Range	292
10	Horse Pasture	Range/IP	72
11	Headquarters	HQ	5
12	Headquarters	HQ	4
13	Horse Pasture 2	IP	23
14	120 State	Range	129

TOTALS:

2778

GOALS/OBJECTIVES

- Maintain economically viable agriculture operating unit as a working ranch, and make the ranch self-sustaining.
- Keep ranch in the family, and hand it down to the next generation.
- Implement infrastructure improvements to make a “showcase place”, including painting outbuildings, hiring a ranch hand that will operate and do annual maintenance needed to fences and other improvements, etc.
- Maintain or enhance sage grouse and antelope habitat using livestock as a tool, and identifying the benefits of their ranching operation to wildlife habitat.
- Balancing wildlife habitat needs with the need for economic sustainability.
- Preserve open space.
- Restore willows, fisheries, and hydrologic function to the Muddy Creek system.

RESOURCE CONCERNS/OPPORTUNITIES

- A. Livestock water availability in the right places to facilitate a grazing rotation.
- B. Riparian vegetation condition (reed canarygrass and noxious weeds) and the lack of willows to help prevent streambank erosion and help the hydrologic functioning of the stream.
- C. Potential cutting off of meanders which would further increase slope and potential streambank erosion.
- D. Muddy Creek is currently an excellent juvenile brown trout fisheries with huge potential for enhancement.
- E. Whitetop was found (only a few plants) and Canada thistle is widespread in riparian area (fields 1 & 3).

- F. Productivity of rangelands for livestock and wildlife (field 7 & 9), especially in areas adjacent to feed stackyards.
- G. Suitability of flood irrigated hayland plants for optimum quality and quantity of forage.
- H. Maintenance of existing quality habitat for antelope and sage grouse.
- I. Livestock trailing in high traffic areas as cattle move to the creek for water from adjacent pastures.
- J. Perceived imbalance of predators to prey.

RESOURCE INVENTORY & ANALYSIS

SOIL – Soil mapping was initiated in 2003 to support the design and implementation of a center pivot irrigation system for only those acres under the pivot. Since then, new soil survey inventory was conducted in 2004 and 2005 as part of the county-wide progressive soil survey. That survey to date has only mapped a portion of the ranch area as shown on the soils map (NI indicates “Not Inventoried”). This data is preliminary and subject to change until the survey is finalized which is projected to be some time in 2011.

WATER – Muddy Creek provides perennial water to the property. There are approximately 4.4 miles of Muddy Creek that run through the property before the confluence with the East Fork River, which is just below the property boundary. There are 4 primary diversions for the property, one from the East Fork to service the majority of the north side of Muddy Creek via the Lake Ditch, another on Muddy Creek in the Pivot Meadow to service some acres in that field on the north side of the creek, another at the pumping station to the pivot, and the last just above the property out of Muddy Creek to service the south side of the creek. There are a total of 833.9 acres water righted on the ranch in Sections 18 & 19 T31N R106W and Sections 13 & 24 T31N R107W represented in 5 permits: Muddy Creek has a unique streambed with a coarse substrate. The Wyoming Game & Fish has conducted a fisheries inventory and found the stream to provide good juvenile habitat for brown trout.

AIR – Air quality in the area is good. Air quality is monitored for Visibility, Ozone (O₃), Particulate Matter (PM), and Nitrogen Dioxide (NO₂), and data is available nearby in Boulder and the Jonah Field—see website <http://www.wyvisnet.com/> for live data. Below is a summary of data available for the Boulder monitoring site:

Parameter	Current Reading 12/26/07 10:30am	Max Allowed (DEQ Standards)
Visual Range	~277	NA
Ozone (O ₃)	54 ppb	84 ppb
Particulate Matter (PM)	6 µg/m ³	50 µg/m ³
Nitrogen Dioxide (NO ₂)	9 ppb	50 ppb

The ranch is located approximately 6 miles west of a Class 1 air-shed in the Bridger-Teton Wilderness. Special consideration is given to this area due to its proximity to a class 1 airshed.

PLANTS – A range inventory was conducted in the fall of 2007, and Ecological Sites mapped. Inventory sites were selected as “key” area, or representative areas in each of the currently fenced management units (pastures). However, all ESDs found in the field are represented on the map with extrapolated data from inventoried sites.

There is a concern that many of the existing herbaceous forbs may have gone unnoticed during the survey due to the time of year that it was conducted. A follow-up visit is recommended in the spring to add any additional forb component to the plant list. See **“MJ Ranch Plant List”** for a complete list of the species found during the survey.

The inventory data was analyzed to determine a Similarity Index (SI) to compare the existing plant community to the Historic Reference Plant Community in lieu of a Desired Plant Community (DPC) which will be defined later in the planning process.

The ranch has a total of 7 rangeland ecological sites, irrigated pasture and flood-irrigated meadow hayland with a mixture of native and non-native forage species, and sprinkler-irrigated hayland with non-native forage species. The suggested AUM values in the **“WY-ECS-2 Range Computations”** for hayland landuses are for aftermath grazing only.

Below is a summary of the range inventory points which provides the Ecological Site Description (ESD), SI, existing Plant Community and range trend:

Site#	GPS#	ESD	SI	Plant Community	Trend
1	311	Sy	85	Bunchgrass/Wy Big Sage	Not Apparent
2	312	Sa	75	Basin Big Sage/Needleandthread	Not Apparent
3	313	Sb	45	Reed Canary/Carex (Managed Noxious Weed)	Downward
4	314	Sy	70	Bunchgrass/Rabbitbrush	Upward
5	415	Ly	65	Bunchgrass/Wy Big Sage	Not Apparent
6	316	Irr Meadow	N/A	Muhly/Brome/Bluegrass	N/A
7	317	Sy	60	Bunchgrass/Rabbitbrush	Upward
8	318	Sa	70	Basin Big Sage/Needleandthread	Not Apparent

Note: All sites are in the 10-14W Ecological Zone. See **“Legend For Ecological Sites”** for further descriptions of these sites.

Below are some additional thoughts and comments at each of the inventory locations:

Site #1 – This site appears to have had past mechanical treatments as evidenced by aerial photo lines in addition to old irrigation ditches pulled through the area. The site has a very high SI and so was inventoried more thoroughly as a potential benchmark for a future DPC. Below is the additional data collected and summarized:

PLANT CANOPY COVER	PERCENT COVER
Thickspike wheatgrass	24%
Wyoming big sagebrush	16%
Sagebrush gilia (granite prickly phlox)	8%
Sandberg bluegrass	6%
Green rabbitbrush	6%
Needlandthread	2%
Annual mustard	2%
TOTAL PLANT CANOPY	64%
BASAL COVER	PERCENT COVER
Thickspike wheatgrass	6%
Wyoming big sagebrush	4%
TOTAL BASAL COVER	10%
COVER/LITTER CHARACTERISTICS	PERCENT COVER
Bare Ground	8%
Total Ground Cover	78%
Ground Cover Between Plant Canopy	42%
Ground Cover Under Plant Canopy	36%
Total Litter	60%
Litter Between Plant Canopy	34%
Litter Under Plant Canopy	26%
SOIL SURFACE CHARACTERISTICS	PERCENT COVER
Embedded Litter	6%
Gravel	26%
Soil	56%
Moss	2%
Plant (Basal Cover)	10%

Site #2 – This site also has a high SI, and the existing plant community has not yet been described in our ESDs. There is a high amount of trailing, and the adjacent pasture shows even higher trailing use with a much reduced understory as expressed by more needleleaf sedge, typically thought of as an “increaser” species, and less needleandthread. There are many sage seedlings from this year on this site, suggesting a good germination year for sagebrush on this site. This is a high production potential site.

Site #3 – This site is representative of the riparian area in pastures 1 and 3. The riparian areas in pastures 4 and 8 have no willows and were at one time

chemically removed for additional hay production by previous owners, and are more dominated by reed canarygrass than pastures 1 and 3. There is extensive Canada thistle infestation along the stream, and trace amounts of perennial pepperweed was found as well. While there are willows present (at least 4 species), they show evidence of over-browsing by their hedged appearance. This is a high production potential site.

Site #4 – This site has had past manipulation and mechanical disturbance as evidenced by the low amounts of sagebrush and high amounts of rabbitbrush. The bunchgrass community looks good, and this site appears to be in an upward trend.

Site #5 – This site has a lot of sage grouse sign, and the scat appears to contain large amounts of alfalfa, suggesting summer (late brood rearing) use of the area. Sage grouse have been seen in the area and surrounding areas during spring, summer, and fall. There is bluebunch wheatgrass on this site, but its vigor appears fairly low.

Site #6 – This site is on the main flood irrigated meadow in pasture 8. The site inventoried expressed native sedge (*Carex* spp.) species, Baltic rush, bluegrasses, tufted hairgrass, and alkali muhly in addition to the introduced species such as canary reedgrass, smooth brome, and Kentucky bluegrass. The muhly is not a preferred species, and may indicate that the meadow could be more productive than it is currently. The aftermath grazing that is occurring looks to be much harder in the uplands than in the meadows in this fenced management unit. On the other side of the creek (south), there appears to be more timothy and other more preferred hay species.

Site #7 – This site was treated with 2,4-D in the 1960s, and there is evidence by the large amounts of rabbitbrush that the site may not have been managed properly after the treatment. It is thought that historically the previous owners kept draft horses in this pasture season-long due to its proximity to the headquarters. The sagebrush is very slow in re-establishing, but since the Jones bought the property and changed the season of use, the bunchgrasses are returning to the site. Herbaceous production is quite good on this site, and continued similar management to the last several years is recommended.

Site #8 – This site is located in the Horse Pasture (field 10), which has a lot of trailing and high traffic use. The site is dominated by basin big sagebrush with a fairly good needleandthread understory, but the herbaceous vegetation shows a high level of use (estimated at 70%). While occasional dormant season use at this level is sustainable, continual use at this level could be detrimental to the overall plant community. The nearby irrigated pasture in this field, which is an extension of the adjacent irrigated meadow, is dominated by bluegrasses and muhly.

Below is a summary of the ecological sites and their approximate acreages:

ECOLOGICAL SITE	ACRES
Irrigated Pasture (IP)	41
Irrigated Hay (IH)	233
Irrigated Meadow	326
Cy 10-14W	33
Ly 10-14W	243
Ov 10-14W	41
Sa 10-14W	604
Sb 10-14W	14
SwSy 10-14W	78
Sy 10-14W	1135

See “**Legend For Ecological Sites**” for further descriptions of these sites.

Hayland – Total hay yield potential for the ranch is currently estimated at 943.5 tons if the entire pivot is in alfalfa/grass mix and all available hay meadow is hayed. This management unit is long on hay and short on grazing forage. Therefore, there are portions of the pivot and hay meadows that are not harvested in any given year either due to poor yield (not economical to hay), wet conditions, or a calculated need for grazing resources. The first cutting for alfalfa/grass hay (pivot) is currently around July 4th-12th. The second occurs at the end of August. Grass hay is harvested (one cutting only) in August. Their current harvest pattern is conducive to wildlife escape—they break out the pivot into sections and harvest parallel to the wheel tracks from the inside to outside of the pivot.

ANIMALS – WILDLIFE

The ranch currently provides habitat for a variety of sagebrush obligate wildlife species, including, but not limited to, sage grouse and pronghorn antelope both of which were seen when inventorying the ranch, either by actually observing the animals (50-75 head of antelope on the pivot) or by seeing their scat (large amounts of sage grouse sign at inventory point #5). The landowner has provided anecdotal information regarding the large amount of sage grouse and antelope that utilize the property. They flush many grouse when harvesting their hay, and the birds roost on their haying equipment.

The nearest occupied lek is just over 1 mile away to the southwest, and is called the Desert Re lek which is part of the Speedway Lek Complex. Just over 2 miles to the east is an unoccupied (abandoned) lek called the Big Sandy which is part of the Big Sandy Lek Complex. It is assumed that the MJ Ranch provides nesting and early-brood rearing habitat as well as late brood-rearing habitat for sage grouse.

Other wildlife that were either observed or discussed with the landowners include brown trout, northern pintail ducks, great blue heron, bald eagle, ferruginous hawk, peregrine falcon, redtail hawk, sandhill crane, long-billed curlew, burrowing owl, short-eared owl, woodpecker, chipmunk, ground squirrel, pocket gopher, prairie dog, geese, cottontail rabbit, jackrabbit, fox, coyote, ravens, badgers, and magpies. The landowners are concerned with an imbalance of predators in the area.

The area is currently classified by the Wyoming Game & Fish Department as Spring/Summer/Fall range for mule deer and antelope, and is adjacent to crucial winter range for moose on the nearby East Fork River of which Muddy Creek is a tributary.

It is clear that the property, as it is currently managed, supports a wide variety of wildlife habitat, mainly because of its diverse plant communities which include various aged stands of sagebrush, different types of sagebrush (basin and Wyoming big sagebrush), hayland (alfalfa and native meadow), and riparian areas.

LIVESTOCK

The ranch is a commercial cow/calf operation that runs 200-250 head of approximately 1150 pound cows. They utilize the MJ Ranch mainly in the fall from October 1st until May 15th when they turn out on either the Square Top Common BLM allotment or go to a private lease referred to as the Routh place. On July 5th, they move up onto the Silver Creek/East Fork Common FS allotment until September 15th. When utilizing this common allotment, their breeding season changes to July 1st using Hereford bulls as part of that grazing association. With recent numbers, they have taken permitted nonuse on their FS allotment, and kept all pairs on the Routh place during that time. They will need to use that allotment this year unless they can work out other arrangements with the FS. There is the possibility of getting yearlings to run on that allotment so that cattle can continue their same rotation as the last several years.

In addition, there are approximately 15 brood mares that utilize the MJ Ranch from May to September. They currently spend most of their time in the BLM pasture, Weaning Shed Pasture, and Bull pasture during this timeframe.

SOCIO-ECONOMIC/HISTORIC –

Mark and Renee Jones have owned and operated the MJ Ranch for ten years. Prior to their ownership, the ranch was homesteaded by Jensen's and operated as a traditional cow/calf operation with hay production on meadows and cattle onsite year round. Their change in season of use, lower stocking, and other factors has already shown an upward trend in many of the pastures.

Since this ranch is used in conjunction with other lands they own in addition to private, BLM, and FS leases, they have more flexibility than many operators. Mark and Renee would like to see the ranching operation support itself so that their other business ventures do not have to financially support their agriculture habit. A conservation easement has been acquired on this parcel to assist in making this land self sustaining for future generations as well as preserve the open space that the family values.

The two-story house at the main headquarters is listed on the historic register.

ALTERNATIVES & ANALYSIS

The opportunities for this ranch are many. This plan allows for flexibility of implementation and addresses many resources. These alternatives are meant to be phased in gradually based on the goals and finances of the land owner. The following alternatives have been discussed with the landowner and some were selected for implementation based on the ability to obtain additional funds, find contractors that are available and to work within permit constraints. This plan will take time to implement all conservation practices. Note: Costs are from 2007 and are not current.

LIVESTOCK PRODUCTION

- Stock for drought rather than “normal” conditions. Current livestock numbers and the shifting of hayed ground to pasture will already illustrate that the property is being managed for drought rather than “normal” conditions. **CURRENTLY IMPLEMENTING THIS MANAGEMENT STRATEGY.**

FENCING

- Fence on landuse boundaries so that individual plant communities can be managed for their own key species and objectives. Fences would separate land units 4/5/6 and 7/8/9, and would allow for water gaps for livestock water access where possible. This would result in approximately 25,406 feet of additional fencing on the property. While fences are typically thought of as impediments to wildlife movement, the benefits to the plant communities outweigh the disadvantages of a fence. Furthermore, wildlife impacts can be minimized with the proper fence design (bottom smooth wire no lower than 16” or high tensile electric design). Installing a water gap to Muddy creek at the north end of the Pivot pasture would be essential, and other water gaps could be considered as needed. The major disadvantages to this alternative are the additional maintenance and cumulative effects to wildlife if the alternative to fence the riparian area is chosen as well—it is recommended that only 1 of these 2 alternatives be chosen. **Estimated Cost (electric) @ \$1.00/ft = \$25,406; (barbed wire) @ \$2.50/ft = \$63,515. (There is a good chance of other funding sources paying ~ 50% incentive payment for this practice)** FENCING WAS COMPLETED ON THE UPPER PORTION OF MUDDY CREEK AND AROUND THE PIVOT IN SEPTEMBER 2009.
- Fence riparian area to exclude livestock for willow re-establishment acceleration (fields 3, 4, and 8). Fence would closely parallel creek on either side. This would result in approximately 23,690 feet of additional fencing on the property. While fences are typically thought of as impediments to wildlife movement, the benefits to the plant communities outweigh the disadvantages of a fence. Furthermore, wildlife impacts can be minimized with the proper fence design (bottom smooth wire no lower than 16” or high tensile electric design and visibility markers for birds). Installing water gaps to Muddy creek for the west part of the Weaning Shed pasture, Pivot pasture, Pivot meadow, and Main meadow would be essential. The acreages inside the riparian

enclosures would be approximately 6 acres in the Weaning Shed Pasture, 27 acres in the Pivot Meadow, and 29 acres in the Main Meadow which can be equated to forage lost (~60 AUMs). The major advantage to this option is that the acreage would be eligible to enroll in the continuous CRP program, would payment incentive up to 90% of the cost of the fence in addition to an annual rental payment that would far exceed the current grazing value. See Continuous CRP Estimates for more details. This option will also support the acceleration of goals to re-establish willows and hydrologic function to Muddy Creek. The major disadvantages to this alternative are the additional maintenance and cumulative effects to wildlife if the alternative to fence landuses is chosen as well—it is recommended that only 1 of these 2 alternatives be chosen. Another potential disadvantage would be increased noxious weed control with livestock removed as tool for weed control.

Estimated Cost (electric) @ \$1.00/ft = \$23,690; (barbed wire) @ \$2.50/ft = \$59,225 (There is a good chance of other funding sources paying 50-100% incentive payment for this practice) FENCED RIPIARIAN PASTURES IN FIELDS 1,3 AND 4. FENCE IN FIELD 7 AND 8 COULD BE IN 15 YEARS – WILL WAIT TO SEE HOW IRRIGATION REORGANIZATION DEVELOPS THERE.

- Remove water gap fencing for square top allotment (one side only) for improved wildlife accessibility. This would remove approximately 4,300 feet of fence. The advantages are benefits to wildlife movements, less fence maintenance, and the addition of approximately 7.3 acres to the Pivot pasture. The disadvantages are the labor to remove the fence and the additional maintenance of an alternative water source. **Estimated Cost @ \$.50/ft = \$2,150 THIS WILL BE DONE PENDING WATER DEVELOPMENT ALTERNATIVES. NO TIME FRAME ESTABLISHED.**
- Use temporary electric fence to Cross-fence the BLM pasture to make more manageable units for grazing small numbers of horses. This would result in approximately ½ mile of temporary electric fencing materials. It would be more labor intensive than the current system, but would result in better distribution and use in this pasture. Will need to consider a time element on this option. When working with BLM, planning, permits, permission and patience are needed as well as a lot of lead time. **Estimated Cost = \$700 THIS ALTERNATIVE WILL BE CONSIDERED AFTER THE WATER IS PROVIDED TO SEE IF IT IS NEEDED.**
- Other fencing options – many of the existing fences could be realigned to coincide with new fencing alternatives. This could be done gradually as older fences are in need of major maintenance/replacement. It would make more sense to align fencing patterns parallel to the creek rather than on the north-south and east-west trajectories that are currently on the landscape. As other fencing alternatives are implemented, the realignment of existing fences to make more manageable pastures for grazing management needs to be considered.

WATER DEVELOPMENT

- ~~Develop old seismic well under pivot for clean water access on the pivot. A 750 foot pipeline would be used to transport the water to a tank that would be on the fence line between the Pivot and the Pivot Pasture. This would provide a clean water source for livestock while protecting the existing spring from trampling (alternative includes fencing spring area). The major disadvantage is the maintenance of additional infrastructure on the ranch. **Estimated Cost @ \$2.89/ft for pipeline and \$2,400 for tank = \$4,568** THIS ALTERNATIVE WILL NOT BE ADOPTED. THE VOLUME IS NOT ENOUGH TO SUPPLY WATER. MARK WILL REMOVE THE SEISMIC WELL WITH BACKHOE.~~
- Drill a well on BLM (Section 25) for water delivery to BLM pasture. Just one tank at the well with no pipeline was discussed. THIS IS AN OPTION FOR WATER DELIVERY TO BLM PASTURE.
- Install a pipeline and tank on the existing well in the 120 State pasture to service the Square Top Allotment and the southern portion of the Pivot pasture. In addition, utilize existing tank at the well location to service the 120 State pasture and field 9. This alternative consists of either approximately 1,330 feet of stockwater pipeline and a tank to service the Square Top Allotment and the Pivot Pasture or 275 feet of stockwater pipeline and a tank to service only the Square Top Allotment (access to water in the Pivot Pasture could be achieved with a water gap on the east side of the pivot). **Estimated Cost @ \$2.89/ft for pipeline and \$2,400 for tank = \$6,244 OR \$3,195** THE WELL NEEDS TO HAVE A PUMP TEST COMPLETED TO ASCERTAIN THE ABILITY OF THE WELL TO PROVIDE THE NEEDED AMOUNT OF WATER.
- Development of spring just south of creek in pivot meadow to provide water to livestock in lieu of accessing Muddy Creek. If spring isn't feasible, a well would be another alternative at the fence splitting fields 3 and 5. Sites will need to be reviewed and will evaluate fencing and production. Some fence may be removed as well to facilitate the best use of the area.
- Install a well and tank in the center of the BLM Pasture to facilitate temporary (or permanent) cross-fencing of this pasture for better grazing distribution. This alternative would provide water in the optimal location for best grazing distribution in this pasture. The project would be located on BLM land and would need to have cooperation from the BLM not only to install the project, but also grazing management plan that would rotate seasons of use through all pastures. Currently, the BLM is only permitted for horse use, but in order to have the flexibility to implement rotational grazing, flexibility in livestock species is a necessity. **Estimated Cost @ \$40/ft to drill a 200 foot well plus \$ 2,400 for tank = \$10,400** 1 WELL WITH 2 PIPELINES WITH TROUGHS OR PUMP OUT OF MUDDY CREEK AND DELIVER TO STORAGE TANK WITH A TROUGH. NEED TO SELECT ROUTE AND GET CULTURAL CLEARANCE STARTED EITHER BY BLM OR NRCS.

- Reservoir development for ½ - 1 acre stock pond west of pivot. Would collect water from surrounding topography and would not use water from Muddy Creek. This is a project that Mark and Renee would like to pursue sometime in the future. NO TIME FRAME DECIDED.
- Install escape ramps on all existing and planned stockwater tanks to reduce incidental losses of small mammals and birds and provide cleaner water for cattle. These are provided by the Sublette County Conservation District at no cost to the rancher. They are maintenance free, and show a good faith effort to minimize impacts to sage grouse. The only cost is installation which is typically done in 15-30 minutes. WILL IMPLEMENT THIS OPTION.

GRAZING MANAGEMENT

- Prevent livestock from accessing more than one fenced pasture at a time (water development required). The success of this alternative rests with the implementation of water developments as indicated above. AFTER IMPLEMENTATION OF FACILITATING PRACTICES, THIS CAN BE DONE.
- Key plant species are managed for in each landuse (fencing required). The success of this alternative rests either with the implementation of fencing or else choosing the most restrictive key plant to manage for which may result in less overall access to certain pastures while sites are revolving to your management goal. The long term result would be improved plant species composition thus resulting in higher production and nutrition for cattle. AFTER IMPLEMENTATION OF FACILITATING PRACTICES, THIS CAN BE DONE.
- Implement rotational grazing system that changes season of use from year to year in each pasture. This will include changing the areas where horses summer graze in addition to fall/spring grazing of cattle. Winter feeding would stay the same. This is a very difficult alternative to implement and analyze because it will change annually based on conditions, weather, water access, and other livestock production factors. There are many ways to implement this alternative that could be modified versions of a rotational grazing system. A change in their current BLM permit (flexible timing and species of livestock) is necessary for this alternative to be successfully implemented. BLM IS WILLING TO CHANGE THIS PERMIT. SINCE IT IS AN INDIVIDUAL ALLOTMENT, BLM RANGE STAFF JUST ASKED THAT WE FOLLOW UP WITH THEM TO MAKE SURE IT GETS DONE.
- Exclude grazing on the riparian area for accelerated willow re-establishment (especially during September through June). This will only be possible if the riparian fencing alternative is implemented. It may provide challenges to weed control efforts, but will result in accelerated healing of the native vegetation and willows along the creek. If decision is to fence along landuse boundaries instead, the riparian area could be fenced off with temporary electric fence (though not a practice that is available for incentive payments). THROUGH OTHER FENCING CHOICES, THIS OPTION WILL BE IMPLEMENTED AS FENCING AND WATER SOURCES ARE COMPLETED.
- Implement an annual monitoring plan emphasizing utilization levels and key indicator plants for which each pasture is managed. Utilization levels are

watched in the uplands even during dormant season grazing. This is recommended as a part of any grazing system. The bare minimum data collected would be photo points at key areas, but could also include a utilization map or utilization measurements at the key areas. Other long-term monitoring methods could also be discussed to measure success of willow establishment, sagebrush density, canopy, age class or other vegetative parameters once objectives for monitoring are established. NRCS can assist in developing the monitoring strategy. SUGGESTION WAS EVERY 5 YEARS, COMPLETE PHOTO POINTS AND EVERY 10 YEARS, UPDATE ESD'S AND PLANT INVENTORY. DECISION ON WHICH PHOTO POINTS TO USE AND COULD THEY USE POINTS USED IN 2007 RANGE INVENTORY? WILL NEED TO MODIFY THIS AS SITES CHANGE OR ARE MANIPULATED. POINT #7 WAS DISCUSSED AND POSSIBLY THE NEED TO ADD ONE SOUTH OF PIVOT.

VEGETATION MANIPULATION

- Re-seed areas surrounding hay stackyards to a dryland alfalfa (*falcata*). This would result in an approximately 70 acre seeding directly east of pivo in fields 5 and 9. Fence location would need to be considered if this alternative is chosen. It could result in an additional 2230 feet of fence removal and 3000 feet of new fence construction. This could provide additional sage grouse habitat on the transition from wet meadow to upland. In addition, it could be an additional forage source for livestock, but would need to be rested during the establishment period and managed carefully to sustain the stand. **Estimated Seedbed Prep @ \$16/acre = \$1,120 and Re-Seed Cost @ \$28/ac = \$1,960 and Fence Removal @ \$.50/ft = \$1,115 and New Fence @ \$2.50/ft = \$7,500 for a total project cost of \$11,695 (There is a good chance of other funding sources paying 50-100% payment incentive for this practice).** THIS MAY RESULT IN A PMC TRIAL TO DETERMINE WHICH SPECIES TO PLANT. TRIAL RESEARCH SUMMER OF 2008 WITH A PLAN BY 2009. BY 2012, ENTIRE AREA SEEDED BASED ON PMC RESULTS. AN OPTION FOR PMC, NOT A DECISION YET.
- Inter-seed grasses/forbs into field 7 (basin big sagebrush plant communities). Some reduction in sagebrush may be necessary. This would result in an approximately 89 acre inter-seeding that could be accomplished with the Lawson aerator. The pasture would need to be rested during the establishment period and managed carefully to sustain the stand. **Estimated Cost @ \$54/ac = \$4,806 (There is a good chance of other funding sources paying 50-100% payment incentive for this practice).** THIS ALTERNATIVE WILL BE POSTPONED DUE TO THE POTENTIAL IRRIGATION DEVELOPMENT THAT MAY OCCUR ON THIS SITE.
- ~~Plant a windbreak along the northwest side of pivot to provide thermal protection to livestock, aid in wind erosion control on the pivot, trap snow for additional moisture, and provide additional wildlife habitat (additional fencing required). This would result in 5100 feet of windbreak (1700 feet x 3 rows) and approximately 3500 feet of additional fencing. The main disadvantages~~

would be the initial cost of installation and huge labor investment in maintaining the trees. In addition, trees are so slow in growing that it will be many years before the benefits are fully realized. Faster growing shrubs could be considered. A snow fence could be added to the design to achieve maximum benefit during establishment period (up to 20 years). The potential negative affect of giving advantage to avian predators to predate on sage grouse would need to be considered as well. The benefits would be better protection for livestock in wintering months, protecting the soil from wind erosion, and soil moisture extended into the growing season from snow catchment. **Estimated Cost @ \$12.30/tree for 850 trees + \$5/ft for 3500 feet of fence = \$27,955 (There is a good chance of other funding sources paying up to 50% payment incentive for this practice).** REMOVED – NOT INTERESTED IN THIS OPTION – TOO MUCH MAINTENANCE.

- Snow Fencing along northwest side of pivot – this would provide similar benefits of a windbreak, but would be less expensive. This would result in approximately 1700 feet of wooden snow fence to provide livestock protection, soil protection from wind erosion, and extended soil moisture. Again, there is concern that this would provide a perch for avian predators for sage grouse, but perch-preventers could be considered if effective. Various snow fence designs could be considered for maximum snow catchment, but are highly variable in cost. **Estimated Cost @ \$10/ft = \$17,000.** REMOVED – NOT INTERESTED IN THIS OPTION – TOO MUCH MAINTENANCE.
- Interseed on north side of fields 4 and 3 with Lawsen aerator. Will need to evaluate further, small areas to investigate. WOULD LIKE TO SEE THIS DONE BY 2014.
- Pasture renovation of south area of Main Meadow. Very rough topography and interested in new species.
- Vegetation Inventory of other private parcels and leased lands to compliment and fully understand operation and provide more alternatives to this plan.

IRRIGATION WATER MANAGEMENT

- Install additional sprinkler irrigation on fields 7 and 8 to maximize alfalfa hay production and late season sage grouse/antelope habitat. This could be entail approximately 58 acres (1/2 pivot) or 116 acres (full pivot) in improved irrigation. The advantages are increased yields, higher forage quality for livestock and wildlife (brood rearing for sage grouse), and maintaining a historic water right for those acres. The disadvantages would be the loss of basin big sagebrush habitat which is thought of as critical winter habitat for sage grouse in severe winters. With a sage grouse lek within 3 miles of this pasture, the brood rearing habitat is possibly more important? **Estimated Cost @ \$1000/ac = \$58,000 (The opportunities for payment incentive for this practice are limited).** THIS WILL PROBABLY BE WITHIN 20 YEARS. REMOVED FROM PLAN DOCUMENT FOR REPORTING PURPOSES SINCE IT IS A WAYS OFF.
- Piping of Lake Ditch from the New Fork River to supply water to the ranch. Discussion centered around losing water en route to ranch which could

provide more water for application and into Muddy Creek. Not many riparian areas have developed around Lake Ditch due to the sandy nature of the soil so those impacts would be minimal. There would be a potential for gravity flow. INTERESTED IN RESERACHING THE WWDC GRANTS.

- Refer to existing Irrigation Water Management (IWM) plan provided for pivot in 2003. Implement IWM on flood-irrigated meadows that manages soil moisture for crop needs. There is no cost to implementing this plan unless moisture sensors are purchased to better monitor soil moisture conditions. IWM could result in better yields on the flood-irrigated land and reduced operation costs on sprinkler-irrigated land.

FORAGE HARVEST MANAGEMENT

- Leave un-harvested strips under pivot for wildlife habitat (cover & feed). There is a cost in lost yields to this alternative, but it will provide additional quality food and cover for sage grouse and food for antelope. **Cost example: leave 10 acres @ 3T/ac @ \$80/T = \$2,400**
- Continue current harvest patterns from the inside of the fields toward the outside to minimize incidental losses of sage grouse and other small mammals/birds. There is no cost to this alternative, and it shows good faith to minimize impacts to sage grouse.
- Continue to delay harvest until after nesting/early brood-rearing period for sage grouse (July 1st), and leave recommended leaf lengths at harvest time and regrowth period before killing frost.
- Temporarily or permanently convert some hayland to irrigated pasture. Current Feed/Forage Balance indicates excess hay production. Hayland converted to irrigated pasture would allow more flexibility in managing riparian and upland habitats, especially if considering vegetative treatments that would require periods of deferment or rest. This is already being employed on a temporary basis depending upon annual growing conditions and the need for grazing resources.

CONSERVATION CROP ROTATION

- Implement a 10 year rotation under sprinkler irrigation that includes 1-2 years of oats/barley/peas and 8-9 years of alfalfa/grass (70/30) mix. Recommended grass for maximum hay palatability: 'Regar' meadow brome. Breaking no more than half of the pivot out of perennial forage is recommended unless necessary due to other factors such as stand failure. Depending upon climate and water availability, keeping a cropping rotation going that always includes legumes is an important component to providing a high quality forage source for livestock and wildlife. This may be more costly than a 15-20 year rotation, but returns on yield are thought to more than make up for extra tillage operations. In the event of stand failure due to freezing, disease, or extended drought and/or lack of water to irrigate, there will need to be an alternative plan that does not rely on irrigation water (alternative, non-legume crops) or includes an option to break out ground before the 10 rotation is complete.

NUTRIENT MANAGEMENT

- Collect soil sample for nutrient analysis and fertilizer recommendations under pivot to optimize hay production. This would only need to be done every 5 years to watch soil fertility characteristics and assure that yields are optimized. **Estimated Cost = \$40 for 2 samples** WILL COMPLETE SUMMER OF 2008.

PEST MANAGEMENT

- Implement a Brucellosis Herd Plan to reduce risk associated with adjacent elk winter feedground. Each plan is written with the landowner to address their specific situation and proximity to the closest feedground, which is Muddy Creek Feed Ground, approximately 8 miles east of the ranch. This plan has been written for this operation, and NRCS funds are currently being employed to assist with the implementation of the plan. IMPLEMENTING BRUCELLOSIS BEST MANAGEMENT PRACTICES CURRENTLY THROUGH AN INDIVIDUALIZED BRUCELLOSIS HERD PLAN.
- Control noxious weeds by the most economical and practical means. Grazing can certainly be used as a means of weed suppression, however it is anticipated that chemical control will be necessary for perennial pepperweed and Canada thistle, especially if cattle are removed from the riparian area. Biological control for Canada thistle may be effective, and could be considered. INVOLVE SUBLETTE COUNTY WEED AND PEST IN DEVELOPMENT OF WEED MANAGEMENT PLAN IN 2008.

WILDLIFE HABITAT MANAGEMENT

- Construct off-stream wildlife ponds in old oxbows to augment waterfowl and fisheries habitat. This option would be opportunistic given a site location and available funds, and needs much more analysis before providing any cost estimates or proposed locations.
- Implement Forage Harvest Management recommendations.
- Implement Conservation Crop Rotation recommendation.
- Implement Vegetation Manipulation recommendations.
- Implement Grazing Management recommendations. Fence and water development alternatives are only facilitating practices to the grazing management, and none are necessary for improved wildlife habitat except to help improve the vegetation resource.
- Removal of unnecessary fences, and utilizing wildlife friendly fence designs in the construction of all new fences.
- When shutting off water to irrigated fields for harvest, close the headgate gradually during the span of 3-4 days. Fish can sense when water levels recede and will start to travel upstream. This will reduce the number of fish lost to ditches when they dry out. No cost associated with this except management and time.
- Allow Wyoming Game and Fish personnel on site for monitoring of wildlife, nesting sites, juveniles, etc. with prior notification.

ALTERNATIVE SELECTION

LIVESTOCK PRODUCTION

- ✓ Stock for drought rather than “normal” conditions.

FENCING

- ✓ Remove water gap fencing for Square Top Common Allotment pending the alternative water source can be developed and there is no legal easement for the current water gap.
- ✓ Use temporary electric fence to Cross-fence the BLM pasture pending BLM approval.
- ✓ Fence the South side of Muddy Creek based on Land Use.
- ✓ Fence the North side of Muddy Creek for riparian values.

WATER DEVELOPMENT

- ✓ Install escape ramps on all existing and planned stockwater tanks.
- ✓ Pursue drilling a well on BLM for the common allotment to provide water to cows on allotment.
- ✓ Pursue pumping water out of Muddy Creek and installing pipeline system to provide water for BLM Pasture – Field 2.
- ✓ Spring development (or well) to provide offsite water for cattle if grazing is excluded from riparian area.

GRAZING MANAGEMENT

- ✓ Implement an annual monitoring plan.
- ✓ Prescribed grazing can be better implemented and adopted after practices have been installed.

VEGETATION MANIPULATION

- ✓ Vegetation inventory of other private parcels and leased lands.
- ✓ Investigate PMC trial in area east of pivot to determine best species to establish.
- ✓ Investigate PMC trial for pasture renovation in Field 8 – Main Meadow.
- ✓ Research Lawson aerator on spots north of Muddy Creek.
- ✓ Willow establishment along Fields 1, 3 and 4 on Muddy Creek.

IRRIGATION WATER MANAGEMENT

- ✓ Implement 2003 Irrigation Water Management (IWM).

FORAGE HARVEST MANAGEMENT

- ✓ Leave un-harvested strips under pivot for wildlife habitat (cover & feed).
- ✓ Continue harvest patterns from the inside of the fields toward the outside to minimize incidental losses of sage grouse and other small mammals/birds.
- ✓ Continue to delay harvest until after nesting period for sage grouse (July 1), and leave recommended leaf lengths at harvest time and regrowth period before killing frost.
- ✓ Annually convert some hayland to irrigated pasture on a temporary basis depending on conditions and need for grazing resources.

CONSERVATION CROP ROTATION

- ✓ Implement a 10 year crop rotation under sprinkler irrigation.

NUTRIENT MANAGEMENT

- ✓ Collect soil sample for nutrient analysis and fertilizer recommendations under pivot to optimize hay production.

PEST MANAGEMENT

- ✓ Implement Brucellosis Herd Plan.
- ✓ Control noxious weeds by the most economical and practical means.

WILDLIFE HABITAT MANAGEMENT

- ✓ Implement Forage Harvest Management recommendations.
- ✓ Implement Conservation Crop Rotation recommendation.
- ✓ Utilize wildlife friendly designs when constructing new fences.
- ✓ Removal of unnecessary fences.
- ✓ Slowly shut off headgate when turning off water for irrigation.

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