# FACT SHEET No. 9

**Rangeland Watershed Program**

U.C. Cooperative Extension and USDA Natural Resources Conservation Service


## Management Measures and Practices


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### What is a "Best Management Practice"?

A Best Management Practice (BMP) "*is a practice or combination of practices that is determined by a state to be the most effective means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals"* (Federal Clean Water Act, 1977).

### How does Best Management Practice relate to Management Measures and Practices?

The term "best" is subject to interpretation and point of view. In recognition of this, the Coastal Zone Act Reauthorization Amendment uses the new terms 'management measures and management practices' (see Fact Sheets 6 and 8 for a discussion of water quality terms and regulations).

- **Management measures** are **goals** for management of nonpoint source pollution for a state, basin, watershed or ranch. They describe what we **want to happen** in the long-term, and they should be linked to impaired beneficial uses of water. An example of a *ranch management measure* might be to *increase streambank vegetation along the portion of Deer Creek that runs through the ranch.* Under voluntary compliance these goals or management measures are determined by the rancher. If voluntary compliance is unsuccessful, the Regional Water Quality Control Board (RWQCB) may require specific management measures and/or practices.
- **Management practices** applied alone or in combinations address the goals stated as management measures.

### How are Management Practices developed?

- **Ranchers:** Many of the range management practices currently used by ranchers and range managers will become water quality management practices. Water quality management practices should be planned and applied just like any other business decision on a ranch. Management practices must be technically and economically feasible.
- **Professionals:** Management practices are designed by range management professionals using the most technically sound research and management information available. For that reason, as technology, environmental or financial conditions change, management practices should be updated to reflect those changes.
- **Regional Water Quality Control Boards:** EPA delegates water quality regulations, including management measures and practices to the State Water Resources Control Board (SWRCB). Legally, a practice must be certified by the SWRCB. The SWRCB may delegate this authority to the Regional Water Quality Control Boards (RWQCB). They may accept the practices in the NRCS Field Office Technical Guides, or they may require management practices unique to the situation.

- **Field Office Technical Guides:** The Natural Resources Conservation Service has conducted a program of voluntary soil and water conservation planning with private landowners and resource managers for over 50 years. The NRCS relies upon a Technical Guide, localized to the geographic area of a field office, and a National Planning Manual as guides for technical assistance. The Field Office Technical Guides may be revised as needs and techniques change.

## How are Management Practices Implemented?

The rancher may seek technical assistance from UC Cooperative Extension, USDA Natural Resources Conservation Service, Resource Conservation Districts, or other agencies to help identify water quality problems, develop management measures (statements of water quality goals or objectives), and select management practices. The amount or extent to which a practice is applied must be consistent with national, state, and basin water quality goals and should reflect the relative contribution of that type of land use activity toward water quality problems within the basin. This technical assistance will result in a plan, typically known as a ranch plan or conservation plan. Because writing a ranch plan is the landowner's first tangible step in voluntarily reducing nonpoint pollution sources, ranch planning is listed as the first management practice in the next section.

### Management Practices for California Rangelands?

Following are the management practices listed in the California Rangeland Water Quality Management Plan for California's privately owned rangelands. The number in parentheses refers to the practice number in the NRCS Field Office Technical Guide.

1. **RANCH PLAN:** The goal of maintaining or improving the quality of water should be included in ranch management plans for livestock operations. Ranch water quality goals need to be linked to water quality problems (impaired beneficial uses) identified by the Regional Water Quality Control Boards for the local basin or sub-basin. Ranch plans may follow several formats:
   - Natural Resources Conservation Service Conservation Planning
   - UCCE Ranch Planning Short Course Outline
   - Holistic Resource Management
   - Any organized planning process conducted by the landowners, agencies, or private consultants

   **Plan Contents**

   1.1 Describe the environmental setting
   1.2 Describe the livestock and grazing operation
   1.3 Describe ranch water quality goals
   1.4 Describe water quality problems on the ranch
   1.5 Describe management measures and practices
   1.6 Describe monitoring and evaluation techniques

2. **GRAZING MANAGEMENT PRACTICES:** Prescribed grazing may be achieved by controlling season, intensity, frequency, and distribution of grazing.

   **Practices**

   2.1 **Prescribed Grazing (528a)** The controlled harvest of vegetation with grazing or browsing animals, managed with the intent to achieve a specified objective, such as:
      1. Improve or maintain the health and vigor of selected plants and to maintain stable and desired plant communities.
      2. Provide or maintain food, cover and shelter for animals of concern.
      3. Improve or maintain animal health and productivity.
      4. Maintain or improve water quality and quantity.
      5. Reduce accelerated soil erosion and maintain or improve soil condition.

2.2 **Use Exclusion (472)** Use exclusion of animals, people, or vehicles from an area to protect, maintain, or improve the quantity and quality of the plant, animal, soil, air, water, and aesthetics resources and human health and safety.

3. **STRUCTURAL RANGE IMPROVEMENTS:** Structural range improvements may be used to facilitate proper grazing use. These practices should be planned, constructed, and utilized in a manner to enhance or maintain water quality. These management practices should be linked in the ranch plan to proper grazing use and other ranch water quality goals.

**Practices**

3.1 **Access Roads (560)** Roads constructed to provide access to farms, ranches, and fields. Used for moving livestock, produce, equipment, and supplies and to provide access for management of ranch resources.

3.2 **Fencing (382)** Enclosing or dividing an area of land with a suitable, permanent structure that acts as a barrier to livestock, big game, or people (does not include temporary fences). Fencing may protect riparian areas which act as sediment traps and filters along water channels and impoundments.

3.3 **Grade Stabilization (410)** A structure used to stabilize the grade and control erosion in natural or artificial channels, to prevent the formation and advance of gullies, and to enhance environmental quality and reduce pollution hazards.

3.4 **Pipelines (516)** Pipeline installed for conveying water for livestock or for recreation. Pipelines may decrease sediment, nutrient, organic, and bacteria pollution from livestock by providing water sources other than streams and lakes.

3.5 **Ponds (378)** A water impoundment made by constructing a dam or an embankment or by excavation of a pit or dugout. Ponds may provide alternate water sources away from streams. Ponds are often used in conjunction with pipelines and troughs and tanks. Ponds may trap nutrients and sediment which wash into the basin.

3.6 **Sediment Basins (350)** A basin constructed to collect and store debris or sediment. Sediment basins will remove sediment and associated materials and other debris from the water which is passed downstream. Stockwater ponds often act as sediment basins.

3.7 **Spring Development (574)** Improving springs and seeps by excavating, cleaning, capping, or providing collection and storage facilities. There will be negligible long-term water quality impacts with spring developments. Erosion and sedimentation may occur from any disturbed areas during and immediately after construction, but should be short-lived. The stream source will usually be fenced.

3.8 **Stock Trails or Walkways (575)** A livestock trail or walkway constructed to improve grazing distribution and access to forage and water. This practice may be used to reduce livestock concentrations, facilitate proper grazing use, and planned grazing systems.

3.9 **Streambank Protection (580)** Using vegetation or structures to stabilize and protect banks of streams, lakes, estuaries, or excavated channels against scour and erosion.

3.10 **Troughs and Tanks (614)** Installation of a trough or tank may facilitate improved distribution of livestock. Troughs and tanks are often an effective means of providing stock water away from streams.

3.11 **Landslide Treatments (453)** Treatments to prevent or stabilize landslides to protect life and property and to prevent excessive erosion and sedimentation.

3.12 **Well (642)** A well may be constructed or improved to provide stockwater away from streams and other critical areas. As a new water source it will improve livestock distribution.

3.13 **Stream Crossing (interim)** A stabilized area to provide access across a stream for livestock and farm machinery. The purpose is to provide a controlled crossing or watering access point for livestock along with access for farm equipment.

4. **LAND TREATMENTS:** Land treatments to manage vegetation, practices to reduce erosion or improve wildlife habitat should be planned, implemented, and maintained to minimize adverse impacts on water quality.

**Practices**

4.1 **Brush Management (314)** Managing and manipulating stands of brush (and weeds) on forest, range, and pasture land by mechanical, chemical, or biological means or by prescribed burning. The purpose of brush management is to increase ground cover, reduce fire hazard, improve water quality in the long-term, improve forage production and quality, increase runoff and other objectives depending on landowner goals. Brush management may temporarily impair water quality by increasing sediment yields because of soil disturbances and reduced vegetative cover.

4.2 **Prescribed Burning (334)** Applying fire to predetermined areas under conditions for which the intensity and spread of the fire are controlled. Prescribed burning is a brush management practice.

4.3 **Critical Area Planting (342)** Planting vegetation, such as trees, shrubs, vines, grasses, or legumes on highly erodible or critically eroding areas. (Does not include tree planting mainly for wood products.) This practice may reduce soil erosion and sediment delivery to surface waters. During grading, seedbed preparation, seeding, and mulching, sediment may impair surface water quality prior *to* plant establishment.

4.4 **Range Seeding (550)** Establishing adapted plants by seeding on native grazing land. (Range does not include pasture and hayland planting.) increased erosion and sediment yield may occur during the establishment of this practice. This is a temporary situation which diminishes when the reseeded area becomes established.

4.5 **Grazingland Mechanical Treatments (548)** Renovating, contour furrowing, pitting, or chiseling native grazingland by mechanical means to improve plant cover and water quality by aerating the soil, increasing infiltration and available moisture, reducing erosion, and protecting low lying land or structures from siltation.

4.6 **Stream Corridor Improvement (204)** Restoration of a modified or damaged stream to a more natural state using bio-engineering techniques to protect the banks, and to re-establish the riparian vegetation. It does not apply to short reaches of stream that should be treated by Practice 580 (Streambank Protection) or Practice 584 (Stream Channel Stabilization).

4.7 **Wildlife Wetland Habitat Management (644) or Woodland Development or Restoration** Retaining, creating, or managing woodland habitat for wildlife. The construction or restoration of a woodland facility to provide the hydrologic and biological benefits of a wetland.

4.8 **Wildlife-Upland Habitat Management (645)** Creating, maintaining, or enhancing areas for food and cover for upland wildlife.

5. **LIVESTOCK MANAGEMENT PRACTICES:** Livestock management practices such as disease control, feeding, and salting should be done in a manner to protect water quality.

**Practices**

5.1 **Livestock Parasite Control** Livestock health and other management practices used to reduce internal parasites and pathogens that may be excreted in manure or urine.

5.2 **Supplemental Feeding and Salting**
Feeding practices that minimize livestock concentration near water bodies and facilitate more uniform livestock distribution.

6. **FACILITY SITING/DESIGN CRITERIA:**
While not a practice, siting and design involves the consideration of the location and/or design of feeding, watering, working, holding, chemical storage and shipping facilities in proper proximity to water bodies for water quality protection.