

Resource Concern	Description of Concern	National Quality Criteria	Measurement Units	State Quality Criteria	Assessment Tools for Quality Criteria Evaluation
<b>Soil Erosion - Sheet and Rill</b>	Detachment and transport of soil particles caused by rainfall splash and runoff degrade soil quality.	Sheet and rill erosion does not exceed the Soil Loss Tolerance "T."	Tons/Acre/Year - average annual tons of erosion reduced per acre for the field or planning area/unit.	Same as national	Current erosion prediction tool; i.e., Revised Universal Soil Loss Equation, Version 2 (RUSLE2).
<b>Soil Erosion - Wind</b>	Detachment and transport of soil particles caused by wind degrade soil quality and/or damage plants.	Wind erosion does not exceed the Soil Loss Tolerance "T" or for plant damage, does not exceed crop damage tolerances.	Tons/Acre/Year - average annual tons of erosion reduced per acre for the field or planning area/unit.	Same as national	Current erosion prediction tool; i.e., Wind Erosion Prediction System (WEPS)
<b>Soil Erosion - Ephemeral Gully</b>	Small channels caused by surface water runoff degrade soil quality and tend to increase in size. On cropland, they can be obscured by heavy tillage.	Surface water runoff is controlled sufficiently to stabilize the small channels and prevent reoccurrence of new channels.	Tons/Year - average annual tons of erosion reduced for the field or planning area/unit.	Same as national	Volume calculation; visual assessment.
<b>Soil Erosion - Classic Gully</b>	Deep, permanent channels caused by the convergence of surface runoff degrade soil quality. They enlarge progressively by head-cutting and lateral-widening.	Surface water runoff is controlled sufficiently to stop progression of head cutting and widening.	Tons/Year - average annual tons of erosion reduced for the field or planning area/unit.	Same as national	Volume calculation; aerial photo trend analysis.
<b>Soil Erosion - Streambank</b>	Accelerated loss of streambank soils restricts land and water use and management.	Accelerated stream bank soil loss does not exceed a level commensurate with upstream land use and normal geomorphological processes on site.	Tons/Year - average annual tons of erosion reduced for the field or planning area/unit.	Assessment tool shows condition of stream is healthy or if off-site conditions cause the stream to be unhealthy, then landowner is not contributing to the problem.	Stream assessment tool; i.e., Stream Visual Assessment Protocol; Proper Functioning Condition (PFC); volume calculation; visual assessment.
<b>Soil Erosion - Shoreline</b>	Soil is eroded along shorelines by wind and wave action, causing physical damage to vegetation, limiting land use, or creating a safety hazard.	Shoreline erosion is stabilized to a level that does not restrict the use or management of adjacent land, water, or structures.	Tons/Year - average annual tons of erosion reduced for the field or planning area/unit.	Same as national	Volume calculation; visual assessment.

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<b>Soil Erosion - Irrigation-induced</b>	Improper irrigation water application and equipment operation are causing soil erosion that degrades soil quality.	Irrigation-induced erosion does not exceed the Soil Loss Tolerance "T."	Tons/Acre/Year - average annual tons of erosion reduced per acre for the field or planning area/unit.	Same as national	Current erosion prediction tool; i.e., Revised Universal Soil Loss Equation, Version 2 (RUSLE2).
<b>Soil Erosion - Mass Movement</b>	Soil slippage, landslides, or slope failure, normally on hillsides, result in large volumes of soil movement.	Shallow slumps, slides, or slips are prevented or minimized so that the mass movement of soil material does not exceed naturally occurring rates.	Tons/Year - average annual tons of erosion reduced for the field or planning area/unit.	NA	
<b>Soil Erosion - Road, Road Sides, and Construction Sites</b>	Soil loss occurs on areas left unprotected during or after road building and/or construction activities.	Sites are adequately protected from soil loss during and after road building and construction activities.	Tons/Year - average annual tons of erosion reduced for the field or planning area/unit.	Same as national	Volume calculation; visual assessment.
<b>Soil Condition - Organic Matter Depletion</b>	Soil organic matter has or will diminish to a level that degrades soil quality.	Soil Conditioning Index is positive.	Soil Conditioning Index improvement - positive improvement in index for the field or planning area/unit.	Same as national	Soil Conditioning Index; Soil Quality Test Kit; Soil testing and analysis; Revised Universal Soil Loss Equation, Version 2 (RUSLE2).
<b>Soil Condition - Rangeland Site Stability</b>	The capacity to limit redistribution and loss of soil resources (including nutrients and organic matter) by wind and water.	Indicators of Rangeland Health Attribute rating for Soil/Site Stability show Slight to Moderate or less departure from Ecological Site Description (ESD).	Departure from ESD categories - amount of departure, by numeric value, from ESD for the field or planning area/unit. 1=None to Slight, 2=Slight to Moderate, 3=Moderate, 4=Moderate to Extreme, or 5=Extreme.	Same as national	Rangeland Health Assessment .
<b>Soil Condition - Compaction</b>	Compressed soil particles and aggregates caused by mechanical compaction adversely affect plant-soil-moisture relationships.	Mechanically compacted soils are renovated sufficiently to restore plant root growth and/or water movement.	Non-measurable	Same as national	Bulk Density Test-Soil Quality Kit.
<b>Soil Condition - Subsidence</b>	Loss of volume and depth of organic soils due to oxidation caused by above-normal microbial activity resulting from excessive drainage or extended drought.	The timing and regime of soil moisture is managed to attain acceptable subsidence rates.	Inches/Acre/Year - average annual inches of subsidence reduced per acre for the field or planning area/unit.	NA	

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<b>Soil Condition - Contaminants - Salts and Other Chemicals</b>	Inorganic chemical elements and compounds such as salts, selenium, boron, and heavy metals restrict the desired use of the soil or exceed the soil buffering capacity.	Salinity levels cause less than a 10% decrease in plant yield. Other contaminants do not exceed plant tolerances or are below toxic levels for plants or animals.	Electric Conductivity (EC) - average reduction in EC for the field or planning area/unit.	Same as national	Soil test; Soil Quality Kit-EC meter; Farm*A*Syst assessment.
<b>Soil Condition - Contaminants - Animal Waste and Other Organics - N</b>	Nitrogen nutrient levels from applied animal waste and other organics restrict desired use of the land.	Nitrogen nutrient application levels do not exceed soil storage/plant uptake capacities based on soil test recommendations and risk analysis results.	Pounds/Acre/Year - average annual pounds of nitrogen (N) reduced per acre for the field or planning area/unit.	Same as national	Soil test; Application records; Yield records/history; Nutrient values of applied organics.
<b>Soil Condition - Contaminants - Animal Waste and Other Organics - P</b>	Phosphorous nutrient levels from applied animal waste and other organics restrict desired use of the land.	Phosphorous nutrient application levels do not exceed soil storage/plant uptake capacities based on soil test recommendations and risk analysis results.	Pounds/Acre/Year - average annual pounds of phosphorous (P) reduced per acre for the field or planning area/unit.	Same as national	Soil test; Phosphorus Index; Application records; Yield records/history; Nutrient values of applied organics.
<b>Soil Condition - Contaminants - Animal Waste and Other Organics - K</b>	Potassium nutrient levels from applied animal waste and other organics restrict desired use of the land.	Potassium nutrient application levels do not exceed soil storage/plant uptake capacities based on soil test recommendations and risk analysis results.	Pounds/Acre/Year - average annual pounds of potassium (K) reduced per acre for the field or planning area/unit.	Same as national	Soil test; Application records; Yield records/history; Nutrient values of applied organics.
<b>Soil Condition - Contaminants - Commercial Fertilizer - N</b>	Over application of nitrogen degrades plant health and vigor or exceeds the soil capacity to retain nutrients.	Soil nutrient levels of nitrogen do not exceed crop needs based on realistic yield goals and appropriate pH levels are maintained.	Pounds/Acre/Year - average annual pounds of nitrogen (N) reduced per acre for the field or planning area/unit.	Same as national	Soil test; Application records; Yield records/history.
<b>Soil Condition - Contaminants - Commercial Fertilizer - P</b>	Over application of phosphorous degrades plant health and vigor or exceeds the soil capacity to retain nutrients.	Soil nutrient levels of phosphorous do not exceed crop needs based on realistic yield goals and appropriate pH levels are maintained.	Pounds/Acre/Year - average annual pounds of phosphorous (P) reduced per acre for the field or planning area/unit.	Same as national	Soil test; Phosphorus Index; Application records; Yield records/history.

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<b>Soil Condition - Contaminants - Commercial Fertilizer - K</b>	Over application of potassium degrades plant health and vigor or exceeds the soil capacity to retain nutrients.	Soil nutrient levels or potassium do not exceed crop needs based on realistic yield goals and appropriate pH levels are maintained.	Pounds/Acre/Year - average annual pounds of potassium (K) reduced per acre for the field or planning area/unit.	Same as national	Soil test; Application records; Yield records/history.
<b>Soil Condition - Contaminants - Residual Pesticides</b>	Residual pesticides in the soil have an adverse effect on non-target plants and animals.	Pesticides are applied, stored, handled, and disposed of so that residues in the soil do not adversely affect non-target plants and animals.	Non-measurable	Same as national	Windows Pesticide Training Tool (WIN-PST); visual assessment; soil test; National Agricultural Pesticide Risk Analysis (NAPRA).
<b>Soil Condition - Damage from Soil Deposition</b>	Sediment deposition damages or restricts land use/management or adversely affects ecological processes.	Sediment deposition is sufficiently reduced to maintain desired land use/management and ecological processes.	Acres/Year - average annual acres of sediment deposition reduced for the field or planning area/unit.	Same as national	Visual assesment; Depth and area measurements
<b>Water Quantity - Rangeland Hydrologic Cycle</b>	The capacity to capture, store, and safely release water from rainfall, run-on, and snowmelt (where relevant).	Indicators of Rangeland Health Attribute rating for Hydrologic Cycle is Slight to Moderate or less departure from Ecological Site Description (ESD).	Departure from Ecological Reference Sheet (ESD) categories - amount of departure, by numeric value, from Ecological Reference Sheet for the field or planning area/unit. 1=None to Slight, 2=Slight to Moderate, 3=Moderate, 4=Moderate to Extreme, or 5=Extreme.	Same as national	Rangeland Health Assessment
<b>Water Quantity - Excessive Seepage</b>	Subsurface water oozing to the surface restricts land use and management.	Subsurface water is managed to limit periods of saturation that are unfavorable to the present or intended land use. Management complies with wetland policies.	Acres/Year – average annual acres of seep reduced for the field or planning area/unit	NA	
<b>Water Quantity - Excessive Runoff, Flooding, or Ponding</b>	The land becomes inundated restricting land use and management.	Excess water amounts and/or rates of flow are controlled consistent with desired present or intended land use goals and wetland policies.	Non-measurable	NA	
<b>Water Quantity - Excessive Subsurface Water</b>	Water saturates upper soil layers restricting land use and management.	Subsurface water is managed to limit periods of saturation compatible with the present or intended land use and wetland policies.	Non-measurable	NA	

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<b>Water Quantity - Drifted Snow</b>	Wind-blown snow deposits and accumulates around and over surface structures restricting ingress, egress, and conveyance of humans and animals.	Snowdrifts are reduced or prevented to allow ingress, egress, and conveyance of humans and animals.	Non-measurable	Same as national	Depth and area measurements; Visual assessment.
<b>Water Quantity - Inadequate Outlets</b>	Natural or constructed outlets too small to remove excess water in a timely manner.	Outlets are designed, installed, upgraded, or maintained to adequately convey water for present or intended uses.	Non-measurable	Same as national	National Engineering Handbook, Part 650 (Engineering Field Handbook – Chapters 2,3,7); Hydrologic models; e.g. , Hydraulic Engineering Center River Analysis System (HECRAS), TR-20, TR-55
<b>Water Quantity - Inefficient Water Use on Irrigated Land</b>	Limited water supplies are not optimally utilized.	Land and water management is planned and coordinated to provide optimal use of natural and applied moisture.	Irrigation System and Management Rating Tool Value	A minimum on farm seasonal irrigation system and management rating tool value of 53 for all surface and sprinkler system types except for center pivot and linear move sprinklers which require a rating value of 68. The minimum rating value for Subsurface Drip Irrigation (SDI) is also 68.	Kansas Irrigation System and Management Rating Tool
<b>Water Quantity - Inefficient Water Use on Non-irrigated Land</b>	Natural moisture is not optimally utilized.	Management provides optimum use of natural moisture for the present or intended land use.	Acre-Inches/Acre/Year - average annual acre-inches of water per acre used more beneficially for the field or planning area/unit.	Soil Tillage Intensity Rating (STIR) equal to or < 20.	Revised Universal Soil Loss Equation, Version 2 (RUSLE2) STIR value.
<b>Water Quantity - Reduced Capacity of Conveyances by Sediment Deposition</b>	Sediment deposits in ditches, canals, culverts, and other water conveyances reduce the desired flow capacity.	Conveyance structures are upgraded or maintained to adequately convey water for present or intended uses.	Cubic yards - Volume of sediment in cubic yards removed to maintain water conveyances for the field or planning area/unit.	NA	

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<b>Water Quantity - Reduced Storage of Water Bodies by Sediment Accumulation</b>	Sediment deposits in water bodies reduce the desired volume capacity.	Water bodies and contributing source areas are treated to allow sufficient water storage for present and intended uses.	Acre-Inches/Year - Average annual reduction in acre-inches in sediment deposition within water bodies for the field or planning area/unit.	Same as national	Visual assessment; Depth and area measurements
<b>Water Quantity - Aquifer Overdraft</b>	Water withdrawals exceed recharge rates.	Land and water management are coordinated to conserve aquifer water levels.	Acre-Inches/Year - average annual reduction in acre-inches of groundwater overdraft for the field or planning area/unit.	Same as national	Water level measurements; Producer is applying water conservation; Division of Water Resources reports
<b>Water Quantity - Insufficient Flows in Water Courses</b>	Water flows are not consistently available in sufficient quantities to support ecological processes and land use and management.	Authorized uses and management of water are coordinated to minimize the impacts on water course flows.	Non-measurable	Same as national	Water flow records; Consumptive use/allocation water rights
<b>Water Quality - Harmful Levels of Pesticides in Groundwater</b>	Residues resulting from the use of pest control chemicals degrade groundwater quality.	Pesticides are applied, stored, handled, disposed of, and managed so that groundwater uses are not adversely affected	Non-measurable	Risk Assessment Tool will result in LOW rating or appropriate mitigation practice(s) applied to reduce risk.	Windows Pesticide Training Tool (WIN-PST); National Agricultural Pesticide Risk Analysis (NAPRA); Vadose zone and groundwater chemical sampling and assay
<b>Water Quality - Excessive Nutrients and Organics in Groundwater</b>	Pollution from natural or human induced-nutrients such as nitrogen (N), phosphorus (P), sulfur (S) (including animal and other wastes) degrades groundwater quality.	Nutrients and organics are stored, handled, disposed of, and applied such that groundwater uses are not adversely affected.	Non-measurable	The Nutrient Management Practice Planning Assist Tool results in a "yes" answer to groundwater quality questions contained within the assessment tool.	Nitrate Leaching Index; Phosphorus Leaching Index; Farm*A*Syst; Nutrient Management Practice Planning Assist Tool
<b>Water Quality - Excessive Salinity in Groundwater</b>	Pollution from salts such as calcium (Ca), magnesium (Mg), sodium (Na), potassium (K), bicarbonates (HCO <sub>3</sub> ), carbonates (CO <sub>3</sub> ), chloride (Cl), and sulfates (SO <sub>4</sub> ) degrade surface water quality.	Salts are stored, handled, disposed of, applied, and managed such that groundwater uses are not adversely affected.	Electrical Conductivity (EC) - average reduction in EC for the field or planning area/unit	NA	

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<b>Water Quality - Harmful Levels of Heavy Metals in Groundwater</b>	Natural or human-induced metal pollutants present in toxic amounts degrade groundwater quality.	Materials containing heavy metals are stored, handled, disposed of, applied, and managed such that groundwater uses are not adversely affected.	Non-measurable	NA	
<b>Water Quality - Harmful Levels of Pathogens in Groundwater</b>	Kinds and numbers of viruses, protozoa, and bacteria are present at a level that degrades groundwater quality.	Materials that harbor pathogens are stored, handled, disposed of, applied, and managed such that groundwater uses are not adversely affected.	Non-measurable	NA	
<b>Water Quality - Harmful Levels of Petroleum in Groundwater</b>	Fuel, oil, gasoline, and other hydrocarbons present in toxic amounts degrade groundwater quality.	Petroleum products are used, stored, handled, disposed of, and managed such that groundwater uses are not adversely affected.	Non-measurable	Same as national	Visual assessment
<b>Water Quality - Harmful Levels of Pesticides in Surface Water</b>	Pest control chemicals present in toxic amounts degrade surface water quality.	Pesticides are applied, stored, handled, disposed of, and managed such that surface water uses are not adversely affected	Non-measurable	Risk Assessment Tool will result in LOW rating or appropriate mitigation practice(s) applied to reduce risk.	Windows Pesticide Training Tool (WIN-PST); National Agricultural Pesticide Risk Analysis (NAPRA)
<b>Water Quality - Excessive Nutrients and Organics in Surface Water</b>	Pollution from natural or human induced nutrients such as nitrogen (N), phosphorus (P), sulfur (S) (Including animal and other wastes) degrades surface water quality.	Nutrients and organics are stored, handled, disposed of, and managed such that surface water uses are not adversely affected.	Non-measurable	The Nutrient Management Practice Planning Assist Tool results in a "yes" answer to the surface water quality questions contained within the assessment tool.	Nitrate Leaching Index; Phosphorus Leaching Index; Farm*A*Syst; Nutrient Management Practice Planning Assist Tool

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<b>Water Quality - Excessive Suspended Sediment and Turbidity in Surface Water</b>	Excessive concentrations of suspended sediment or organic particles degrades surface water quality.	Delivery or suspension of mineral and organic particles, and excessive algae growth or organic stains, is managed such that surface water uses are not adversely affected.	Non-measurable	All sources of soil erosion (sheet and rill; ephemeral; gully, streambank; shoreline; irrigation induced) are controlled to quality criteria level. Conduits to surface waters are protected from direct runoff from adjacent lands by use of appropriate practices (buffers, filter strips, grassed waterways, etc)	Appropriate erosion prediction tools (Revised Universal Soil Loss Equation, Version 2 (RUSLE2), volume calculation); visual assessment
<b>Water Quality - Excessive Salinity in Surface Water</b>	Pollution from salts such as calcium (Ca), magnesium (Mg), sodium (Na), potassium (K), bicarbonates (HCO <sub>3</sub> ), carbonates (CO <sub>3</sub> ), chloride (Cl), and sulfates (SO <sub>4</sub> ) degrade surface water quality.	Salts are stored, handled, disposed of, applied, and managed such that surface water uses are not adversely affected.	Electrical conductivity (EC) - average reduction in EC for the field or planning area/unit	NA	
<b>Water Quality - Harmful Levels of Heavy Metals in Surface Water</b>	Natural or human induced metal pollutants are present in toxic amounts that degrade surface water quality.	Materials containing heavy metals are stored, handled, disposed of, applied, and managed such that surface water uses are not adversely affected.	Non-measurable	NA	
<b>Water Quality - Harmful Temperatures of Surface Water</b>	Undesired thermal conditions degrade surface water quality.	Use and management of land and water are coordinated to minimize impacts on surface water temperatures.	Non-measurable	NA	
<b>Water Quality - Harmful Levels of Pathogens in Surface Water</b>	Kinds and numbers of viruses, protozoa, and bacteria are present at a level that degrades surface water quality.	Materials that harbor pathogens are stored, handled, disposed of, applied, and managed such that surface water uses are not adversely affected.	Non-measurable	NA	
<b>Water Quality - Harmful Levels of Petroleum in Surface Water</b>	Fuel, oil, gasoline, and other hydrocarbons present in toxic amounts degrade surface water quality.	Petroleum products are used, stored, handled, and disposed of such that groundwater uses are not adversely affected.	Non-measurable	Same as national	Visual assessment

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<b>Air Quality - Particulate matter less than 10 micrometers in diameter (PM 10)</b>	Particulate matter less than 10 (PM-10) micrometers in diameter are suspended in the air causing potential health hazards to humans and animals.	Land use and management operations reduce PM-10 emissions into the atmosphere and comply with requirements of the state or federal implementation plan and all applicable federal, tribal, state, and local regulations.	Pounds/Year - average annual pounds of reduced PM-10 emissions for the field or planning area/unit	NA	
<b>Air Quality - Particulate matter less than 2.5 micrometers in diameter (PM 2.5)</b>	Particulate matter less than 2.5 (PM-2.5) micrometers in diameter are suspended in the air causing potential health hazards to humans and animals.	Land use and management operations reduce PM-2.5 emissions into the atmosphere and comply with requirements of the state or federal implementation plan and all applicable federal, tribal, state, and local regulations.	Pounds/Year - average annual pounds of reduced PM-2.5 emissions for the field or planning area/unit	NA	
<b>Air Quality - Excessive Ozone</b>	High concentrations of ozone (O3) are adversely affecting human health, reducing plant yields, and leading to the creation of smog.	Land use and management operations comply with requirements of the state or federal implementation plan and all applicable federal, tribal, state, and local regulations.	Pounds/Year - average annual pounds of reduced ozone precursors emissions for the field or planning area/unit	NA	
<b>Air Quality - Excessive Greenhouse Gas - CO2 (carbon dioxide)</b>	Increased CO2 concentrations are adversely affecting ecosystem processes.	Land use and management operations reduce CO2 emissions into the atmosphere and comply with requirements of the state or federal implementation plan and all applicable federal, tribal, state, and local regulations.	Non-measurable	NA	
<b>Air Quality - Excessive Greenhouse Gas - N2O (nitrous oxide)</b>	Increased N2O concentrations are adversely affecting ecosystem processes.	Land use and management operations reduce N2O emissions into the atmosphere and comply with requirements of the state or federal implementation plan and all applicable federal, tribal, state, and local regulations.	Non-measurable	NA	

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<b>Air Quality - Excessive Greenhouse Gas – CH4 (methane)</b>	Increased CH4 concentrations are adversely affecting ecosystem processes.	Land use and management operations reduce methane (CH4) emissions into the atmosphere and comply with requirements of the state or federal implementation plan and all applicable federal, tribal, state, and local regulations.	Non-measurable	NA	
<b>Air Quality - Ammonia (NH3)</b>	Animal waste and inorganic commercial fertilizers emit ammonia that contributes to odor, is a PM-2.5 precursor, and contributes to acid rain.	Land use and management operations reduce ammonia (NH3) emissions into the atmosphere and comply with requirements of all applicable federal, tribal, state, and local regulations.	Pounds/Year – average annual pounds of reduced NH3 emissions for the field or planning area/unit	NA	
<b>Air Quality - Chemical Drift</b>	Materials applied for pest control drift downwind and contaminate/injure non-targeted fields, crops, soils, water, animals, and humans.	Land use and management operations reduce chemical drift into the atmosphere and comply with all applicable federal, tribal, state, and local regulations, and applicable label directions.	Non-measurable	Same as national	Pest Management Standard
<b>Air Quality - Objectionable Odors</b>	Land use and management operations produce offensive smells.	Odor-producing facilities and activities are planned and sited to mitigate potential nuisance impacts and meet all applicable tribal, state, and local regulations.	Non-measurable	Same as national	Olfactory Assessment
<b>Air Quality - Reduced Visibility</b>	Sight distance is impaired due to airborne particles causing unsafe conditions and impeded viewing of natural vistas, especially in Class I viewing areas (primarily national parks and monuments).	Land use and management operations reduce particle emission into the atmosphere and comply with all applicable federal, tribal, state, and local regulations, including state and local smoke and/or burn management plans.	Non-measurable	Same as national	Visual assessment; Regional air partnership recommendations and/or state guidance for smoke management. Complies with smoke and or burn plan.

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<b>Air Quality - Undesirable Air Movement</b>	Wind velocities (too little or too much) reduce animal or plant productivity, impact human comfort, and increase energy consumption.	Devices and practices are sited and planned to mitigate excess or deficient air movement.	Non-measurable	NA	
<b>Air Quality - Adverse Air Temperature</b>	Air temperatures (too cold or too hot) reduce animal or plant productivity, impact human comfort, and increase energy consumption.	Devices and practices are planned and sited to mitigate temperature extremes.	Non-measurable	NA	
<b>Plants not adapted or suited</b>	Plants are not adapted and/or suited to site conditions or client objectives.	Selected plants are adapted to the soil and climatic conditions or the site is modified to make it suitable for the desired plants. Plants are sustainable, do not negatively impact other resources, and meet client objectives. For specific land uses, additional criteria apply: <b>Cropland:</b> A healthy stand with vigorous growth. Yields 75 % of client expectations. <b>Rangeland:</b> Plants on or planned for the site are listed in applicable Ecological Site Descriptions (ESDs) <b>Pastureland:</b> Plants on or planned for the site have a site adaptation score greater than 3 using Pasture Condition Scoring (PCS) and are listed in applicable Forage Suitability Groups (FSGs) reports. <b>Hayland:</b> Plants on or planned for the site are listed in applicable FSGs reports. <b>Forestland/Agroforest:</b> Plants on or planned for the site are listed in ESDs	Non-measurable	Same as national except for <b>Pastureland:</b> Plants on or planned for the site have a percent desirable plant score greater than 3 using the PCS sheets approved for target location(s). Desirable species are those listed in the applicable FSG reports with a species adaptation rating of at least 7. <b>Hayland:</b> Plants on or planned for the site are listed in applicable FSG reports with a species adaptation rating of at least 7. <b>Forestland/ Agroforest:</b> Plants planned for the site are listed in the appropriate Conservation Tree/Shrub Suitability Group (CTSSG) of the Windbreak and Environmental Planting Interpretations, Section II of the electronic Field Office Technical Guide (eFOTG.)	ESDs; FSG; Rangeland Health Assessment; PCS; CTSSGs of the Windbreak and Environmental Planting Interpretations, Section II of the eFOTG

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<b>Plant - Condition - Productivity, Health, and Vigor</b>	Plants do not produce the yields, quality, and soil cover to meet client objectives.	Selected plants on or planned for the site are sufficiently productive to meet or exceed client needs. For specific land uses, additional criteria apply: <b>Cropland:</b> A healthy stand with vigorous growth produces at least 75% of site potential. <b>Rangeland:</b> The plant community has a similarity index of at least 60% or an upward trend for similarity indices less than 60%. <b>Pastureland:</b> Forage yields are at least 75% of high management estimates cited in Forage Suitability Group (FSG) reports. <b>Hayland:</b> Forage yields at least 75% of high mgt. estimates cited in FSG reports. <b>Forestland/Agroforest:</b> Forests consist of healthy stands with vigorous growth having a stand density within 25% of optimum stocking on a stems/acre basis. Plants chosen for agroforest applications are consistent with Conservation Tree and Shrub Suitability Groups (CTSSG) listings and height performance.	Non-measurable	<b>Cropland:</b> A healthy, vigorous stand that meets the producer's yield goals given the yield potential for the soil map unit. Organic matter percent is 50% of native condition or if less than 50%, organic matter is improving; Electrical conductivity (EC) below 4 MMHOS. <b>Rangeland:</b> Maintaining a plant community with a similarity index or condition class of 65% or more or having an upward trend for plant communities with a similarity index or condition class of less than 65% of the potential plant community. <b>Pastureland:</b> Managing a plant community that will result in a Pasture Condition Score (PCS) of 30 or above. <b>Hayland:</b> Same as national.	Client interview; Plant tissue and harvest analysis; NRCS discipline manuals/handbooks; National Range and Pasture Handbook; Ecological Site Descriptions; Rangeland Similarity Index Worksheet; FSGs; Soil survey reports; Rangeland Health Assessment; PCS

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				<p><b>Forestland</b> - Forest consist of healthy stands of vigorous growth having a stand density of within 25% of optimum stocking on a stem/acre basis for the particular site and stand composition. Crop trees within the stand are uniformly distributed. Note: a crop tree is defined as any tree selected and released in the forest for the objectives of wildlife, water quality, timber products, and aesthetics.</p> <p><b>Agroforestry</b> - Meets good windbreak condition described in Kansas NRCS Forestry Technical Note KS-11, ECS - Windbreak Condition.</p>	<p>CTSSG of the Windbreak and Environmental Planting Interpretations, Section II of the eFOTG; References: <a href="#">Crop Tree Management in Eastern Hardwoods</a> <a href="http://www.fs.fed.us/na/morgantown/frm/parameterkey/ctm/ctmindex.html">http://www.fs.fed.us/na/morgantown/frm/parameterkey/ctm/ctmindex.html</a>; <a href="#">Upland Central Hardwoods</a> <a href="http://ilvirtualforest.nres.uiuc.edu/forestry/sm oakhbk.htm">http://ilvirtualforest.nres.uiuc.edu/forestry/sm oakhbk.htm</a>; <a href="#">Black Walnut Stocking Per Acre</a> <a href="http://ilvirtualforest.nres.uiuc.edu/forestry/sm bwhbk.htm">http://ilvirtualforest.nres.uiuc.edu/forestry/sm bwhbk.htm</a></p>
<p><b>Plant Condition - Threatened or Endangered Plant Species: Plant Species Listed or Proposed for Listing under the Endangered Species Act</b></p>	<p>The site includes individuals, habitat, or potential habitat for one or more plant species listed or proposed for listing under the Endangered Species Act.</p>	<p>Populations and/or habitats of threatened and endangered plant species are managed to maintain, increase, or improve current populations, health, or sustainability.</p>	<p>Non-measurable</p>	<p>Same as national</p>	<p>General Manual Title 190, Part 410; FWS county endangered species; Fish and Wildlife Service (FWS) recovery plans; federal and state endangered species rules and regulations</p>

Resource Concern	Description of Concern	National Quality Criteria	Measurement Units	State Quality Criteria	Assessment Tools for Quality Criteria Evaluation
<b>Plant Condition - Threatened or Endangered Plant Species: Declining Species, Species of Concern</b>	The site includes individuals, habitat, or potential habitat for one or more plant species that the state or tribal government with jurisdiction, or the State Technical Committee, has identified as a species of concern. This includes plant species which have been identified as candidates for listing under the Endangered Species Act.	Populations and/or habitats of plant species of concern are managed to maintain, increase, or improve current populations, health, or sustainability.	Non-measurable	Same as national	General Manual Title 190, Part 410; FWS county endangered species; FWS recovery plans; federal and state endangered species rules and regulations; Species of concern list
<b>Plant Condition - Noxious and Invasive Plants</b>	The site has noxious or invasive plants present.	The site is managed to control noxious and invasive plants and to minimize their spread	Non-measurable	Same as national	Federal, state, and county option noxious weed list, the Kansas invasive weed watch list, and Kansas permanent quarantine list
<b>Plant Condition - Forage Quality and Palatability</b>	Plants do not have adequate nutritive value or palatability for the intended use	Forage plants are managed to produce the desired nutritive value and palatability for the intended use.	Non-measurable	Same as national	Near-Infrared Reflectance Spectroscopy (NIRS) Forage Quality Analysis nutritional balance analyzer (NUTBAL); plant tissue analysis
<b>Plant Condition - Wildfire Hazard</b>	The kinds and amounts of fuel loadings (plant biomass) pose risks to human safety, structures, and resources should wildfire occur.	Fuel loadings are reduced and/or isolated to meet client needs in minimizing the risk and incidence of wildfire.	Acres/Year - average annual acres protected from wildfire for the field of planning area/unit	NA	
<b>Fish and Wildlife - Inadequate Food</b>	Quantity and quality of food is unavailable to meet the life history requirements of the species or guild of species of concern	Food availability meets the life history requirements of the species or guild of species of concern.	Non-measurable based on habitat evaluation guide	Minimum criteria identified within the Kansas Wildlife Habitat Assessment Guide (KWHAG). Identified criteria represent 50% of the potential habitat value for a planning unit.	KWHAG

Resource Concern	Description of Concern	National Quality Criteria	Measurement Units	State Quality Criteria	Assessment Tools for Quality Criteria Evaluation
<b>Fish and Wildlife - Inadequate Cover/Shelter</b>	Cover/shelter for the species of concern is unavailable or inadequate. For aquatic species, this includes lack of hiding, thermal, and/or refuge cover	The ecosystem or habit types support the necessary plant species in the kinds, amounts, and physical structure; and the connectivity of fish and wildlife cover is adequate to support, over time, the species of concern.	Non-measurable based on habitat evaluation guide	Minimum criteria identified within the Kansas Wildlife Habitat Assessment Guide (KWHAG). Identified criteria represent 50% of the potential habitat value for a planning unit.	KWHAG
<b>Fish and Wildlife - Inadequate Water</b>	The quantity and quality of water is unacceptable for the species of concern	The quantity and quality of water meets the life history requirements of the species of concern.	Non-measurable based on habitat evaluation guide	Minimum criteria identified within the Kansas Wildlife Habitat Assessment Guide (KWHAG). Identified criteria represent 50% of the potential habitat value for a planning unit.	KWHAG
<b>Fish and Wildlife - Inadequate Space</b>	Lack of area and fragmentation of areas disrupt life history requirements of the species of concern	Adequate area and connectivity of areas meet life history requirements of the species of concern. (Examples: staging areas for rest and feeding, lekking areas for breeding, migratory movement corridors)	Non-measurable based on habitat evaluation guide	Minimum criteria identified within the Kansas Wildlife Habitat Assessment Guide (KWHAG). Identified criteria represent 50% of the potential habitat value for a planning unit.	KWHAG
<b>Fish and Wildlife - Habitat Fragmentation</b>	Habitat has insufficient structure, extent, and connectivity to provide ecological functions and/or achieve management objectives.	Fish and wildlife habitats are connected and are maintained sufficiently to support the species or guild of species of concern	Non-measurable based on habitat evaluation guide	Minimum criteria identified within the Kansas Wildlife Habitat Assessment Guide (KWHAG). Identified criteria represent 50% of the potential habitat value for a planning unit.	KWHAG
<b>Fish and Wildlife - Imbalance Among and Within Populations</b>	Populations are not in proportion to available quantities and qualities of food (plants, predator/prey), cover/shelter, water, and space and other life history requirements.	Land and water use and management are consistent with direct population management activities conducted by fish and wildlife agencies.	Non-measurable based on habitat evaluation guide	NA	

Resource Concern	Description of Concern	National Quality Criteria	Measurement Units	State Quality Criteria	Assessment Tools for Quality Criteria Evaluation
<b>Fish and Wildlife - Threatened and Endangered Fish and Wildlife Species Listed or Proposed for Listing under the Endangered Species Act</b>	The site includes individuals, habitat or potential habitat for one or more fish or wildlife species listed or proposed for listing under the Endangered Species Act.	Populations and/or habitats of threatened and endangered fish and wildlife species and/or habitats they occupy are managed to maintain, increase or improve current populations, health, or sustainability.	Non-measurable	Same as national	General Manual Title 190, Part 410; Fish and Wildlife Service (FWS) county endangered species; FWS recovery plans; federal and state endangered species rules and regulations
<b>Fish and Wildlife - Threatened and Endangered Species: Declining Species, Species of Concern</b>	The site includes individuals, habitat, or potential habitat for one or more fish or wildlife species that the state or tribal government with jurisdiction, or the State Technical Committee, has identified as a species of concern. This includes fish and wildlife species, which have been identified as candidates for listing under the Endangered Species Act.	Populations and/or habitats of fish and wildlife species of concern are managed to maintain, increase, or improve current populations, health, or sustainability.	Non-measurable	Same as national	General Manual Title 190, Part 410; Fish and Wildlife Service (FWS) county endangered species; FWS recovery plans; federal and state endangered species rules and regulations
<b>Domestic Animals - Inadequate Quantities and Quality of Feed and Forage</b>	Total feed and forage is insufficient to meet the nutritional and production needs of the kinds and classes of livestock	Feed and forage including supplemental nutritional requirements are provided to meet production goals for the kinds and classes of livestock. Native grazers are factored into the total feed and forage balance computations.	Non-measurable	Domestic animals are provided adequate food of sufficient quality and quantity with supplements to meet their nutritional requirements.	National Range and Pasture Handbook (NRPH); Nutritional Balance Analyzer (NUTBAL); NUTBAL PRO; forage quality laboratory analysis; forage balance worksheet
<b>Domestic Animals - Inadequate Shelter</b>	Livestock are not protected sufficiently to meet the production goals for the kinds and classes of livestock.	Artificial and/or natural shelter is provided to meet production goals for the kinds and classes of livestock.	Non-measurable	Domestic animals are provided adequate shelter and cover.	National Range and Pasture Handbook (NRPH); appropriate Natural Resources Conservation Service (NRCS) guides

Resource Concern	Description of Concern	National Quality Criteria	Measurement Units	State Quality Criteria	Assessment Tools for Quality Criteria Evaluation
<b>Domestic Animals - Inadequate Stock Water</b>	The quantity, quality, and distribution of drinking water is insufficient to meet the production goals for the kinds and classes of livestock.	Sufficient water of acceptable quality is provided and adequately distributed to meet production goals for the kinds and classes of livestock. To reduce potential for water contamination, watering facilities are constructed or modified to minimize mortality to indigenous wildlife.	Non-measurable	Domestic animals are provided sufficient quantity and quality of water to meet their daily needs.	National Range and Pasture Handbook (NRPH); appropriate Natural Resources Conservation Service (NRCS) guides
<b>Domestic Animals - Stress and Mortality</b>	Animals exhibit illness or death from disease, parasites, insects, poisonous plants, or other factors.	Land and water use and management are consistent with activities conducted to alleviate stress and mortality factors.	Non-measurable	NA	
<b>Inefficient Energy Use - Equipment and Facilities</b>	Inefficient use of energy in the farm operation increases dependence on non-renewable energy sources that can be addressed through improved energy efficiency and the use of on-farm renewable energy sources.	NA	Non-measurable	NA	American Society of Agricultural and Biological Engineers (ASABE), ANSI/ASABE Standard, S612, Energy Audit
<b>Inefficient Energy Use - Farming/Ranching Practices and Field Operation</b>	Inefficient use of energy in the field operation increases dependence on non-renewable energy sources that can be addressed through improved energy efficiency and the use of on-farm renewable energy sources.	NA	Non-measurable	<b>Cropland</b> - minimum criteria for cropping systems is set at 4.0 gallons (diesel) per acre per year OR 560,000 BTU. <b>Other landuses</b> - NA	Revised Universal Soil Loss Equation, Version 2 (RUSLE2) or Wind Erosion Prediction System (WEPS) fuel use estimates