

APPENDIX L: Monitoring Summary

Indicators	Priority	Methods	Frequency and Timing	Location	Lead	Who monitors	Status
Absolute Cover Bare Ground	Very High	Point intercept method along 50 m transects plus complete species list from 100 m ²	Sampling season: July 15- August 31 Frequency: Annually for two years then 3-5 years break repeating pattern	Systemwide	Grassland Ecologist	Plant Ecology staff, Monitoring staff, contractors	Planned
Native Frog Presence in Suitable Habitat	Very High	Visual encounter surveys augmented with aural breeding surveys	Aural sampling season: depends on species but generally late March through July Visual encounter sampling season: July through mid-September Frequency: Annual for both	Systemwide	Wildlife Ecologist	Wildlife Ecology staff, Monitoring staff, Information Resource staff, volunteers	On going
Native Species Relative Cover	Very High	Point intercept method along 50 m transects plus complete species list from 100 m ²	Sampling season: July 15- August 31 Frequency: Annually for two years then 3-5 years break repeating pattern	Systemwide	Grassland Ecologist	Plant Ecology staff, Monitoring staff, contractors	Planned
Native Species Richness	Very High	Point intercept method along 50 m transects plus complete species list from 100 m ²	Sampling season: July 15- August 31 Frequency: Annually for two years then 3-5 years break repeating pattern	Systemwide	Grassland Ecologist	Plant Ecology staff, Monitoring staff, contractors	Planned
Percent of occupied land in Grassland Preserves, Multiple Objective Areas or Prairie Dog Conservation Areas.	Very High	GPS mapping of prairie dog colonies	Sampling season: August-October Frequency: Annual	Systemwide	Wildlife Ecologist	Wildlife Ecology staff, Monitoring staff, Information Resource staff, volunteers	On going
Percent of target with acceptable bird conservation score	Very High	Distance sampling of line transects	Sampling season: May 15- July 15 Frequency: TBD	Systemwide	Wildlife Ecologist	Wildlife Ecology staff	Enhance
Proportion of habitat blocks over 100 ha with singing male grasshopper sparrows	Very High	Distance sampling line transects	Sampling season: May 15- July 15 Frequency: TBD	Systemwide in blocks over 100 ha	Wildlife Ecologist	Wildlife Ecology staff	Enhance

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Relative cover of host plants for skipper/butterfly species of concern (big bluestem and little bluestem)	Very High	Point intercept method along 50 m transects plus complete species list from 100 m ²	Sampling season: July 15- August 31 Frequency: Annually for two years then 3-5 years break repeating pattern	Systemwide	Grassland Ecologist	Plant Ecology staff, Monitoring staff, contractors	Planned
Richness of selected conservative plant species	Very High	Point intercept method along 50 m transects plus complete species list from 100 m ²	Sampling season: July 15- August 31 Frequency: Annually for two years then 3-5 years break repeating pattern	Systemwide	Grassland Ecologist	Plant Ecology staff, Monitoring staff, contractors	Planned
Abundance of black spleenwort	High	Population census	Sampling season: August Frequency: Once every 5 years	White Rocks	Grassland Ecologist	Plant Ecology staff, Monitoring staff, contractors	Planned
Acres in agricultural production	High	Database analysis	Annual report	Systemwide	Agricultural Specialist	Agricultural Specialists, Resource Information staff	On going
Average derived PIF score of sampled sites within selected drainages	High	Fixed distance point counts	Sampling season: May-July Frequency: Every other year or every third year	Systemwide	Wildlife Ecologist	Wildlife Ecology staff, Information Resource staff, volunteers	Enhance
Grassland preserves with occupancy between 10 and 26%	High	Annual prairie dog GPS mapping	Sampling: August-October Frequency: Annual	Grassland Preserves	Wildlife Ecologist	Wildlife Ecology staff, Information Resource staff, volunteers	Planned
Fish index of biotic integrity (IBI)	High	Methods developed during recent EMAP project	Sampling: TBD Frequency: Once every 5 years	Systemwide	Wetland/Riparian Ecologist	Wetland/Riparian Ecology staff, Wildlife Ecology staff, Monitoring staff, CDOW	Planned
Impediments to fish passage	High	GIS analysis	Annual report	Systemwide	Wetland/Riparian Ecologist	Wetland/Riparian Ecology staff, Resource Information staff	On going
Macroinvertebrate index of biotic integrity (IBI)	High	Methods developed during recent EMAP project	Sampling: Mid-summer Frequency: Once every 5 years	Systemwide	Wetland/Riparian Ecologist	Wetland/Riparian Ecology staff, Wildlife Ecology staff, Monitoring staff, CDOW, contractors	Planned
Management of Ute Ladies-Tresses Orchid Habitat	High	GIS and database analysis	Annual report	Two VanVleet parcels and Yunker	Monitoring Coordinator	Agricultural Specialists, Grassland Ecologist, Water Resources Administrator	Planned

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Number of active Bald Eagle nest sites in the Grassland Planning Area	High	Visual observation	Sampling season: Nov. 1 through July 31 Frequency: Annual	Systemwide at the nest sites	Wildlife Ecologist	Wildlife Ecology staff, Rangers, volunteers	On going
Number of prairie dog colonies with successful nesting attempts by burrowing owls	High	Visual observation	Sampling season: March - October Frequency: Annual	Systemwide at prairie dog colonies	Wildlife Ecologist	Wildlife Ecology staff, possibly volunteers	On going
Percent of grazed areas in good condition according to an integrated measure of range quality.	High	TBD	Season: When livestock leave a pasture Frequency: Annual	Leased lands	Agricultural Specialist	Agricultural Specialists	Planned
Percent of target area experiencing a 5-30 year fire return	High	GPS mapping and GIS analysis	Mapping will occur after fires. Analysis will occur on an annual basis.	Systemwide	Resource Information coordinator	Resource information staff, Monitoring staff, Grassland Ecology staff	On going
Percent of target area experiencing a 5-10 year fire return	High	GPS mapping and GIS analysis	Mapping will occur after fires. Analysis will occur on an annual basis.	Systemwide	Resource Information coordinator	Resource information staff, Monitoring staff, Grassland Ecology staff	On going
Percent of target dominated by exotic species (Rapid Assessment Mapping)	High	RAM	Sampling season: late June thru early August Frequency: Once every 5 years	Systemwide	IPM Specialist	IPM staff	On going
Percent of target with prevalence of exotic species (Rapid Assessment Mapping)	High	RAM	Sampling season: late June thru early August Frequency: Once every 5 years	Systemwide	IPM Specialist	IPM staff	On going
Physical instream and riparian habitat metric	High	Methods outlined in Barbour et al. 1999	Sampling season: June-October (growing season) Frequency: Once every 5 years.	Systemwide	Wetland/Riparian Ecologist	Wetland/Riparian Ecology staff, Monitoring staff	Planned
Predator Community Composition/Abundance	High	Visual observation	Sampling season: August-October Frequency: Annual	Systemwide	Wildlife Ecologist	Wildlife Ecology staff, volunteers	Planned
Presence of populations of Ute Ladies Tresses Orchid	High	Botanical inventory for presence	Season: second or third week of August Frequency: Every year	Two VanVleet parcels and Yunker	Grassland Ecologist	Plant Ecology staff, volunteers	Planned

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Road and trail density (including undesignated trails) density within 200 meter buffer around wetland/riparian complex.	High	GIS analysis	Sampling season: NA Frequency: Once every five years - on the same cycle as undesignated trail mapping.	Systemwide	Monitoring Coordinator	Resource information staff, Wetland/Riparian Ecologist, Monitoring staff	On going
Size distribution of large blocks	High	GIS analysis	Sampling season: NA Frequency: Once every five years - on the same cycle as undesignated trail mapping.	Systemwide	Monitoring Coordinator	Resource information staff, Monitoring staff	On going
Size of Bell's twinpod (<i>Physaria bellii</i>) populations	High	CNHP/OSMP rare plant census methods	Season: May (late April possibly) Frequency: once every five years (minimum)	Shale barrens	Grassland Ecologist	Plant Ecology staff, volunteers	On going
Size of dwarf leadplant (<i>Amorpha nana</i>) populations	High	CNHP/OSMP rare plant census methods	Season: late May - mid June (ideal) through September (possible) Frequency: once every five years (minimum)	Systemwide (concentrated at forest/grassland interface)	Grassland Ecologist	Plant Ecology staff, volunteers	On going
Size of grassyslope sedge (<i>Carex oreocharis</i>) populations	High	CNHP/OSMP rare plant census methods	Season: June Frequency: once every five years (minimum)	Two known populations on pediments in southern part of the planning area.	Grassland Ecologist	Plant Ecology staff, volunteers	On going
Size of Prairie violet/bird's foot violet (<i>Viola pedatifida</i>) populations	High	CNHP/OSMP rare plant census methods	Season: May (late April possibly) Frequency: once every five years (minimum)	Systemwide (concentrated at forest/grassland interface)	Grassland Ecologist	Plant Ecology staff, volunteers	On going
Visual Obstruction Vegetation Height-Density (Robell Pole Measure)	High	Modified Robell pole or similar methodology	TBD	Systemwide	Grassland Ecologist	Plant Ecology staff, contractors	Planned
Bobolink indicator	High	Aural surveys along transects with locations mapped	Sampling season: May-July Frequency: Annual	Systemwide within hay fields or similar habitat	Wildlife Ecologist	Wildlife Ecology staff, volunteers	Enhance

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Buffer width (vegetated area within 100 m of a creek)	Medium	Visual estimation or measurement	TBD	Systemwide	Wetland/Riparian Ecologist	Wetland/Riparian Ecology staff, Monitoring staff	Planned
Buffer width (vegetated area within 100m of the wetland)	Medium	Visual estimation or measurement	TBD	Systemwide	Wetland/Riparian Ecologist	Wetland/Riparian Ecology staff, Monitoring staff	Planned
Cottonwood Regeneration	Medium	Plots	TBD	Systemwide	Wetland/Riparian Ecologist	Wetland/Riparian Ecology staff, Monitoring staff	Planned
Distance to nearest wetland or riparian area	Medium	GIS analysis	TBD	Systemwide	Wetland/Riparian Ecologist	Wetland/Riparian Ecology staff, Monitoring staff	Planned
Irrigable land leased for agriculture	Medium	GIS and database analysis	Every other year	Systemwide	Agricultural Specialist	Agricultural Specialist, Water Resources Administrator, Resource Information staff	Planned
Percent occurrence of CNHP-tracked grassland dependent butterflies and skipper species	Medium	TBD	Sampling season: May-August based on flight times which differ by species Frequency: Two consecutive years followed by 3-7 years off repeating pattern	Systemwide	Wildlife Ecologist	Wildlife Ecology staff, contractors	Planned
Percent occurrence of grassland dependent butterflies and skipper species	Medium	TBD	Sampling season: May-August based on flight times which differ by species Frequency: Two consecutive years followed by 3-7 years off repeating pattern	Systemwide	Wildlife Ecologist	Wildlife Ecology staff, contractors	Planned
Percent of colonies with territorial horned larks	Medium	Visual observation associated with prairie dog mapping	Sampling season: August-October Frequency: Annual	Systemwide on prairie dog colonies	Wildlife Ecologist	Wildlife Ecology staff, possibly volunteers	Planned
Percent Soil Organic Matter	Medium	TBD	Sampling season: Growing season Frequency: Once every 4 years	Leased lands	Agricultural Specialist	Agricultural Specialists, Lessees	Planned
Presence of full suite of rare species	Medium	Varies by species	Varies by species	White Rocks	Monitoring Coordinator	Wildlife Ecology staff, Plant Ecology staff, volunteers	Planned

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Species richness of sensitive breeding birds	Medium	Point counts	Sampling season: May-July Frequency: TBD	Systemwide in wetlands	Wildlife Ecologist	Wildlife Ecology staff, volunteers	Planned
Submerged aquatic nuisance species (ANS) richness	Medium	Visual surveys	Sampling season: July-August Frequency: TBD	Systemwide	IPM Specialist	IPM staff, Wetland/Riparian Ecology staff, Wildlife Ecology staff	On going
Dissolved Oxygen (lotic-flowing water habitats)	Low	Dissolved oxygen meter	TBD	Systemwide	Wetland/Riparian Ecologist	Wetland/Riparian Ecology staff, Monitoring staff	Planned
Instream Flows	Low	TBD	TBD	Systemwide	Wetland/Riparian Ecologist	Wetland/Riparian Ecology staff, Monitoring staff	Planned
Number of over-bank flooding events during late May through June measured every 5-10 years	Low	TBD	When it occurs	Systemwide	Wetland/Riparian Ecologist	Wetland/Riparian Ecology staff, Monitoring staff	Planned
Percent of area in conservation ownership	Low	GIS analysis	Annual report	White Rocks	Monitoring Coordinator	Resource information staff, Monitoring staff	On going
Percent of identified hydrologic restoration projects completed.	Low	TBD	TBD	Systemwide	Wetland/Riparian Ecologist	Wetland/Riparian Ecology staff, Monitoring staff	Planned
Percent of wetlands in each class with idealized/prescribed/proper hydrologic regime.	Low	TBD	TBD	Systemwide	Wetland/Riparian Ecologist	Wetland/Riparian Ecology staff, Monitoring staff	Planned
POND Secchi disk depth	Low	Secchi disk sampling	TBD	Systemwide	Wetland/Riparian Ecologist	Wildlife Ecology staff, Wetland/Riparian Ecology staff, Monitoring staff	Planned
POND Total Phosphorus	Low	Grab and/or composite samples	TBD	Systemwide	Wetland/Riparian Ecologist	Wildlife Ecology staff, Wetland/Riparian Ecology staff, Monitoring staff	Planned

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Presence of breeding Barn Owls	Low	Nighttime broadcast call playbacks	Sampling season: May-June Frequency: Annual	White Rocks	Wildlife Ecologist	Wildlife Ecology staff, volunteers	Planned
Presence of six-lined racerunner	Low	Visual observation	Sampling season: May-August Frequency: Annual or every other year	White Rocks	Wildlife Ecologist	Wildlife Ecology staff, volunteers	Planned
Total Phosphorus (lotic-flowing water habitats)	Low	Grab and/or composite samples	TBD	Systemwide	Wetland/Riparian Ecologist	Wetland/Riparian Ecology staff, Monitoring staff	Planned