

Permeability is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Surface runoff is medium, and the erosion hazard is moderate.

In irrigated areas this soil is suited to crops commonly grown in the area. Perennial grasses and alfalfa or close grown crops should be grown at least 50 percent of the time. Contour ditches and corrugations can be used in irrigating close grown crops and pasture. Furrows, contour furrows, and cross slope furrows are suitable for row crops. Sprinkler irrigation is also suggested. Keeping tillage to a minimum and utilizing crop residue help to control erosion. Maintaining fertility is important. Crops respond to applications of phosphorus and nitrogen.

In nonirrigated areas this soil is suited to winter wheat, barley, and sorghum. Most of the acreage is planted to winter wheat. The predicted average yield is 28 bushels per acre. The soil is summer fallowed in alternate years to allow moisture accumulation. Generally precipitation is too low for beneficial use of fertilizer.

Stubble mulch farming, stripcropping, and minimum tillage are needed to control soil blowing and water erosion. Terracing also may be needed to control water erosion.

The potential native vegetation is dominated by blue grama. Several mid grasses, such as western wheatgrass and needleandthread, are also present. Potential production ranges from 1,600 pounds per acre in favorable years to 1,000 pounds in unfavorable years. As range condition deteriorates, the mid grasses decrease; blue grama, buffalograss, snakeweed, yucca, and fringed sage increase; and forage production drops. Undesirable weeds and annuals invade the site as range condition becomes poorer.

Management of vegetation on this soil should be based on taking half and leaving half of the total annual production. Seeding is desirable if the range is in poor condition. Sideoats grama, little bluestem, western wheatgrass, blue grama, pubescent wheatgrass, and crested wheatgrass are suitable for seeding. The grass selected should meet the seasonal requirements of livestock. It can be seeded into a clean, firm sorghum stubble, or it can be drilled into a firm prepared seedbed. Seeding early in spring has proven most successful.

Windbreaks and environmental plantings of trees and shrubs commonly grown in the area are generally well suited to this soil. Cultivation to control competing vegetation should be continued for as many years as possible following planting. Trees that are best suited and have good survival are Rocky Mountain juniper, eastern redcedar, ponderosa pine, Siberian elm, Russian-olive, and hackberry. The shrubs best suited are skunkbush sumac, lilac, Siberian peashrub, and American plum.

Wildlife is an important secondary use of this soil. The cropland areas provide favorable habitat for ring-necked pheasant and mourning dove. Many nongame species can be attracted by establishing areas for nesting and escape cover. For pheasants, undisturbed nesting cover is essential and should be included in plans for habitat development, especially in areas of intensive agriculture. Range-

land wildlife, for example, the pronghorn antelope, can be attracted by developing livestock watering facilities, managing livestock grazing, and reseeding where needed.

This soil has good potential for urban and recreational development. Increased population growth in the survey area has resulted in increased homesite construction. The chief limiting soil feature for urban development and road construction is the limited capacity of this soil to support a load. Septic tank absorption fields function properly, but community sewage systems should be provided if the population density increases. Because of the permeability of the substratum, sewage lagoons must be sealed. Lawns, shrubs, and trees grow well. Capability subclass IIIe irrigated, IVe nonirrigated; Loamy Plains range site.

34—Kim loam, 5 to 9 percent slopes. This is a deep, well drained soil on plains and alluvial fans at elevations of 4,900 to 5,250 feet. It formed in mixed eolian deposits and parent sediment from a wide variety of bedrock. Included in mapping are small areas of soils that have loamy sand underlying material.

Typically the surface layer is brown and pale brown loam about 10 inches thick. The upper 25 inches of the underlying material is pale brown loam. The lower part to a depth of 60 inches is pale brown fine sandy loam.

Permeability is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Surface runoff is rapid, and the erosion hazard is moderate.

This soil is suited to limited cropping. Intensive cropping is hazardous because of erosion. The cropping system should be limited to such close grown crops as alfalfa, wheat, and barley. This soil also is suited to irrigated pasture. A suitable cropping system is 3 to 4 years of alfalfa followed by 2 years of corn and small grain and alfalfa seeded with a nurse crop.

Close grown crops can be irrigated from closely spaced contour ditches or sprinklers. Contour furrows or sprinklers should be used for new crops. Applications of nitrogen and phosphorus help in maintaining good production.

The potential native vegetation is dominated by blue grama. Sideoats grama, little bluestem, western wheatgrass, and sedge are also prominent. Potential production ranges from 1,800 pounds per acre in favorable years to 1,500 pounds in unfavorable years. As range condition deteriorates, the sideoats grama and little bluestem decrease; forage production drops; and blue grama, buffalograss, and several perennial forbs and shrubs increase. Undesirable weeds and annuals invade the site as range condition becomes poorer.

Management of vegetation should be based on taking half and leaving half of the total annual production. Seeding is desirable if the range is in poor condition. Sideoats grama, little bluestem, western wheatgrass, and pubescent wheatgrass are suitable for seeding. The grass selected should meet the seasonal needs of livestock. It can be seeded into a clean, firm sorghum stubble, or it

can be drilled into a firm prepared seedbed. Plowing and drilling on the contour minimize runoff and soil losses. Seeding early in spring has proven most successful.

Windbreaks and environmental plantings are generally well suited to this soil. Cultivation to control competing vegetation should be continued for as many years as possible following planting. Trees that are best suited and have good survival are Rocky Mountain juniper, eastern redcedar, ponderosa pine, Siberian elm, Russian-olive, and hackberry. The shrubs best suited are skunkbush sumac, lilac, Siberian peashrub, and American plum.

Wildlife is an important secondary use of this soil. The cropland areas provide favorable habitat for ring-necked pheasant and mourning dove. Many nongame species can be attracted by establishing areas for nesting and escape cover. For pheasants, undisturbed nesting cover is essential and should be included in plans for habitat development, especially in areas of intensive agriculture. Rangeland wildlife, for example, the pronghorn antelope, can be attracted by developing livestock watering facilities, managing livestock grazing, and reseeding where needed.

This soil has good potential for urban and recreational development. Increased population growth in the survey area has resulted in increased homesite construction. The chief limiting soil feature for urban development and road construction is the limited capacity of this soil to support a load. Septic tank absorption fields function properly, but community sewage systems should be provided if the population density increases. Because of the permeability of the substratum, sewage lagoons must be sealed. Lawns, shrubs, and trees grow well. Capability subclass IVe irrigated, VIe nonirrigated; Loamy Plains range site.

35—Loup-Boel loamy sands, 0 to 3 percent slopes. This level to nearly level map unit is on stream bottoms and in drainageways of the sandhills at elevations of 4,550 to 4,750 feet. The Loup soil occupies the lower or depression areas, which receive additional runoff. It makes up about 55 percent of the unit. The Boel soil occupies the slightly higher elevations. It makes up about 35 percent of the unit. About 10 percent of the unit is Osgood sand and Valent sand.

The Loup soil is deep and poorly drained. It formed in sandy alluvium. Typically the surface layer is very dark grayish brown, mottled loamy sand about 16 inches thick. The upper 24 inches of the underlying material is light brownish gray, mottled loamy sand. The lower part to a depth of 60 inches is light brownish gray, mottled sandy loam.

Permeability is rapid. Available water capacity is moderate. The water table is at or near the surface in spring and about 36 inches below the surface in the fall. Surface runoff is slow, and the erosion hazard is low.

The Boel soil is deep and somewhat poorly drained. It formed in stratified sandy alluvium. Typically the surface layer is grayish brown loamy sand about 14 inches thick. The underlying material to a depth of 60 inches is pale brown and very pale brown, stratified, mottled loamy sand.

Permeability is rapid. Available water capacity is moderate. The water table is usually about 24 to 36 inches below the surface. Surface runoff is slow, and the erosion hazard is low.

This unit is used as rangeland and irrigated cropland. Cropping in irrigated areas is limited to the crops tolerant of water and salts. Light, frequent irrigations by furrows and flooding reduce the salts accumulation. Pasture is the best use. Tall wheatgrass, tall fescue, and annual sweetclover are some of the best suited crops. Commercial fertilizers improve the amount and value of forage produced.

The potential native vegetation on this unit is dominated by switchgrass, little bluestem, sand reedgrass, and western wheatgrass. Indiangrass, sand bluestem, prairie cordgrass, slender wheatgrass, alkali sacaton, saltgrass, sedge, and rush are also present. Potential production ranges from 4,000 pounds per acre in favorable years to 3,000 pounds in unfavorable years. As range condition deteriorates, the switchgrass, sand bluestem, indiangrass, little bluestem, and prairie cordgrass decrease and saltgrass, blue grama, sand dropseed, sedge, and rush increase. Undesirable weeds and annuals invade the site as range condition becomes poorer.

Management of vegetation on this unit should be based on taking half and leaving half of the total annual production. Seeding is desirable if the range is in poor condition. Switchgrass, sand bluestem, sand reedgrass, western wheatgrass, indiangrass, pubescent wheatgrass, and intermediate wheatgrass are suitable for seeding. The plants selected should meet the seasonal requirements of livestock. They can be seeded into a clean, firm sorghum stubble, or they can be drilled into a firm prepared seedbed. Seeding early in spring has proven most successful. Capability subclass IVw irrigated, VIw nonirrigated; Sandy Meadow range site.

36—Midway-Shingle complex, 5 to 20 percent slopes. This moderately sloping to strongly sloping map unit is on upland hills and ridges at elevations of 5,050 to 5,250 feet. The Midway soil makes up about 50 percent of the unit, and the Shingle soil about 35 percent. About 15 percent is Renohill clay loam and Tassel fine sandy loam. The Midway soil differs from the Shingle soil in having more than 35 percent clay in the underlying material.

The Midway soil is shallow and well drained. It formed in residuum from calcareous shale. Typically the surface layer is light olive brown clay about 7 inches thick. The underlying material is light brownish gray clay about 6 inches thick. Depth to calcareous clayey shale is about 13 inches.

Permeability is slow. Available water capacity is low. The effective rooting depth is 10 to 20 inches. Surface runoff is rapid, and the erosion hazard is moderate to high.

The Shingle soil also is shallow and well drained and formed in residuum from calcareous shale. Typically the surface layer is grayish brown loam about 6 inches thick. The underlying material is light yellowish brown clay loam about 12 inches thick. Depth to calcareous clayey

sugar beets, small grain, or beans. Few conservation practices are needed to maintain top yields.

All methods of irrigation are suitable, but furrow irrigation is the most common. Barnyard manure and commercial fertilizer are needed for top yields.

Windbreaks and environmental plantings generally are well suited to this soil. Summer fallow a year before planting and continued cultivation for weed control are needed to insure establishment and survival of plantings. Trees that are best suited and have good survival are Rocky Mountain juniper, eastern redcedar, ponderosa pine, Siberian elm, Russian-olive, and hackberry. The shrubs best suited are skunkbush sumac, lilac, Siberian peashrub, and American plum.

Openland wildlife, such as pheasant, mourning dove, and cottontail, are best suited to this soil. Wildlife habitat development, including tree and shrub plantings and grass plantings to serve as nesting areas, should be successful without irrigation in most years. Under irrigation, good wildlife habitat can be established, benefiting many kinds of openland wildlife.

This soil has good potential for urban and recreational development. The chief limiting soil features for urban development are the shrink-swell potential of the subsoil as it wets and dries and the limited capacity of the soil to support a load. Lawns, shrubs, and trees grow well. Capability class I irrigated.

79—Weld loam, 1 to 3 percent slopes. This is a deep, well drained soil on smooth plains at elevations of 4,850 to 5,000 feet. It formed in eolian deposits. Included in mapping are small areas of soils that have a subsoil of loam and light clay loam. Also included are some leveled areas.

Typically the surface layer of this Weld soil is brown loam about 8 inches thick. The subsoil is brown and pale brown heavy clay loam and light clay about 20 inches thick. The substratum to a depth of 60 inches is silt loam.

Permeability is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Surface runoff is slow, and the erosion hazard is low.

In irrigated areas this soil is suited to all crops commonly grown in the area, including corn, sugar beets (fig. 8), beans, alfalfa, small grain, and onions. An example of a suitable cropping system is 3 to 4 years of alfalfa followed by corn, corn for silage, sugar beets, small grain, or beans. Land leveling, ditch lining, and installing pipelines are needed for proper water applications.

All methods of irrigation are suitable, but furrow irrigation is the most common. Barnyard manure and commercial fertilizer are needed for top yields.

This soil is well suited to winter wheat, barley, and sorghum if it is summer fallowed in alternate years. Winter wheat is the principal crop. The predicted average yield is 33 bushels per acre. If the crop is winterkilled, spring wheat can be seeded. Generally precipitation is too low for beneficial use of fertilizer.

Stubble mulch farming, stripcropping, and minimum tillage are needed to control soil blowing and water erosion. Terracing also may be needed to control water erosion.

The potential native vegetation is dominated by blue grama. Several mid grasses, such as western wheatgrass and needleandthread, are also present. Potential production ranges from 1,600 pounds per acre in favorable years to 1,000 pounds in unfavorable years. As range condition deteriorates, the mid grasses decrease; blue grama, buffalograss, snakeweed, yucca, and fringed sage increase; and forage production drops. Undesirable weeds and annuals invade the site as range condition becomes poorer.

Management of vegetation on this soil should be based on taking half and leaving half of the total annual production. Seeding is desirable if the range is in poor condition. Sideoats grama, little bluestem, western wheatgrass, blue grama, pubescent wheatgrass, and crested wheatgrass are suitable for seeding. The grass selected should meet the seasonal requirements of livestock. It can be seeded into a clean, firm sorghum stubble, or it can be drilled into a firm prepared seedbed. Seeding early in spring has proven most successful.

Windbreaks and environmental plantings are generally well suited to this soil. Summer fallow a year before planting and continued cultivation for weed control are needed to insure establishment and survival of plantings. Trees that are best suited and have good survival are Rocky Mountain juniper, eastern redcedar, ponderosa pine, Siberian elm, Russian-olive, and hackberry. The shrubs best suited are skunkbush sumac, lilac, Siberian peashrub, and American plum.

Openland wildlife, such as pheasant, mourning dove, and cottontail, are best suited to this soil. Wildlife habitat development, including tree and shrub plantings and grass plantings to serve as nesting areas, should be successful without irrigation during most years. Under irrigation, good wildlife habitat can be established, benefiting many kinds of openland wildlife.

This soil has good potential for urban and recreational development. The chief limiting soil features for urban development are the shrink-swell potential of the subsoil as it wets and dries and the limited capacity of the soil to support a load. Lawns, shrubs, and trees grow well. Capability subclass IIe irrigated, IIIc nonirrigated; Loamy Plains range site.

80—Weld loam, 3 to 5 percent slopes. This is a deep, well drained soil on plains at elevations of 4,850 to 5,000 feet. It formed in eolian deposits. Included in mapping are small areas of soils that have a subsoil of loam and light clay loam.

Typically the surface layer is brown loam about 8 inches thick. The subsoil is brown and pale brown heavy clay loam and light clay about 18 inches thick. The substratum to a depth of 60 inches is silt loam.

Permeability is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Surface runoff is medium, and the erosion hazard is moderate.

In irrigated areas this soil is suited to most of the crops commonly grown in the area, such as corn, alfalfa, wheat, and barley. Sugar beets are often grown. The soil is suited to irrigated pasture. Ditch lining and installing pipelines are needed for proper water application.