

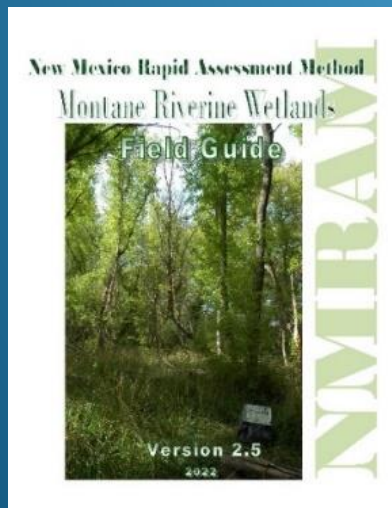


New Mexico Environment Department



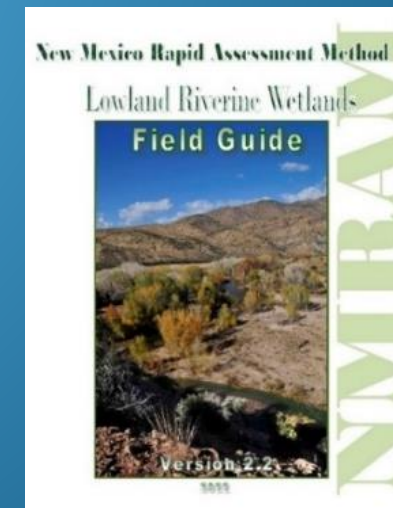
New Mexico Rapid Assessment Method (NMRAM) *Riverine Wetlands*

Surrounding Land Use



New Mexico Environment Department
Surface Water Quality Bureau
Wetlands Program

Natural Heritage New Mexico
University of New Mexico

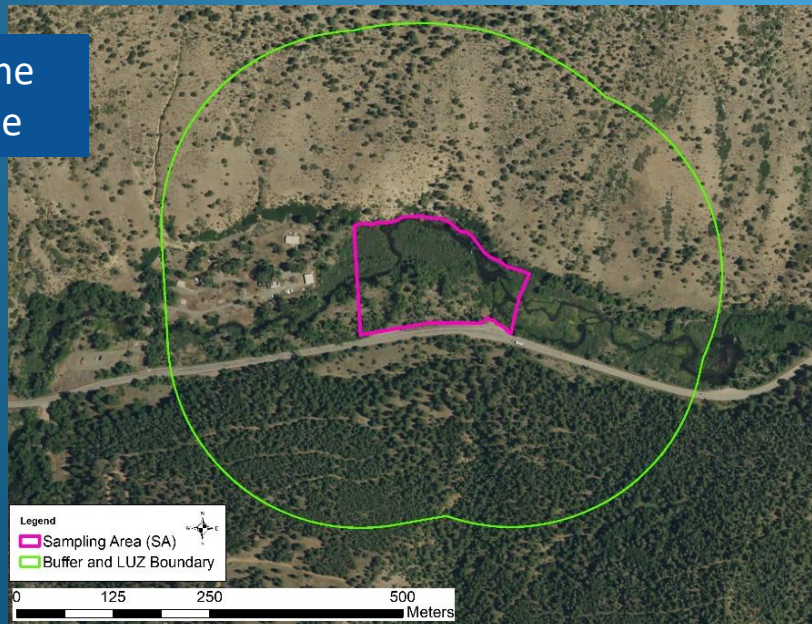


SURROUNDING LAND USE

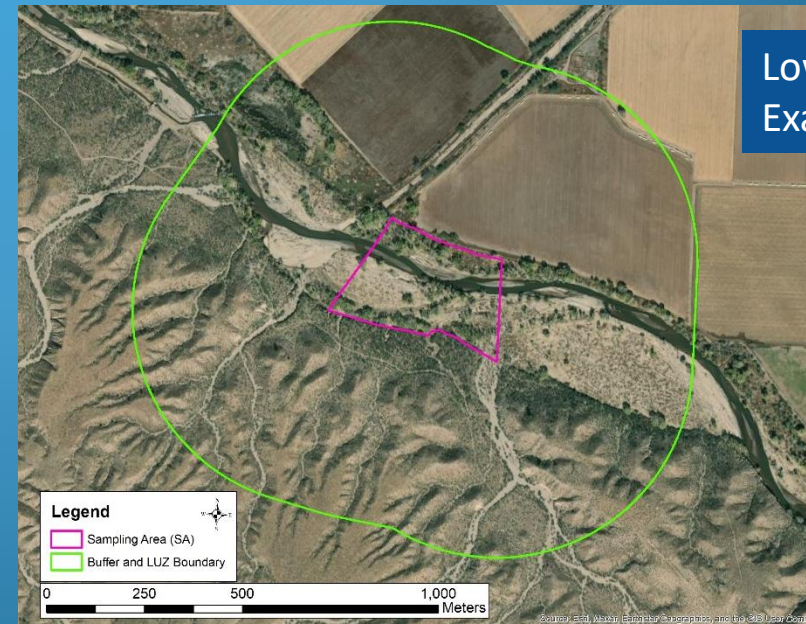
Definition: The extent and intensity of human-dominated land surrounding the SA

- Level 1: GIS and field verified
- The intensity of human activity in the landscape has a proportionate impact to the ecological processes of natural ecosystems
- Assessed within an area extending around the SA:
 - 250 m for small SAs (Montane)
 - 500 m for medium and large SAs (Lowland)
- Land Use Index (LUI) = $\sum \text{LU Coefficient} \times \text{Percent of area}$

Montane
Example



Lowland
Example

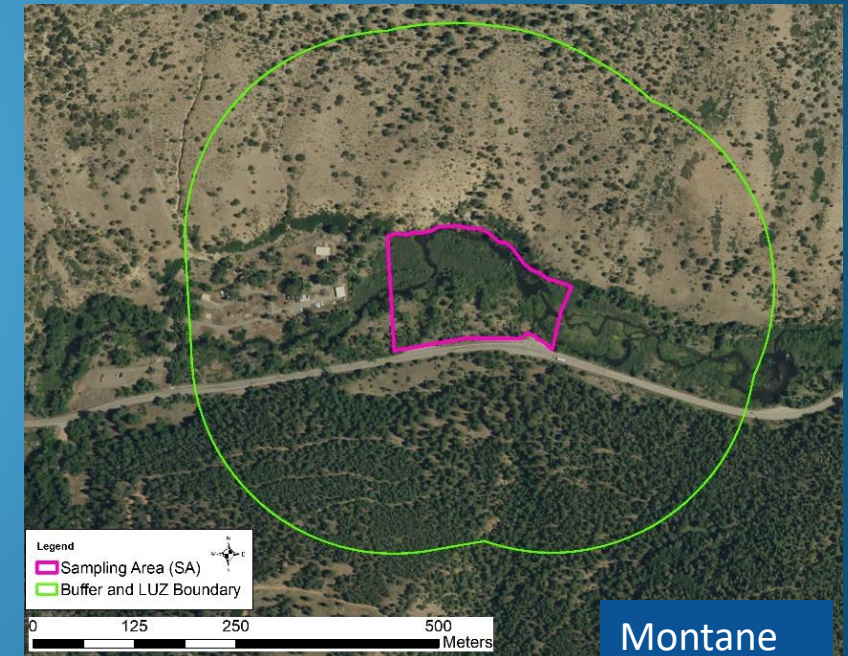


SURROUNDING LAND USE

- Measured using a Land Use Index (LUI) between the SA and the LUZ boundary
 - SA to lime green ring
- Includes a suite of 23 land use types weighted by intensity of human disturbance and percentage area occupied (Worksheet 4)

Land Use Element
Paved roads, parking lots, domestic or commercially developed buildings, mining (gravel pit, quarry, open pit, strip mining), railroads
Unpaved roads (e.g., driveway, tractor trail, unpaved parking lots), paddock, dirt lot
Dredging, borrow pits, abandoned mines, water-filled artificial impoundments (ponds and reservoirs)
Filling or dumping of sediment or soils
Intense recreation (all-terrain vehicle use, camping, popular fishing spot, etc.)
Rip-rapped channel (highly modified channel with severely limited vegetation zone that is altered by human activities but not a completely concrete channel [that goes under paved roads]), junkyards, trash dumps, disturbed ground (not including roads)
Ski area
Dam sites and flood-disturbed shorelines around water storage reservoirs
Abandoned artificial impoundments (ponds and reservoirs) and associated disturbed flood zones
Artificial/Constructed wetlands, irrigation ditches
Developed/Managed trail system (high use trail)
Agriculture - active tilled crop production
Agriculture - permanent crop (vineyards, orchards, nurseries, berry production)
Manicured lawns, sport fields, and golf courses; urban manicured parks
Old fields and other disturbed fallow lands dominated by ruderal and/or exotic species (e.g., kochia, Russian thistle, mustards, annual vegetation)
Mature old fields and other fallow lands with natural composition, introduced hay field and pastures (e.g., perennial vegetation cover)
Restoration areas in process to natural conditions (re-conversion in process)
Haying of native grassland (e.g., no tillage, haying and baling only)
Heavy logging or tree removal with >50% of large trees (e.g., >30 cm diameter at breast height) removed, woodland/shrub vegetation conversion (chaining, cabling, rotochopping)
Commercial tree plantation, Christmas tree farms
Selective logging or tree removal with <50% of large trees (e.g., >30 cm diameter at breast height) removed
Mature restoration areas returned to natural conditions (re-converted)
Natural area, land managed for native vegetation - No agriculture, logging, development

- Estimate percentage of each land use element within the assessment area (SA boundary to LUZ boundary)
- Total estimated percentage land use must add up to 100% for index to calculate

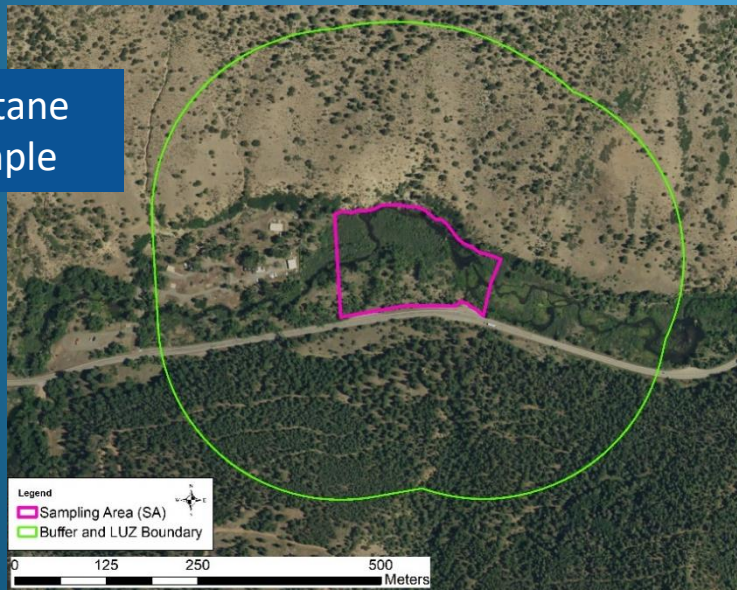


Montane
Example

SURROUNDING LAND USE

- Land uses were assigned a Coefficient based on impact to wetland Functions
- % LUZ Area = estimated % area between SA boundary and LUZ boundary (pink line to green line)
 - Total estimated percentage land use must = 100%
- % LUZ area * coefficient = LUI Score
- Sum of LUI Score taken to Table L4 to rate metric

Montane Example



L4 - Surrounding Land Use

Worksheet 4. Surrounding Land Use. Enter the percent area occupied by a given Land Use Element in the Land Use Zone (LUZ) surrounding the SA. Calculate the Land Use Index (LUI) Score by element as the product of the element coefficient times the percent of the LUZ Area occupied. (The %LUZ Area must total 100%.) Sum the LUI scores for each element to create the final LUI Score. Rate using Table L4 and enter the rating in the SA Rank Summary Worksheet.

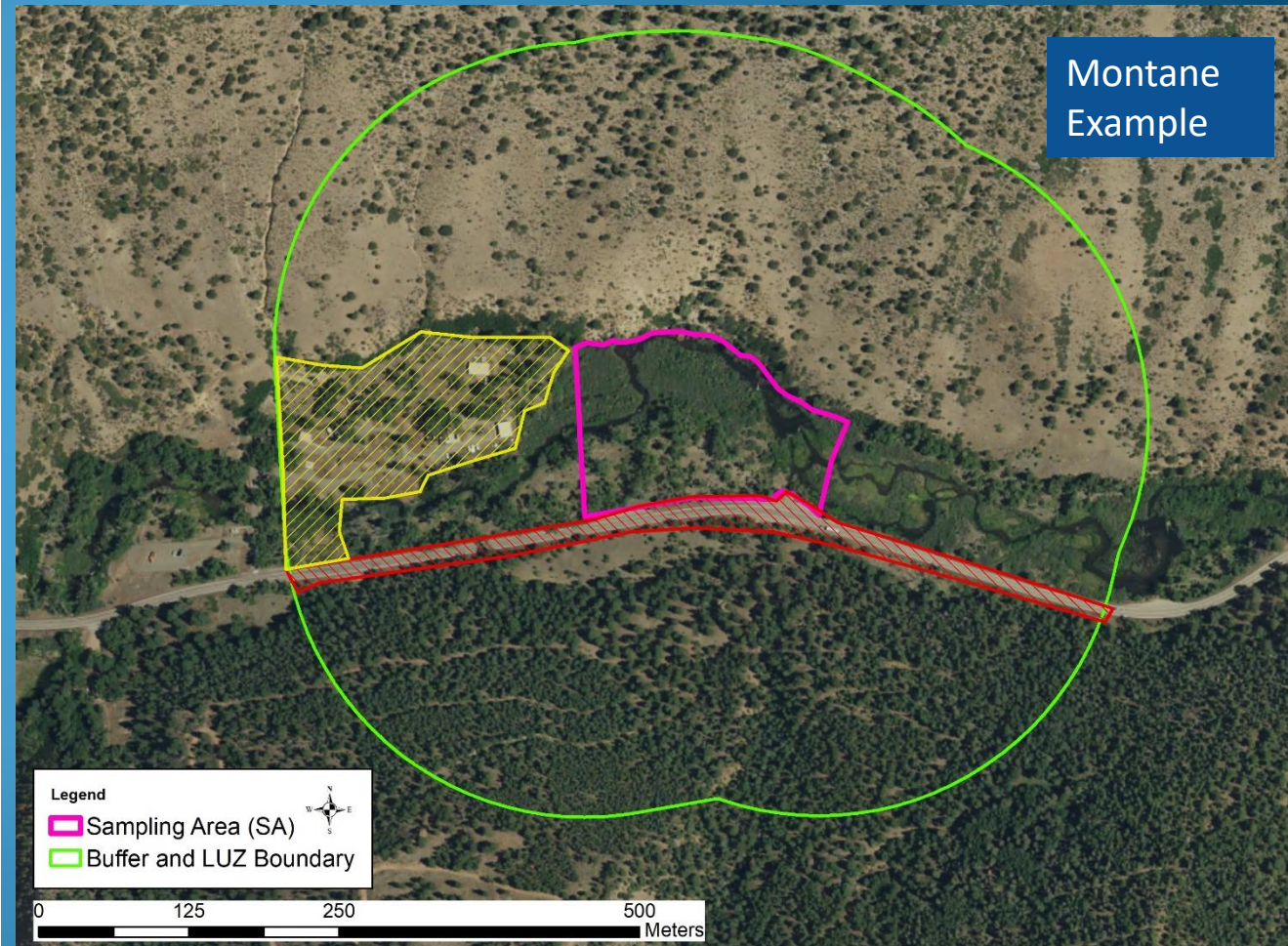
Land Use Element	Coef	% LUZ Area	LUI Score
Paved roads, parking lots, domestic or commercially developed buildings, mining (gravel pit, quarry, open pit, strip mining), railroads	0		0
Unpaved roads (e.g., driveway, tractor trail, unpaved parking lots), paddock, dirt lot	0.1		
Dredging, borrow pits, abandoned mines, water-filled artificial impoundments (ponds and reservoirs)	0.1		
Filling or dumping of sediment or soils	0.1		
Intense recreation (all-terrain vehicle use, camping, popular fishing spot, etc.)	0.3		
Rip-rapped channel (highly modified channel with severely limited vegetation zone that is altered by human activities but not a completely concrete channel [that goes under paved roads]), junkyards, trash dumps, disturbed ground (not including roads)	0.3		
Ski area	0.4		
Dam sites and flood-disturbed shorelines around water storage reservoirs	0.5		
Abandoned artificial impoundments (ponds and reservoirs) and associated disturbed flood zones	0.5		
Artificial/Constructed wetlands, irrigation ditches	0.7		
Developed/Managed trail system (high use trail)	0.8		
Agriculture - active tilled crop production	0.2		
Agriculture - permanent crop (vineyards, orchards, nurseries, berry production)	0.3		
Manicured lawns, sport fields, and golf courses; urban manicured parks	0.3		
Old fields and other disturbed fallow lands dominated by ruderal and/or exotic species (e.g., kochia, Russian thistle, mustards, annual vegetation)	0.5		
Mature old fields and other fallow lands with natural composition, introduced hay field and pastures (e.g., perennial vegetation cover)	0.7		
Restoration areas in process to natural conditions (re-conversion in process)	0.8		
Haying of native grassland (e.g., no tillage, haying and baling only)	0.9		
Heavy logging or tree removal with >50% of large trees (e.g., >30 cm diameter at breast height) removed, woodland/shrub vegetation conversion (chaining, cabling, rotochopping)	0.3		
Commercial tree plantation, Christmas tree farms	0.6		
Selective logging or tree removal with <50% of large trees (e.g., >30 cm diameter at breast height) removed	0.8		
Mature restoration areas returned to natural conditions (re-converted)	0.9		
Natural area, land managed for native vegetation - No agriculture, logging, development	1		
LUI Score= Coefficient * % LUZ Area			

SURROUNDING LAND USE

L4 - Surrounding Land Use

Worksheet 4. Surrounding Land Use. Enter the percent area occupied by a given Land Use Element in the Land Use Zone (LUZ) surrounding the SA. Calculate the Land Use Index (LUI) Score by element as the product of the element coefficient times the percent of the LUZ Area occupied. (The %LUZ Area must total 100%.) Sum the LUI scores for each element to create the final LUI Score. Rate using Table L4 and enter the rating in the SA Rank Summary Worksheet.

Land Use Element	Coef	% LUZ Area	LUI Score
Paved roads, parking lots, domestic or commercially developed buildings, mining (gravel pit, quarry, open pit, strip mining), railroads	0		0
Unpaved roads (e.g., driveway, tractor trail, unpaved parking lots), paddock, dirt lot	0.1		
Dredging, borrow pits, abandoned mines, water-filled artificial impoundments (ponds and reservoirs)	0.1		
Filling or dumping of sediment or soils	0.1		
Intense recreation (all-terrain vehicle use, camping, popular fishing spot, etc.)	0.3		
Rip-rapped channel (highly modified channel with severely limited vegetation zone that is altered by human activities but not a completely concrete channel [that goes under paved roads]), junkyards, trash dumps, disturbed ground (not including roads)	0.3		
Ski area	0.4		
Dam sites and flood-disturbed shorelines around water storage reservoirs	0.5		
Abandoned artificial impoundments (ponds and reservoirs) and associated disturbed flood zones	0.5		
Artificial/Constructed wetlands, irrigation ditches	0.7		
Developed/Managed trail system (high use trail)	0.8		
Agriculture - active tilled crop production	0.2		
Agriculture - permanent crop (vineyards, orchards, nurseries, berry production)	0.3		
Manicured lawns, sport fields, and golf courses; urban manicured parks	0.3		
Old fields and other disturbed fallow lands dominated by ruderal and/or exotic species (e.g., kochia, Russian thistle, mustards, annual vegetation)	0.5		
Mature old fields and other fallow lands with natural composition, introduced hay field and pastures (e.g., perennial vegetation cover)	0.7		
Restoration areas in process to natural conditions (re-conversion in process)	0.8		
Haying of native grassland (e.g., no tillage, haying and baling only)	0.9		
Heavy logging or tree removal with >50% of large trees (e.g., >30 cm diameter at breast height) removed, woodland/shrub vegetation conversion (chaining, cabling, rotochopping)	0.3		
Commercial tree plantation, Christmas tree farms	0.6		
Selective logging or tree removal with <50% of large trees (e.g., >30 cm diameter at breast height) removed	0.8		
Mature restoration areas returned to natural conditions (re-converted)	0.9		
Natural area, land managed for native vegetation - No agriculture, logging, development	1		
LUI Score= Coefficient * % LUZ Area			



SURROUNDING LAND USE

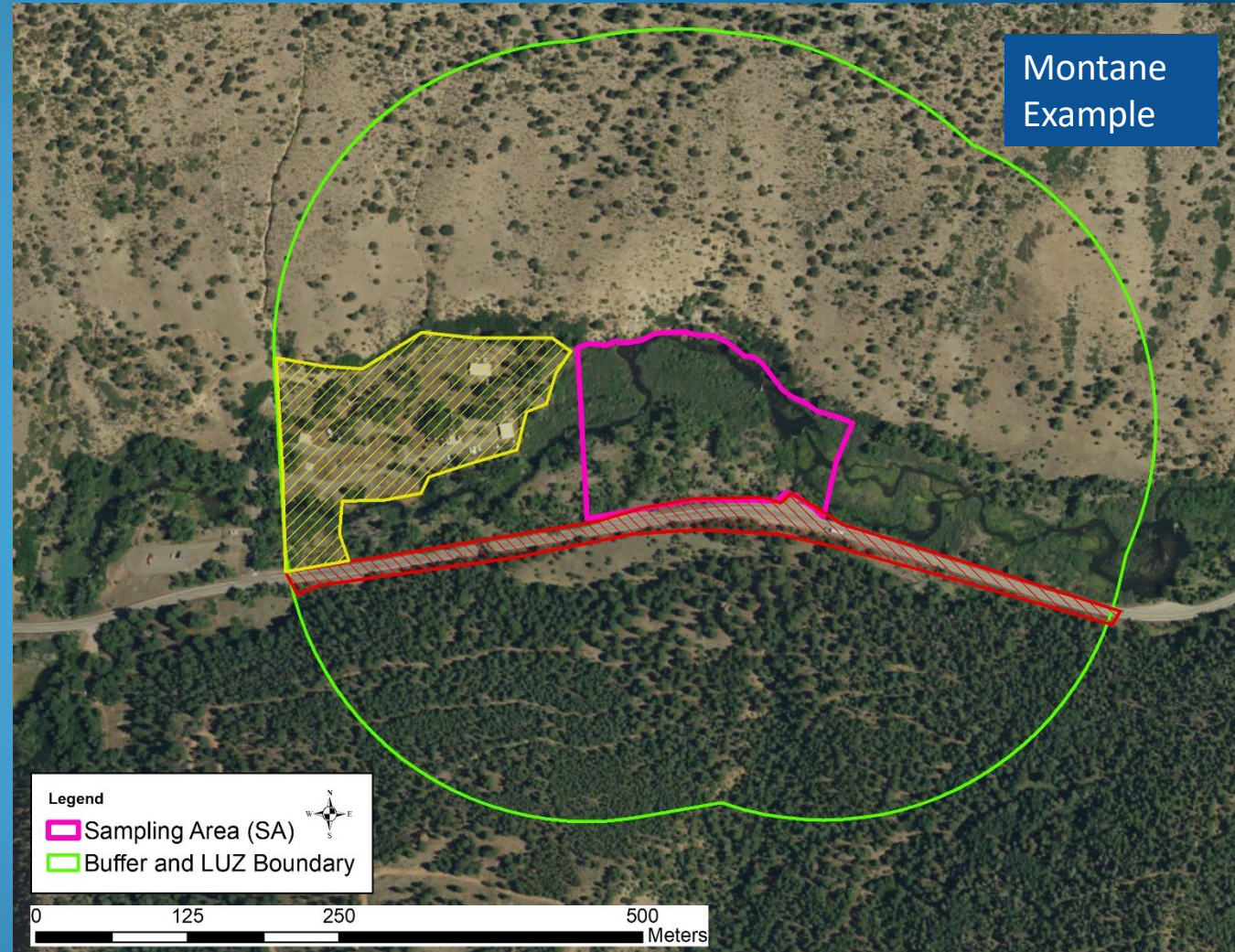
L4 - Surrounding Land Use

Worksheet 4. Surrounding Land Use. Enter the percent area occupied by a given Land Use Element in the Land Use Zone (LUZ) surrounding the SA. Calculate the Land Use Index (LUI) Score by element as the product of the element coefficient times the percent of the LUZ Area occupied. (The %LUZ Area must total 100%.) Sum the LUI scores for each element to create the final LUI Score. Rate using Table L4 and enter the rating in the SA Rank Summary Worksheet.

Land Use Element	Coef	% LUZ Area	LUI Score
Paved roads, parking lots, domestic or commercially developed buildings, mining (gravel pit, quarry, open pit, strip mining), railroads	0	7	0
Unpaved roads (e.g., driveway, tractor trail, unpaved parking lots), paddock, dirt lot	0.1		
Dredging, borrow pits, abandoned mines, water-filled artificial impoundments (ponds and reservoirs)	0.1		
Filling or dumping of sediment or soils	0.1		
Intense recreation (all-terrain vehicle use, camping, popular fishing spot, etc.)	0.3	2	0.6
Rip-rapped channel (highly modified channel with severely limited vegetation zone that is altered by human activities but not a completely concrete channel [that goes under paved roads]), junkyards, trash dumps, disturbed ground (not including roads)	0.3		
Ski area	0.4		
Dam sites and flood-disturbed shorelines around water storage reservoirs	0.5		
Abandoned artificial impoundments (ponds and reservoirs) and associated disturbed flood zones	0.5		
Artificial/Constructed wetlands, irrigation ditches	0.7		
Developed/Managed trail system (high use trail)	0.8		
Agriculture - active tilled crop production	0.2		
Agriculture - permanent crop (vineyards, orchards, nurseries, berry production)	0.3		
Manicured lawns, sport fields, and golf courses; urban manicured parks	0.3	2	0.6
Old fields and other disturbed fallow lands dominated by ruderal and/or exotic species (e.g., kochia, Russian thistle, mustards, annual vegetation)	0.5		
Mature old fields and other fallow lands with natural composition, introduced hay field and pastures (e.g., perennial vegetation cover)	0.7		
Restoration areas in process to natural conditions (re-conversion in process)	0.8		
Haying of native grassland (e.g., no tillage, haying and baling only)	0.9		
Heavy logging or tree removal with >50% of large trees (e.g., >30 cm diameter at breast height) removed, woodland/shrub vegetation conversion (chaining, cabling, rotochopping)	0.3		
Commercial tree plantation, Christmas tree farms	0.6		
Selective logging or tree removal with <50% of large trees (e.g., >30 cm diameter at breast height) removed	0.8		
Mature restoration areas returned to natural conditions (re-converted)	0.9		
Natural area, land managed for native vegetation - No agriculture, logging, development	1	89	89
LUI Score= Coefficient * % LUZ Area		100	90.2

Table L4. Surrounding Land Use Rating		
Rating	LUI Score	
<input type="radio"/> 4	≥95 - 100	
<input checked="" type="radio"/> 3	≥80 - <95	
<input type="radio"/> 2	≥40 - <80	
<input type="radio"/> 1	<40	

Calculate L4 Rating



LANDSCAPE ATTRIBUTE SCORE ROLL-UP

NMRAM - SA Rank Summary Worksheet: Montane Riverine Wetlands 2.5			
Metric Description	Rating	Wt	Final Score
Landscape Context		Σ	2.25
L1. Buffer Integrity Index	2	0.25	0.5
L2. Riparian Corridor Connectivity	1	0.25	0.25
L3. Relative Wetland Size	3	0.25	0.75
L4. Surrounding Land Use	3	0.25	0.75
Biotic		Σ	
B1. Relative Native Plant Community Composition		0.2	
B2. Vegetation Horizontal Patch Structure		0.2	
B3. Vegetation Vertical Structure		0.2	
B4. Native Riparian Tree Regeneration		0.2	
B5. Invasive Exotic Plant Species Cover		0.2	
Abiotic		Σ	
A1. Floodplain Hydrologic Connectivity		0.3	
A2. Physical Patch Diversity		0.2	
A3. Channel Equilibrium		0.2	
A4. Stream Bank Stability and Cover		0.2	
A5. Soil Surface Condition		0.1	

SA Condition Scoring Summary			
Major Attribute	Score	Wt.	Wt. Score
Landscape Context	2.25	0.3	0.675
Biotic		0.35	
Abiotic		0.35	
SA WETLAND CONDITION SCORE Σ			
SA WETLAND RANK =			

SA Wetland Rank		
Rank	Score	Description
A	≥3.25 - 4.0	Excellent Condition
B	≥2.5 - <3.25	Good Condition
C	≥1.75 - <2.5	Fair Condition
D	1.0 - <1.75	Poor Condition