National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
SOIL				
Soil Erosion - Sheet and Rill	Detachment and transport of soil particles and creation of channels caused by splash and surface runoff water degrade soil quality. Normal tillage operations obscure rills.	Sheet and rill erosion does not exceed Soil Loss Tolerance "T"	Erosion does not exceed "T" for planned rotation and agronomic feasibility and soil resource base is sustained. *Rangeland:* score of moderate or better for rills (ref. (1), p. 18).	• Current water erosion tool: RUSLE or RUSLE2 (16) • Rangeland: Interpreting Indicators of Rangeland Health, p. 18 (1) • Soil Quality Information Sheets (4) • Soil Quality Test Kit (5)
Soil Erosion - Wind	Detachment and transport of soil particles caused by wind degrade soil quality or plant damage.	Wind erosion does not exceed the Soil Loss Tolerance "T", or does not exceed Crop Damage Tolerances.	Erosion does not exceed "T" for planned rotation and agronomic feasibility and soil resource base is sustained. *Rangeland:* score of moderate or better for wind scoured, blowout and/or depositional areas (ref. (1), p. 23).	• Current erosion prediction tool, i.e., Wind Erosion Equation (WEQ) (16) • Rangeland: Interpreting Indicators of Rangeland Health, p. 23 (1)
Soil Erosion - Concentrated Flow - Ephemeral Gully	Small channels are caused by surface water runoff. On cropland, they can be obscured by heavy tillage.	Channels are stabilized and surface runoff water is controlled sufficiently to prevent reoccurrence of the small channels.	No excessive erosion and concentrated flow channels are absent or old ones are blunted and muted features. *Rangeland:* score of moderate or better for water flow patterns (ref. (1), p. 9).	• Visual assessment • Interpretation of aerial photographs • Rangeland: Interpreting Indicators of Rangeland Health, p. 9 (1)

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
SOIL				
Soil Erosion – Concentrated Flow - Classic Gully	Deep, permanent channels caused by the convergence of surface runoff enlarge progressively by headcutting and lateral widening	Surface water runoff is controlled sufficiently to stop progressive headcutting and lateral widening.	*Rangeland:* score of moderate or better for gullies (ref. (1), p. 22).	• Visual assessment • Direct volume method (14) • Interpretation of aerial photographs • Rangeland: Interpreting Indicators of Rangeland Health, p. 22 (1)
Soil Erosion - Streambank	Accelerated loss of streambank soil restricts land and water use management.	Accelerated streambank soil loss does not exceed a level commensurate with upstream land use and normal geomorphological processes on site.	*Rangeland:* score of 7 or better for channel condition and 4 or better for bank stability (ref. (2)).	• Visual assessment • Direct Volume Method (14) • Lateral Recession Estimate • Interpretation of Aerial Photographs • Rangeland: Visual Assessment of Riparian Health (2)
Soil Erosion - Shoreline	Soil is eroding along shorelines by wind and water action, causing physical damage to vegetation, limiting land use, or creating a safety hazard.	Shoreline erosion is reduced to the level that does not restrict the use or management of adjacent land, water, or structures.	Same as National	• Visual assessment • Aerial photo analysis • Volume analysis
Soil Erosion - Irrigation Induced	Improper irrigation water application, and equipment operation is causing excessive erosion	Irrigation induced erosion does not exceed the Soil Loss Tolerance "T"	Erosion does not exceed "T" and any runoff entering receiving waters is at or below state standards.	• Imhoff Cone or other acceptable method used to quantify sediment in irrigation runoff water. (17) • Surface Irrigation Models (i.e., Furrow4 or FUSED-if calibrated) • NRCS Irrigation Water Management Guides • Direct volume method

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
SOIL				
Soil Erosion - Mass Movement	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	Toeslopes are not undercut and tops of slopes are not overloaded.	• Visual assessment • Geologic Investigation
Soil Erosion - Roadbank and Construction Sites	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.	Roadbanks and scoured areas are stable and not eroding. Sediment is not leaving the site in runoff water.	• Visual assessment • Current water and wind erosion prediction tools (RUSLE2 and WEQ)(15) • Direct volume calculation • Soil Quality – Urban Technical Note 1 (18)
Soil Condition - Organic Matter Depletion*)*	Soil organic matter levels are decreasing or have reached a degraded steady state. Aggregate stability is decreasing. Infiltration is impeded. Crusting is evident. Ability of soil organisms to cycle nutrients, improve structural stability or suppress disease is declining.	Soil Conditioning Index is positive, aggregate stability is improving, and organism diversity is favorable.	Soil Conditioning Index is 0 or positive and soil crust is absent and there is an adequate percent of water stable aggregates. Use an appropriate sampling method when testing soil. *Rangeland:* score of moderate or better for Soil Surface Loss or Degradation (ref. (1), p. 27)	• Soil Conditioning Index (3) • Soil Quality Kit: Measure thickness and strength of soil crust (4) Measure soil aggregate stability, (5) p.p. 18, 70 Earthworm Test (5) pp. 22, 73 Respiration Test (5) pp. 4, 52 • Soil Quality Information Sheets (21, 22) • Rangeland: Interpreting Indicators of Rangeland Health, p. 27 (1) • Soil Sampling Method (12)

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
SOIL				
Soil Condition - Compaction	Compressed soil particles and aggregates are causing adverse affects on plant-soil-moisture relationships.	Management-induced compacted zones that limit plant root growth and/or water movement are reduced. Soil penetrometer readings are less than 200 PSI at field capacity	Use an appropriate sampling method when testing soil. *Rangeland:* score of mod. or better for Compaction Layer (ref. (1), p. 29)	• Soil Quality Test Kit: Bulk Density Test (5) pp. 9, 57 • Observation of plant roots • Penetrometer (11) • Rangeland: Interpreting Indicators of Rangeland Health, p. 29 (1) • Soil Quality Information Sheet: Compaction (23) • Soil Sampling Method (12)
Soil Condition – Subsidence	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.	Same as National	• Visual assessment • Inventory of volume and depth • Soil probes and witness poles
Soil Condition – Contaminants – Excess Chemicals	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.	Use an appropriate sampling method when testing soil.	• Laboratory test for chemical contaminants. • Background Concentrations of Trace and Major Elements in California Soils (6) • Soil Quality Test Kit: Electrical Conductivity Test (5) pp. 14, 59 • Effects of Salinity, Boron, Sodium, and Chloride on Crop Yields (7) • Soil Quality Information Sheet: Salinization (24) • Soil Sampling Method (12)

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
SOIL				
Soil Condition – Contaminants - Excess animal waste and other organics	Animal waste and other organics restrict desired use of the land.	Soil nitrogen and phosphorous application levels do not exceed crop uptake capacity.	Use an appropriate sampling method when testing soil.	• Nitrogen Quick Test (9) • Soil laboratory testing. • Plant tissue testing. • Application records. • Reference for nutrient requirements of crops (10) • Soil Sampling Method (12)
Soil Condition – Contaminants - Excess Commercial Fertilizer	Over application of nutrients restricts plant growth, or exceeds the soil buffering capacity.	Soil fertilizer levels do not exceed crop requirements and do not acidify the soil	Use an appropriate sampling method when testing soil.	• Nitrogen Quick Test (9) • Soil laboratory testing. • Reference for nutrient requirements of crops (10) • Soil Sampling Method (12) • Soil Quality Test Kit: pH meter (5) pp. 15, 63
Soil Condition - Contaminants - Excess Pesticides	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 residual soil pesticides do not adversely affect non-target plants and animals.	The pesticides chosen are compatible with the soil and are not subject to loss by leaching or runoff. Use an appropriate sampling method when testing soil.	• Visual observation • Pesticide Screening Tool WIN-PST (13) • Laboratory testing of soil for excess pesticides. • Soil Sampling Method (12) • Soil Quality Information Sheet: Pesticides (19)

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
SOIL				
Soil Condition – Damage from Soil Deposition (on-site and off-site)	Onsite or off-site sediment damages or restricts land use/management or adversely affects ecological processes.	Soil deposition is sufficiently reduced to maintain desired land use/management and ecological processes.	Human health and/or safety are not put at risk from airborne dust or particulate matter. *Rangeland:* score of moderate or better for Wind-scoured, Blowouts, and/or Deposition Areas (ref. (1), p. 23).	• Visual assessment • Volume calculation • Current water and wind erosion prediction tools (RUSLE2 and WEQ) (16) coupled with sediment delivery ratios. • Plant and animal community assessment • Rangeland: Interpreting Indicators of Rangeland Health, p. 23 (1) • Soil Quality Information Sheet: Sediment Deposition on Cropland (20)

(1) USDI and USDA. Interpreting Indicators of Rangeland Health, version 3, Technical Reference 1734-6, 2000. http://www.glti.nrcs.usda.gov/technical/publications/index.html#range-health-indicate Also refer to the Ecological Site Descriptions.
(2) Ward, Tate and Atwill. Visual Assessment of Riparian Health. University of California Division of Agricultural Resources, Rangeland Monitoring Series Publication 8089. http://agronomy.ucdavis.edu/calrng/california%20Rangelands%20Monitoring%20Publications_files/8089HR.pdf
(3) The currently available Soil Conditioning Index may need revision for use in California. See http://soils.usda.gov/sqi/sci.htm.
(4) http://soils.usda.gov/sqi/files/sq_sev_1.pdf
(5) USDA-SQI. Soil Quality Test Kit (August 1999). http://soils.usda.gov/sqi/kit2.html
(6) Background Concentrations of Trace and Major Elements in California Soils. Kearney Foundation of Soil Science, Division of Agriculture and Natural Resources, University of California, March 1996. http://envisci.ucr.edu/faculty/acchang/kearney/kearney_text.htm
(7) Hansen and Gratten. Agricultural Salinity and Drainage. University of California Agricultural & Natural Resources Publication 3375. http://anrcatalog.ucdavis.edu
(9) Hartz, Tim. Efficient Nitrogen Management for Cool-Season Vegetables. http://vric.ucdavis.edu/veginfo/topics/fertilizer/nitmanagement.pdf
(10) We need to find a reference giving nutrient needs of individual crops.
(11) Jones, Dickey, Eisenhauer and Wiese. Identification of Soil Compaction and Its Limitations to Root Growth, NebGuide G-87-831A
NRCS Soil Quality Information Sheet on Compaction http://anrcatalog.ucdavis.edu
(12) EC 0628 How to Take a Soil Sample… and Why. http://eesc.orst.edu/agcomwebfile/edmat/EC628.pdf
(13) HTTP://www.wcc.nrcs.usda.gov/pestmgt/winpst.html
(14) (Width (ft) * Depth (ft) * Length(ft) * average bulk density * 62.4)/2000 = Tons. An average bulk density is 1.5 gm/cm^3. For bulk densities based on texture see http://soils.usda.gov/sqi/files/sq_nin_1.pdf
(15) Soil Quality Institute Urban Technical Note Series – Note 1: Erosion and Sedimentation on Construction Sites http://soils.usda.gov/sqi/files/u01d.pdf
Erosion Tools http://www.wcc.nrcs.usda.gov/water/quality/common/erosion/erosiontools.html http://servicecenter.usda.gov/release/
(16) Erosion Tools http://www.wcc.nrcs.usda.gov/water/quality/common/erosion/erosiontools.html http://servicecenter.usda.gov/release/ Renard, Foster, Weesies, McCool, Yoder. 1997. Predicting soil erosion by water: A guide to conservation planning with the Revised Universal Soil Loss Equation (RUSLE).

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
SOIL				

U.S. Department of Agriculture, handbook No. 703, 404 pp. http://www.wa.nrcs.usda/FOTG/section1/RUSLEALL.HTML#Rusle This website is from the State of Washington Resource Quality Criteria. We need a functioning website. RUSLE 2 will need more development for use in California.
(17) Use the fact sheet developed by Terry Hall of the Hollister Service Center for Imhoff Cone. Terry Hall's fact sheet is attached. HACH Water Analysis Handbook http://ecommerce.hach.com/stores/hach/pdfs/wah/eng_pdf/SolidsSet_None_Other_DMM_Eng_WAH.pdf
(18) http://soils.usda.gov/sqi/files/u01d.pdf
(19) Soil Quality Information Sheet: Pesticides http://soils.usda.gov/sqi/files/Pesticides.pdf
(20) Soil Quality Information Sheet: Sediment Deposition on Cropland http://soils.usda.gov/sqi/files/sq_fiv_1.pdf
(21) Soil Quality Information Sheet: Aggregate Stability http://soils.usda.gov/sqi/files/sq_eig_1.pdf
(22) Soil Quality Information Sheet: Soil Crusts http://soils.usda.gov/sqi/files/sq_sev_1.pdf
(23) Soil Quality Information Sheet: Compaction http://soils.usda.gov/sqi/files/sq_nin_1.pdf
(24) Soil Quality Information Sheet: Salinization http://soils.usda.gov/sqi/files/Salinzation.pdf

Needed Tech Notes or Research:
1. Provide all data needed to run RUSLE 2 in California.
2. Locate website for the RUSLE manual, USDA Agricultural Handbook No. 703.
3. Provide list of nutrient needs of individual crops in California.
4. Calibrate the Soil Conditioning Index for use in California. This may be done with soil data from the "Long Term Research on Agricultural Systems" (LTRAS) at the University of California at Davis. The director is Steve Kaffka, e-mail srkaffka@ucdavis.edu, voice 530-752-8108. Susan Andrews at the Soil Quaity Institute has offered to assist with the calibration of the Soil Conditioning Index for use in California. We can contact her at USDA Natural Resources Conservation Service, Soil Quality Institute, 2150 Pammel Drive, Ames, IA 50011, voice (515) 294-9762, FAX (515) 294-8125, email andrews@nstl.gov

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
WATER				
Water Quantity - Excessive Seepage	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.	Water does not restrict suitable land use and does not restrict operational activities. The desired land use does not require management or maintenance more extensive than on the remaining treatment unit.	• Visual Assessment (physical presence of water, prevalence of hydrophytic vegetation, etc.) • Client interview • Area measurements • Soil Survey[1]
Water Quantity - Excessive Runoff, Flooding, or Ponding	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.	No unacceptable damage to land, crops, or structures from overland flow or standing water following a 2-year, 24-hour event.	• Visual assessment • Client interview • Stream Visual Assessment Protocol[2] • National Engineering Handbook (EFH – chapter 2 and 3)[3] • Hydrologic models, e.g. HECRAS[4],TR-20,TR-55[3]
Water Quantity - Excessive Subsurface Water	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.	Same as National	• Visual assessment of soil cores and coring holes • Plant quality and quantity measurements • National Engineering Handbook, Part 650 (EFH-Chapter 14)[3] • Soil Survey[1] • DrainMod[5]

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
WATER				
Water Quantity - Drifted Snow	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.	Same as National	• Visual assessment • Client interview • Depth and area measurements
Water Quantity - Inadequate Outlets	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.	Same as National	• Visual assessment • Client interview • National Engineering Handbook, part 650 (EFH – Chapters 2,3,7)[3] • Hydrologic models, e.g. HECRAS[4], TR-20, TR-55[3]
Water Quantity - Inefficient Water Use on Irrigated Land	Limited water supplies are not optimally utilized.	Land and water management is planned and coordinated to provide optimal use of natural and applied moisture.	Considering farm economics and available technology, the current irrigation method shall be the most appropriate for the crops, soils, topography and climate. The irrigator has adequate control of the frequency, rate and duration of water application to each field. Irrigation timing and amount decisions are planned to replace depleted soil moisture (or the amount consumed by the crop) and applying a determined amount of water for salt leaching. Irrigation runoff or tail water is re-used beneficially.	• Visual assessment • National Engineering Handbook, Part 652, Irrigation Guide[3] • Crop quality and quantity measurements • Farm Irrigation Rating Index (FIRI)[6]

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
WATER				
Water Quantity - Inefficient Water Use on Non-irrigated Land	Natural moisture is not optimally utilized.	Management provides optimum use of natural moisture for the present or intended land use.	Vegetation, cropping sequences, and cultural operations are managed for efficient use of precipitation by minimizing water losses to runoff and evaporation, thereby inducing positive effects on the plant-soil-moisture relationship, on groundwater recharge, and on water yield downstream.	• Visual assessment • Plant or animal quality and quantity measurements • Soil Moisture Test
Water Quantity - Reduced Capacity of Conveyances by Sediment Deposition	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.	Designed flow capacity is maintained and sediment source areas treated to acceptable levels so they minimally contribute to sediment deposition problems.	• Visual assessment • Client interview • National Engineering Handbook, Part 650 (EFH – Chapters 2,3,7)[3] • Hydrologic models, e.g., HECRAS[4], TR-20, TR-55[3] • Measurements of loss of capacity
Water Quantity - Reduced Storage of Water Bodies by Sediment Accumulation	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.	Sediment source areas are treated to acceptable levels to minimize contributions to the identified problem.	• Visual assessment • Depth and area measurements • National Engineering Handbook, Part 650 (EFH – Chapters 2,3,7,11)[3]
Water Quantity - Aquifer Overdraft	Water withdrawals exceed recharge rates.	Land and water management are coordinated to conserve aquifer water levels.	Same as National	• Water level measurements

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
WATER				
Water Quantity – Insufficient Flows in Water Courses	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.	Same as National	• Visual assessment • Water flow records • Gauge Station data • Consumptive use/allocation water rights • Habitat Evaluation Guides • National Biology Handbook
Water Quality - Harmful Levels of Pesticides in Groundwater	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	Farming practices, including irrigation water management, minimize the transport of pesticides.	• WIN-PST (Windows Pesticide Screening Tool – USDA/NRCS)[7] • NAPRA (National Agricultural Pesticide Risk Analysis – USDA/NRCS)[7] • Vadose zone and groundwater chemical sampling and assay
Water Quality - Excessive Nutrients and Organics in Groundwater	Pollution from natural or human induced nutrients such as N, P, and organics (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.	Farming practices, including irrigation water management, minimize the transport of nutrients and organics.	• National Engineering Handbook, Part 651, Ag. Waste Mgt. Field Handbook[3] • NLEAP[8] • Farm*A*Syst[9] • Vadose zone and groundwater chemical/particle sampling and assay

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
WATER				
Water Quality - Excessive Salinity in Groundwater	Pollution from salts such as Ca, Mg, Na, K, HCO_3, CO_3, Cl, and SO_4 degrades groundwater quality.	Salts are stored, handled, disposed of, applied, and managed such that groundwater uses are not adversely affected.	Same as National	• Vadose zone and groundwater salinity sampling (total dissolved solids [TDS] or electrical conductivity) and assay • National Engineering Handbook, Part 652, Irrigation Guide[3] • Soil salinity sampling and assay • Water sampling
Water Quality - Harmful Levels of Heavy Metals in Groundwater	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.	Alternatives reduce or eliminate contributions to groundwater of heavy metals exceeding allowable standards established by appropriate regulations..	• Vadose zone and groundwater chemical sampling and assay
Water Quality - Harmful Levels of Pathogens in Groundwater	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.	Alternatives reduce or eliminate contributions of pathogens exceeding allowable standards established by appropriate regulations.	• Vadose zone and groundwater chemical sampling and assay
Water Quality - Harmful Levels of Petroleum in Groundwater	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.	Same as National	• Vadose zone and groundwater chemical sampling and assay

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
WATER				
Water Quality - Harmful Levels of Pesticides in Surface Water	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	The amount of pesticides leaving the targeted area is minimized or eliminated and does not exceed established standards from federal, state, or local criteria.	• WIN-PST (Windows Pesticide Screening Tool – USDA/NRCS)[7] • NAPRA (National Agricultural Pesticide Risk Analysis – USDA/NRCS)[7] • Surface water chemical sampling assay
Water Quality - Excessive Nutrients and Organics in Surface Water	Pollution from natural or human induced nutrients such as N, P, and organics (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.	The amount of nutrients/organic material leaving the treated area is minimized or eliminated and does not exceed standards from federal, state, or local criteria.	• SVAP (Stream Visual Assessment Protocol – USDA/NRCS)[2] • P index[7] • National Engineering Handbook, Part 651, Ag. Waste Mgt. Field Handbook[3] • Surface water chemical/particle sampling and assay

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
WATER				
Water Quality - Excessive Suspended Sediment and Turbidity in Surface Water	Pollution from mineral or organic particles degrades surface water quality.	Movement of mineral and organic particles is managed such that surface water uses are not adversely affected.	Suspended sediments leaving the site are minimized and do not exceed standards from federal, state, or local criteria. Factors including all farming practices contributing to turbidity in the area of concern will be minimized.	• Visual assessment • Client interview • SVAP (Stream Visual Assessment Protocol – USDA/NRCS)[2] • Water Quality Indicators Guide – Surface Waters, Field Sheets IA and 1B (Terrene Institute ©1996) • Surface water chemical/particle sampling and assay
Water Quality - Excessive Salinity in Surface Water	Pollution from salts such as Ca, Mg, Na, K, HCO_3, HCO_3, CO_3, Cl, and SO_4 degrades surface water quality.	Salts are stored, handled, disposed of, applied, and managed such that surface water uses are not adversely affected.	Same as National	• SVAP (Stream Visual Assessment Protocol – USDA/NRCS)[2]
Water Quality - Harmful Levels of Heavy Metals in Surface Water	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.	Same as National	• Surface water chemical sampling and assay

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
WATER				
Water Quality - Harmful Temperatures of Surface Water	Undesired thermal conditions degrade surface water quality.	Use and management of land and water are coordinated to minimize impacts on surface water temperatures.	Water temperatures will be suitable for the intended uses and meet or exceed criteria established by federal, state, or local regulations.	• SVAP (Stream Visual Assessment Protocol – USDA/NRCS)[2] – canopy cover • HSI model for target species (Habitat Suitability Index – USF&WS)[10]- • Surface water temperature sampling and assay
Water Quality - Harmful Levels of Pathogens in Surface Water	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.	Pathogens reaching a surface water body do not exceed allowable criteria established by federal, state, and local regulations.	• Surface water pathogen sampling and assay
Water Quality - Harmful Levels of Petroleum in Surface Water	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.	Same as National	• Surface water chemical sampling and assay

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
WATER				

FOOTNOTES

[1] Soil Survey: www.ca.usda.gov/mlra02/
[2] Stream Visual Assessment Protocol: ftp.wcc.nrcs.usda.gov/downloads/wqam/svapfnl.pdf
[3] NRCS Engineering References: www.info.usda.gov/CED
[4] HecRas: www.hec.usace.army.mil/software/hec-ras/hecras-hecras.html
[5] DrainMod: www.wwc.nrcs.usda.gov/nrcsirrig-mgt-models.html
[6] Farm Irrigation Rating Index: www.id.nrcs.usda.gov/technical/engineering/engdwnld.html
[7] WinPST: www.wcc.nrcs.usda.gov/pestmgt/
[8] NLEAP: gpsr.ars.usda.gov/products/nleap/nleap.htm
[9] Farm*A*Syst: www.uwex.edu/farmasyst/
[10] Habitat Suitability Index: www.fws.gov

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
AIR				
Air Quality - Particulate matter less than 10 micrometers in diameter (PM 10)	Particulate matter less than 10 micrometers in diameter are suspended in the air causing potential health hazards to humans and animals.	Land use and management operations comply with PM 10 requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations	Designated- Particulate Matter Non-Attainment Area under the CAA: Meet all applicable Federal, Tribal, State, Local, and special Air District criteria and regulations. Conservation system implementation will reduce agricultural PM 10 to meet requirements of the State or Federal Implementation Plan. Designated Particulate Matter Attainment Area: Observation or measurement of onsite conditions determine acceptable levels of PM such that human health and crop/livestock production are not negatively impacted. Meet all applicable Federal, Tribal, State, Local, and special air district regulations. Conservation system implementation will reduce agricultural PM generation.	• Specific guidelines contained in State or Federal Implementation Plan; or other approved NRCS tool. • Air quality analysis • Onsite observation, local regulations, criteria, or other approved NRCS tools.

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
AIR				
Air Quality - Particulate matter less than 2.5 micrometers in diameter (PM 2.5)	Particulate matter less than 2.5 micrometers in diameter are suspended in the air causing potential health hazards to humans and animals.	Land use and management operations comply with PM 2.5 requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	Designated- Particulate Matter Non-Attainment Area under the CAA: Meet all applicable Federal, Tribal, State, Local, and special air district criteria and regulations. Conservation system implementation will reduce agricultural PM 2.5 to meet requirements of the State or Federal Implementation Plan. Designated Particulate Matter Attainment Area: Observation or measurement of onsite conditions determine acceptable levels of PM such that human health and crop/livestock production are not negatively impaired. Conservation system implementation will reduce agricultural PM generation.	• Specific guidelines contained in State or Federal Implementation Plan; or other approved NRCS tools • Onsite observation, local regulations, criteria, or other approved NRCS tools.

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
AIR				
Air Quality - Excessive Ozone	High concentrations of ozone (O_3) 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.	Designated- Ozone Non-Attainment area under the CAA: Meet all applicable Federal, Tribal, State, Local, and special Air District criteria and regulations. Conservation system implementation will reduce agricultural contributions to ozone precursors to meet requirements of the State or Federal Implementation Plan. Designated- Ozone Attainment Area: Observation of onsite conditions determine acceptable levels such that human health and crop/livestock production are not negatively impaired. Conservation system implementation will reduce agriculture's contribution to ozone precursor.	• Specific guidelines contained in State or Federal Implementation Plan; or other approved NRCS tools • Onsite observation, local regulations, criteria, or other approved NRCS tools.

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
AIR				
Air Quality - Excessive Greenhouse Gas – CO_2 (carbon dioxide)	Increased CO_2 concentrations are adversely affecting ecosystem processes.	Land use and management operations comply with requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	Conservation system implementation will reduce the release of CO2 equivalents to the atmosphere from that of baseline conditions, and/or offset carbon emissions by increasing carbon sequestration from baseline conditions. (Note: SIPs and FIPs are only applicable to substances or emissions having ambient air quality standards under the Clean Air Act. Greenhouse gases do not have standards established under CAA.)	• Model simulations (Century, EPIC, CQUESTER); sampling for soil carbon or International Panel on Climate Change methodology; or other NRCS approved tools
Air Quality - Excessive Greenhouse Gas – N_2O (nitrous oxide)	Increased N_2O concentrations are adversely affecting ecosystem processes.	Land use and management operations comply with requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	Conservation system implementation will help reduce releases of CO2 equivalents to the atmosphere below that of baseline conditions, **(Note: SIPs and FIPs are only applicable to substances or emissions having ambient air quality standards under the Clean Air Act. Greenhouse gases do not have standards established under CAA.)**	• Model simulations (NLEAP or DayCENT), or IPCC methodology; or other NRCS approved tools

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
AIR				
Air Quality - Excessive Greenhouse Gas – CH4 (methane)	Increased CH4 concentrations are adversely affecting ecosystem processes. .	Land use and management operations comply with requirements of the State or Federal Implementation Plan and all applicable Federal, Tribal, State, and Local regulations.	Conservation system Implementation will help reduce releases of CO2 equivalents to the atmosphere below that of baseline conditions. If capturing methane for use as a renewable energy resource, there must be a reduction of CO2 equivalent. **(Note: SIPs and FIPs are only applicable to substances or emissions having ambient air quality standards under the Clean Air Act. Greenhouse gases do not have standards established under CAA.)**	• IPCC methodology; or other NRCS approved tools
Air Quality - Ammonia (NH3)	Animal waste and inorganic commercial fertilizers emit ammonia that contributes to odor, is a PM2.5 precursor, and contributes to acid rain.	Land use and management operations comply with requirements of all applicable Federal, Tribal, State, and Local regulations.	Meet all applicable Federal, Tribal, State, and Local regulations. Conservation system implementation will help reduce releases of NH3 to the atmosphere below that of baseline conditions or meet the requirements of a State or Federal Implementation plan.	• Approved NRCS technical guidance and tools

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
AIR				
Air Quality - Chemical Drift	Materials applied for pest control drift downwind and contaminate/injure non-targeted fields, crops, soils, water, animals and humans.	Land use and management operations comply with all applicable Federal, Tribal, State, and Local regulations, and applicable label directions.	Meet all applicable Federal, Tribal, State, and Local regulations, and label directions.	• Approved NRCS technical guidance and tools
Air Quality - Objectionable Odors	Land use and management operations produce offensive smells.	Odor-producing facilities and activities are planned and sited to mitigate potential nuisance impacts and meets all applicable Tribal, State, and Local regulations.	Meet all applicable Tribal, State, and Local regulations; Conservation system implementation will follow good siting and planning efforts to mitigate potential nuisance impacts.	• Olfactory assessment • Agricultural Waste Management Field Handbook (AWMFH) • NRCS approved tools
Air Quality - Reduced Visibility	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 comply with all applicable Federal, Tribal, State, and Local regulations including state and local smoke and/or burn management plans.	Meet all applicable Federal, Tribal, State, and Local regulations including state and local smoke and/or burn management plans.	• Visual assessment • Regional air partnership recommendations and/or state guidance for smoke management

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
AIR				
Air Quality - Undesirable Air Movement	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.	Designated Particulate Matter Non-Attainment Area as designated under the CAA: Conservation system implementation will meet air quality criteria and regulations as identified within Federal, Tribal, State, Local, and special air district regulations or within State or Federal Implementation Plans. Designated Particulate Matter Attainment Area: Conservation system implementation will reduce energy consumption and/or improve livestock performance and/or increase plant productivity and/or increase human health and comfort. Observation or onsite measurement results in the desired air movement within the planned area.	• Visual assessment • Anemometers • Approved NRCS technical guidance and tools • Approved NRCS technical guidance and tools.
Air Quality - Adverse Air Temperature	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.	Devices and practices are planned and sited to mitigate temperature extremes.	• Chill factor indices; heat indices • Air temperature assessment

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
AIR				

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
PLANTS				
Plants not adapted or suited	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: ***Cropland:*** A healthy stand with vigorous growth. Yields 75% of client expectations. **Rangeland:** Plants on or planned for the site are listed in applicable Ecological Site Descriptions (ESD) ***Pastureland:*** 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 (FSG)reports. ***Hayland:*** Plants on or planned for the site are listed in applicable Forage Suitability Groups (FSG)reports. ***Forestland/Agroforest:*** Plants on or planned for the site are listed in Ecological Site Descriptions (ESD)	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. Plants should meet the Vegetation requirements of the Conservation Practice Standards & Specifications. For specific land uses, additional criteria apply: ***Cropland:*** A healthy stand with vigorous growth. Yields 85% of client expectations. Meets the vegetation requirement of the Conservation Practice Standard. **Rangeland:** Plants on or planned for the site are listed in applicable Ecological Site Descriptions (ESD) ***Pastureland:*** 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 (FSG)reports. ***Hayland:*** Plants on or planned for the site are listed in applicable Forage Suitability Groups (FSG)reports. ***Forestland/Agroforest:*** Plants on or planned for the site are listed in Ecological Site Descriptions (ESD)	• On-site investigation and records • Forage Suitability Groups (FSG) • Pasture Condition Scoring (PCS) • Client interview • PLANTS database • Vegetative Guide • Plant hardiness zone map • Soil pH, drainage class, sodium adsorption ratio (SAR) and electrical conductivity (EC) suitability ranges. • Soil interpretations – Section IV • Local agronomy guides • University Extension Service information • Soil survey manuscripts • Ecological Site Descriptions (ESD) • Conservation Tree and Shrub Groups (CTSG) • Silvics of North America Trees • NRCS Discipline Manuals/handbooks • Field Planting Evaluations

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
PLANTS				
Plant – Condition – Productivity, Health and Vigor	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: ***Cropland:*** A healthy stand with vigorous growth produces at least 75% of site potential. ***Rangeland:*** The plant community has a similarity index of at least 60% or an upward trend for similarity indices less than 60%. ***Pastureland:*** Forage yields are at least 75% of high management estimates cited in FSG reports. ***Hayland:*** Forage yields at least 75% of high mgt. estimates cited in Forage Suitability Groups (FSG) reports ***Forestland/Agroforest:*** 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 Groups (CTSG) listings and height performance.	Selected plants on or planned for the site are sufficiently productive to meet or exceed client needs. For specific land uses, additional criteria apply: ***Cropland:*** A healthy stand with vigorous growth produces at least 85% of site potential. ***Rangeland:*** The plant community has a similarity index of at least 60% or an upward trend for similarity indices less than 60%. ***Pastureland:*** Forage yields are at least 75% of high management estimates cited in FSG reports. ***Hayland:*** Forage yields at least 75% of high mgt. estimates cited in Forage Suitability Groups (FSG) reports ***Forestland/Agroforest:*** 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 Groups (CTSG) listings and height performance.	• Local agronomy guides • Client interview • Plant tissue and harvest analysis • Crop scouting • NRCS discipline manuals/handbooks • National Range and Pasture Handbook • Ecological Site Descriptions • Rangeland Similarity Index Worksheet • Rising plate meter • Forage Suitability Groups (FSG) • Electronic probe calibrated for the forage mixture, or a clip and weigh sampling procedure. • Plot sampling of understory vegetation • Soil survey reports • Soil Testing • Crop/soil yield comparison in the vicinity • Pasture Condition Scoring • Keys for disease and insect symptoms • Keys for nutrient deficiencies, toxicities, and other conditions • Rangeland Health Assessment • Stocking rate of desired species • Stocking measurement for the tree stands • Vegetative Guide • Conservation Tree and Shrub Groups (CTSG)

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
PLANTS				
Plant Condition - Threatened or Endangered Plant Species	Plant populations and /or habitat quantity and quality have reached a level that one or more plant species are in danger of or threatened with extinction.	Threatened and endangered plant species and/or habitats they occupy are managed to avoid actions that would reduce their current population, health, or sustainability.	Threatened and endangered plant species and/or habitats that they occupy are managed in way that would not reduce their current population, health, or sustainability.	• Client interviews • Inventory site • General Manual, 190, Part 410 • US Fish and Wildlife Service county endangered species lists • Federal and state endangered species rules and regulations • Consultation with appropriate federal, state, and local agencies/groups • PLANTS Website
Plant Condition - Noxious and Invasive Plants	The site has noxious or invasive plants present.	The site is managed to control noxious and invasive plants and to minimize their spread.	Same As National	• Client interviews • Inventory site • Consult weed management associations/ Areas • Consultation with appropriate federal, state, and local agencies/groups • State or local noxious weed list • PLANTS Website • Field Planting Evaluations • Vegetative Guide
Plant Condition - Forage Quality and Palatability	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.	Same As National	• NIRS Forage Quality Analysis (NUTBAL) • Plant tissue analysis

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
PLANTS				
Plant Condition – Wildfire Hazard	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.	Same As National	• Visual assessment protocols • Site and flammable biomass inventories • Aerial photo analysis

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
ANIMALS				
Fish and Wildlife - Inadequate Food	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.	Food availability meets the nutritional demands of the species of concern	• Visual assessment • Inventory of food species • Aerial photo analysis • State Adapted Wildlife Habitat Evaluation Guide • National Biology Handbook • Client Interviews
Fish and Wildlife – Inadequate Cover/Shelter	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.	The ecosystem or habitat types support the necessary native plant species in the kinds, amounts, and physical structure that are required. Invasive species do not threaten long term habitat functions. The connectivity of fish and wildlife cover is adequate to support, over time, the species of concern	• Visual assessment • Inventory of cover/shelter • Aerial photo analysis • State Adapted Wildlife Habitat Evaluation Guide • National Biology Handbook • Client Interviews

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
ANIMALS				
Fish and Wildlife – Inadequate Water	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.	A supply of water of sufficient quantity and quality is available within the daily range of the species of concern during the timeframes necessary for utilization	• Surface water dissolved oxygen sampling and assay • Stream Visual Assessment Protocol • Habitat Suitability Index - model for target species • Inventory of water supplies • Aerial photo analysis • State Adapted Wildlife Habitat Evaluation Guide • National Biology Handbook • Client Interviews
Fish and Wildlife – Inadequate Space	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)	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)	• Visual assessment • Stream Visual Assessment Protocol • Inventory of space/areas • Aerial photo analysis • State Adapted Wildlife Habitat Evaluation Guide • National Biology Handbook • Client Interviews

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
ANIMALS				
Fish and Wildlife - Plant Community Fragmentation	Natural plant communities have insufficient structure, extent, and connectivity to provide ecological functions and/or achieve management objectives.	Fish and wildlife habitat functions of connected plant communities are maintained sufficiently to support the species or guild of species of concern	Planning area creates and/or maintains fish and wildlife habitat functions of plant communities such that, when connected to other such areas, they are sufficient to support the species or guild of species of concern.	• Stream Visual Assessment Protocol • Aquatic and terrestrial habitat evaluation procedures • Wildlife Habitat Evaluation Guide (WHEG) • Client Interviews
				•
Fish and Wildlife - Imbalance Among and Within Populations	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.	Numbers and kinds of animals do not exceed the carrying capacity of the treatment unit. There is a proper balance of food, water, cover, space, connectivity, and other habitat requirements for species of concern	• Fish and wildlife agency guidance and protocols • Client Interviews • Management History • Resource Inventory • Habitat Evaluation • National Biology Manual

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
ANIMALS				
Fish and Wildlife - Threatened and Endangered Species	Fish and wildlife populations and/or habitat quantity and quality have reached a level that one or more species are in danger of or threatened with extinction.	Threatened and endangered fish and wildlife species and/or habitats they occupy are managed to avoid actions that would reduce their current population, health, or sustainability.	Land treatments and conservation practices are applied in ways that avoid negative impacts to threatened and endangered species and or their habitats	• Client interviews • CADFG RAREFIND • General Manual, 190, Part 410 • Fish and wildlife recovery plans • Federal and state endangered species rules and regulations • Consultation with appropriate federal, state, and local agencies/groups • Fish and wildlife agency web sites • Field Identification
Domestic Animals – Inadequate Quantities and Quality of Feed and Forage	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.	Total forage/browse available for consumption meets the livestock needs as determined from production goals and management objectives.	• Measured inventory • National Range and Pasture Handbook • Grazing Lands Application (GLA) software • Nutritional Balance Program (NUTBAL) • NIRS/Nutritional Balance Profile Program (NUTBAL Pro) • Forage quality laboratory analysis • Other State adapted forage/livestock management software and job sheets • GLCI Grazing Recordbook (Body Condition Score)Cattle BCS>=4 Sheep BCS >=3 • Client Interviews • Visual inspection of animals

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
ANIMALS				
Domestic Animals – Inadequate Shelter	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.	Natural / artificial shelter and cover is adequate to protect domestic animals from inclement weather. Tools indicate domestic animals are in adequate condition and mortality of adult and young animals is minimal during severe weather and storms.	• Visual assessment • Inventory of facilities and their capacities • Aerial photo analysis • National Range and Pasture Handbook • Client Interviews
Domestic Animals – Inadequate Stock Water	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.	Sufficient water of acceptable quality is provided and adequately distributed to meet production goals and management objectives such as appropriate livestock distribution.	• Visual assessment of quantity and/or quality of water facilities • Visual inspection of soil and vegetative conditions at water facilities • Inventory of distribution needs • Aerial photo analysis • National Range and Pasture Handbook • Client Interviews • Water Quality Analysis • FOTG Section IV Standards

National and State Resource Concerns and Quality Criteria				
Natural Resource Concern	**Description of Concern**	**National Quality Criteria**	**California State Quality Criteria**	**Assessment Tools for Quality Criteria Evaluation**
ANIMALS				
Domestic Animals - Stress and Mortality	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.	Land and water use and management are consistent with activities conducted to alleviate stress and mortality factors.	• Animal health/mortality alerts • State and local biosecurity protocols • State and local standards for animal disposal • Client Interviews • Visual Inspection Of Animals • GLCI Grazing Recordbook (Body Condition Score)Cattle BCS>=4 Sheep BCS >=3

Natural Resource: HUMAN CONSIDERATIONS				
Basic Resource Concern: HUMAN CONSIDERATIONS				
Specific Resource Considerations	**Description of Specific Considerations**	**NQC**	**SQC**	**Assessment Tool for Evaluation**
LAND	Land is the basic unit of production. It is where crops are grown, livestock grazed and wildlife produced. Land is measured in acres (or hectares). Productivity on the land is measured as units of production (pounds, bushels, etc.). Farm machinery and structures are also included with land.			All changes in land use, land taken out of production or land brought into production should be identified**.**
CAPITAL	Capital represents the landowners "ability to pay" for farm or ranch improvements. Capital is a measure of the landowner's monetary assets (dollars), physical assets (land & machinery) their ability to borrow money (credit), obtain financial assistance (cost-share) or barter "goods and services".			All additional expenses and income resulting from conservation activities should be identified.
LABOR	Labor represents the landowner's "ability to work" or hire "workers". Labor is measured in units of time (hours, years). Labor includes the landowner, family, hired help or other trained workers.			Changes to the labor requirements from managing/implementing conservation practices should be identified**.**
MANAGEMENT LEVEL	Management level measures the land user's "knowledge, skills and ability" to operate the farm or ranch.			The management level is measured in qualitative units of skill level
RISK	Risk is the exposure to monetary loss, injury or damage to resources. Risk is measured in qualitative units. Risk affects crop and livestock/wildlife yields, flexibility, timing, cash flow and other resources. The risk resulting from the conservation plan affects the landowner, those living or working on the farm, the local community and people traveling near the planning area.			Inform decision maker of changes in risk associated with implementation the conservation plan**.**
PROFITABILITY	Profitability describes the relative benefits and costs of the farm or ranch operation, and is often measured in dollars. An activity is profitable if the benefits are greater than the costs.			Where possible, provide benefit and cost information to the decision maker**.**

CULTURAL RESOURCES	NRCS recognizes that cultural resources are an integral part of our national heritage and recognizes its responsibilities for historic preservation, particularly as they are listed in the National Historic Preservation Act. NRCS will ensure that cultural resources are considered in all NRCS actions and programs. NRCS will identify and protect cultural resources early in the planning and environmental evaluation process for all assistance activities classified as an undertaking (i.e. any action that results in physical ground disturbance). NRCS will protect cultural resources in their original location to the fullest extent practicable by avoiding adverse impacts			Cultural resources are the traces of all the past activities and accomplishments of people. They include tangible traces such as historic districts, sites, buildings, structures; traces of less tangible objects such as dance forms, aspects of folk life, cultural or religious practices; historical documents; and some landscapes, vistas, and cemeteries. Collection of cultural resource material is prohibited without authorization. Laws established to protect cultural resources include: the Antiquities Act of 1906, the Historic Sites Act of 1935, the National Historic Preservation Act of 1966, and the Native American Graves Protection and Repatriation Act of 1990. The National Register of Historic Places provides certain requirements for the protection of historic sites and funding for their maintenance.
CIVIL RIGHTS IMPACTS	(Departmental Regulation 4300-4) The purpose of the civil rights (CR) impact analysis is to examine CR's implications of proposed agency actions related to employment, management, program development, program implementation, or decision-making. Performance of the analysis is directed by DR 4300-4, which requires agencies to identify, evaluate and address the CR implications of policy actions to *prevent any adverse impact* on employees, as well as *on program beneficiaries from socially and economically disadvantaged groups, minorities, women, and person with disabilities.*			The analysis should be properly documented to clearly show that agency actions, which if implemented, will not result in denial or reduced program benefits, or any form of discrimination against any clientele group. *Documentation identifying and addressing civil rights impacts is to be included in background material of all policy, and/or program actions used in the decision making process.*

ENVIRONMENTAL JUSTICE (*Departmental Regulation 5600-2; in compliance with Executive Order 12898 NRCS Civil Rights Action Plan Rules and National Environmental Policy Act Procedures for Environmental Justice).*	All existing and future NRCS programs and activities are subject to Environmental Justice DR 5600-2. This includes all environmental evaluation and assessments of programs, projects or technical assistance actions. Environmental Justice (EJ) occurs when all people, *including minority and low income individuals* are provided the opportunity to comment *before* decisions are made; are allowed to share in the benefits of the decisions; and are not affected in a disproportionately high and adverse manner. EJ principles should be used to take preventive rather than corrective actions. However, EJ regulations can be used to correct previous adverse actions or environmental injustices caused by NRCS activities. The impact of Environmental Justice DR 5600-2 is: EJ principles must be taken into account in all NRCS activities -- including a) technical assistance b) financial assistance c) program delivery d) educational assistance			EJ principles must be incorporated into all Determination of whether a particular program or activity raises an environmental justice issue depends on an evaluation of all circumstance. NRCS should consider whether the adverse effect is appreciably more severe or greater in magnitude than the adverse effect that would be suffered by the non-minority population and/or non-low-income population.
SOCIAL ASSESSMENT	A social assessment is an analytical method to identify human and social concerns in a conservation project or program area. A social assessment provides the conservation planner with an awareness of the concerns, issues, and needs of local farmers, ranchers and other landowners. With this information, the planner can not only develop a plan that complies with USDA CR and NEPA's EJ policies but, also meets the needs of both the natural environment and the community. A conservation plan that meets everyone's needs can usually be implemented without unnecessary conflicts, delays, obstacles and frustration.			Additionally, a social analysis provides the planner with knowledge about individual landowners and community concerns, issues, and needs. With this information, the planner can develop a plan that complies with USDA CR and EJ policies and meets the needs of both the natural resources base and the local landowners and residents. A conservation plan that meets everyone's needs can usually be implemented without unnecessary delays and obstacles