TIPNAT SERIES

The Tipnat series consists of very deep, well drained soils that formed in mixed alluvium. The Tipnat soils are on alluvial flats. Slope ranges from 0 to 4 percent. The mean annual precipitation is about 6 inches and the mean annual temperature is about 66 degrees F.

TAXONOMIC CLASS: Fine-loamy, mixed, superactive, thermic Typic Natrargids

TYPICAL PEDON: Tipnat loamy sand, rangeland and wildlife habitat. (Colors are for dry soils unless otherwise noted.) The soil surface is covered by approximately 25 percent pebbles.

A1--0 to 1 inch; pale brown (10YR 6/3) loamy sand, brown (10YR 4/3) moist; strong medium and thick platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots, many very fine and fine vesicular pores; 10 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary. (1 to 3 inches thick)

A2--1 to 3 inches; light yellowish brown (10YR 6/4) loamy sand, brown (7.5YR 5/3) moist; moderate thin and medium platy structure; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine interstitial and common very fine tubular pores; 10 percent pebbles; strongly effervescent (6 percent calcium carbonate in the fine earth fraction); strongly alkaline (pH 8.6); clear wavy boundary. (0 to 4 inches thick)

2Btk--3 to 13 inches; light brown (7.5YR 6/4) sandy clay loam, brown (7.5YR 4/4) moist; weak medium and coarse prismatic structure parting to moderate medium and thick platy; slightly hard, very friable, moderately sticky and moderately plastic; common very fine and few fine roots; few very fine tubular pores; common thin clay films on faces of peds and bridging between mineral grains; few fine and medium segregated soft masses of calcium carbonate; common distinct calcium carbonate coats on rock fragments; 5 percent pebbles violently effervescent (8 percent calcium carbonate in the fine earth fraction); very strongly alkaline (pH 9.2); clear smooth boundary. (8 to 17 inches thick)

3Cky--13 to 60 inches; light brown (7.5YR 6/4) stratified sand to very gravelly sandy clay loam, brown (7.5YR 4/4) moist; massive; soft to hard, very friable, nonsticky to moderately sticky and nonplastic to moderately plastic; common very fine and few fine roots; common very fine interstitial pores; common medium segregated soft masses of calcium carbonate; common fine and medium soft masses of gypsum in the lower portion of the horizon; common distinct calcium carbonate coats on rock fragments; averages 10 percent pebbles; violently effervescent (6 percent calcium carbonate in the fine earth fraction); strongly alkaline (pH 8.6); abrupt wavy boundary.
TYPE LOCATION: Clark County, Nevada; about 6 miles southwest of Boulder City, NV located in the north end of Eldorado Valley; approximately 2,800 feet north and 2,720 feet east of the southeast corner of section 2, T. 24 S., R. 63 E.; USGS Boulder City NW, NV 7.5 minute topographic quadrangle; 35 degrees 53 minutes 18 seconds north latitude, 114 degrees 54 minutes 40 seconds west longitude; UTM 11s, 688544e, 3973579n; NAD 83.

RANGE IN CHARACTERISTICS:

Soil moisture - Usually dry, moist in some part for short periods during winter and early spring and for 10 to 20 days cumulative between July to October following summer convection storms. Has a typic aridic moisture regime.

Soil temperature - 66 to 71 degrees F.

Depth to base of natric horizon - 10 to 20 inches

Control section - Percent clay: 20 to 30 percent.

Rock fragments: 0 to 15 percent gravel.

A horizon - Hue 10YR or 7.5YR.

Value: 6 or 7 dry, 4 or 5 moist.

Chroma: 3 or 4, dry or moist.

2Btk horizon - Hue 7.5YR or 10YR.

Value: 4 through 7 dry, 3 or 4 moist.

Chroma: 3 through 6, dry or moist.

Texture: Sandy clay loam, loam or clay loam.

Salinity: 4 - 8 mmhos/cm.

SAR: 13 - 45

Gypsum: 0 to 3 percent.

3Cky horizon - Hue 7.5YR, 10YR or 5YR.

Value: 5 through 7 dry, 3 through 5 moist.

Chroma: 3 or 4, dry or moist.
Texture: Stratified sand to very gravelly sandy clay loam.

Clay content: Average 6 to 18 percent.

Rock fragments: Averages 0 to 15 percent.

Structure: Massive or subangular blocky.

Gypsum: 1 to 5 percent.

**COMPETING SERIES:** These are the Casaga (NV), Corum (CA), Dusty (AZ), Garces (CA), Leuhman (T CA), Norob (CA), and Polvadero (T CA) series. Corum, Garces, Leuhman, Norob and Polvadero soils lack summer precipitation. Casaga soils have very gravelly textures at 20 to 40 inches. Corum soils have weathered granitic bedrock at a depth of 20 to 40 inches. Dusty soils have a calcic horizon. Garces soils have an argillic horizon extending past 20 inches.

**GEOGRAPHIC SETTING:** Tipnat soils are on alluvial flats. These soils formed in mixed alluvium. Slope ranges from 0 to 4 percent. Elevations are 1,700 to 2,700 feet. The climate is hot and arid with warm, moist winters and hot, dry summers. The mean annual precipitation is 5 to 7 inches; mean annual temperature is 64 to 69 degrees F., and the frost-free season is 240 to 300 days.

**GEOGRAPHICALLY ASSOCIATED SOILS:** These are the Bluepoint and Grapevine soils. Bluepoint soils have a sandy particle-size control section and Grapevine soils have a coarse-loamy particle-size control section. These soils do not have natric horizons.

**DRAINAGE AND PERMEABILITY:** Well drained; low runoff; moderately slow permeability.

**USE AND VEGETATION:** These soils are used for rangeland and wildlife habitat. The present vegetation is mainly cattle saltbush, creosotebush and white bursage.

**DISTRIBUTION AND EXTENT:** Mojave Desert of southern Nevada. MLRA 30. These soils are not extensive.

**MLRA OFFICE RESPONSIBLE:** Davis, California

**SERIES ESTABLISHED:** Clark County Area, Nevada, 2006. Proposed in Clark County, Nevada, 1994. The name is coined.

**REMARKS:** Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon - 0 to 3 about inches (A1 and A2 horizons).

Natric horizon - 3 to 13 inches (2Btnk horizon).
Argillic horizon -3 to 13 inches (2Btkn horizon).

Particle-size control section - 3 to 13 inches (2Btkn horizon).

National Cooperative Soil Survey
U.S.A.
ARIZO SERIES

The Arizo series consists of very deep, excessively drained soils that formed in mixed alluvium. Arizo soils are on recent alluvial fans, inset fans, fan apron, fan skirts, stream terraces, floodplains of intermittent streams and channels. Slope ranges from 0 to 15 percent. The mean annual precipitation is about 7 inches and the mean annual temperature is about 62 degrees F.

TAXONOMIC CLASS: Sandy-skeletal, mixed, thermic Typic Torriorthents

TYPICAL PEDON: Arizo very gravelly fine sand, desert wildlife habitat. (Colors are for dry soil unless otherwise noted.)

A--0 to 8 inches; light brownish gray (10YR 6/2) very gravelly fine sand, dark grayish brown (10YR 4/2) moist; weak coarse platy structure; slightly hard, very friable, nonsticky and nonplastic; few fine and medium roots; few fine vesicular and many very fine and fine interstitial pores; 35 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary. (0 to 10 inches thick)

Bk--8 to 36 inches; light brownish gray (10YR 6/2) extremely gravelly sand, dark grayish brown (10YR 4/2) moist; single grained; loose, nonsticky and nonplastic; few fine and medium roots; many very fine and fine interstitial pores; 60 percent pebbles and 10 percent cobbles; few very thin coats of calcium carbonate on undersides of pebbles; strongly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

C--36 to 62 inches; light brownish gray (10YR 6/2) extremely gravelly sand, dark grayish brown (10YR 4/2) moist; single grained; loose, nonsticky and nonplastic; few very fine and fine roots; many very fine and fine, and few medium interstitial pores; 60 percent pebbles, 20 percent cobbles and 3 percent stones; strongly effervescent; moderately alkaline (pH 8.2). (Combined thickness of the Bk and C horizons is 50 to 60 inches)

TYPE LOCATION: Clark County, Nevada; approximately 2 miles east and 1 mile north of Bunkerville, Nevada; about 1,000 feet east and 600 feet south of center of section 20, T. 13 S., R. 71 E. 36 degrees, 47 minutes, 16.8 seconds north latitude and 114 degrees, 4 minutes, 50.0 seconds west longitude; USGS Mesquite, NV-AZ 7.5 minute quadrangle; UTM 11S, 760513e 4075330n; NAD83.

RANGE IN CHARACTERISTICS:

Soil moisture - Usually dry, moist for short periods throughout the moisture control section during December through March. Moist above and periodically in upper part of moisture control
section for 10 to 20 days cumulative, during July through October. The soil has a typic aridic soil moisture regime.

Soil temperature - 59 to 71 degrees F.

Reaction: Neutral to strongly alkaline.

Other features: Effervescent in some or all parts, with thin calcium carbonate coatings on undersides of rock fragments in some pedons.

Control section - Rock fragments: 35 to 85 percent.

A horizon - Hue: 10YR or 7.5YR.
Value: 5 through 8 dry, 3 through 6 moist.
Chroma: 2 through 6.

Bk and/or C horizons - 10YR or 7.5YR.
Value: 4 through 8 dry, 3 through 6 moist.
Chroma: 2 through 6.
Texture: Averages coarse sand through loamy sand.
Structure: Single grained or massive.

COMPETING SERIES: These are the Dudleyville (AZ), Jean (NV) and Kokan (NM) series. Dudleyville soils occur within the Sonoran Desert (MLRA 40 and 41) and are moist above and periodically in upper part of moisture control section for more than 20 days cumulative, during July through October. Jean soils have a shallow Bw horizon and have textures in the upper control section of loamy sand or loamy fine sand with less than 15 percent rock fragments. Kokan soils occur within the Chihuahuan Desert (MLRA 42) and are moist for short periods in some part mainly in July, August, and early September and are dry the rest of the year.

GEOGRAPHIC SETTING: Arizo soils are on recent alluvial fans, inset fans, fan aprons, fan skirts, stream terraces, floodplains of intermittent streams and channels. These soils form in mixed alluvium. Slope ranges from 0 to 15 percent. Elevations are 750 to 4,600 feet. The climate is arid or semiarid with mild winters and hot dry summers. The mean annual precipitation is 2 to 10 inches and may range to 13 inches in Arizona where temperatures are 67 to 70 degrees F.; mean annual temperature is 57 to 70 degrees F., and the frost-free season is 180 to 340 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Bard, Bitter Spring, Gila, Nickel, Tonopah, and Vinton soils. Bard soils have a petrocalcic horizon. Bitter Spring soils have a gravelly sandy loam B2t horizon. Gila soils have a loamy control section. Nickel and Tonopah soils have a calcic horizon. Vinton soils have a loamy fine sand or loamy sand control section.

DRAINAGE AND PERMEABILITY: Excessively drained; negligible to medium runoff; rapid to very rapid permeability. Arizo soils with sandy loam and loam surface textures have moderate or moderately rapid over very rapid permeability.
USE AND VEGETATION: These soils are used for rangeland and wildlife habitat. The present vegetation is mainly creosotebush and white bursage.

DISTRIBUTION AND EXTENT: Southern Nevada, Southern California, Arizona, and New Mexico. These soils are extensive. The central concept for the series is in MLRA 30. Use in MLRA 40, 41, 42 should be reevaluated.

MLRA OFFICE RESPONSIBLE: Davis, California

SERIES ESTABLISHED: Clark County (Virgin River Area), Nevada. 1971.

REMARKS: Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon - 0 to 8 inches (A horizon).
Particle-size control section -10 to 40 inches (Part of the Bk and C horizons).

National Cooperative Soil Survey
U.S.A.
LANIP SERIES

The Lanip series consists of very deep, well drained soils that formed in mixed alluvium. The Lanip soils are on fan remnants. Slope ranges from 2 to 8 percent. The mean annual precipitation is about 6 inches and the mean annual air temperature is about 60 degrees F.

TAXONOMIC CLASS: Fine-loamy, mixed, superactive, thermic Typic Calciargids

TYPICAL PEDON: Lanip very gravelly sandy loam, rangeland and wildlife habitat. (Colors are for dry soil unless otherwise noted.) The soil surface is partially covered by approximately 50 percent pebbles.

A1--0 to 1 inch; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; weak thick platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 50 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (1 to 2 inches thick)

A2--1 to 6 inches; light yellowish brown (10YR 6/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine, and few medium roots; common very fine tubular pores; 15 percent pebbles; moderately alkaline (pH 8.2); clear wavy boundary. (1 to 6 inches thick)

Bk--6 to 15 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine, and few medium roots; many very fine, few fine and medium tubular pores; many fine calcium carbonate coats on underside of rock fragments; 20 percent pebbles; noneffervescent to slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary. (8 to 22 inches thick)

Btk--15 to 39 inches; brown (7.5YR 5/4) clay loam, brown (7.5YR 4/4) moist; strong fine and medium prismatic structure; hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; common very fine tubular pores; many distinct clay films on faces of peds and lining pores; many fine filaments and seams of calcium carbonate; many fine calcium carbonate coats on underside of rock fragments; 5 percent pebbles; slightly effervescent (11 percent calcium carbonate equivalent in the fine earth fraction); strongly alkaline (pH 8.6); clear wavy boundary. (12 to 26 inches thick)

Bkq1--39 to 48 inches; light yellowish brown (10YR 6/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very
fine tubular pores; many medium irregularly shaped masses and concretions of calcium carbonate; many medium calcium carbonate and silica coats on the underside of rock fragments; 17 percent pebbles; violently effervescent (11 percent calcium carbonate equivalent in the fine earth fraction); strongly alkaline (pH 8.6); clear wavy boundary. (8 to 10 inches thick)

2Bkq2--48 to 60 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; few very fine tubular pores; many medium irregularly shaped masses and concretions of calcium carbonate; many medium calcium carbonate and silica coats on the underside of rock fragments; 50 percent pebbles; violently effervescent (13 percent calcium carbonate equivalent in the fine earth fraction); strongly alkaline (pH 8.6).

TYPE LOCATION: Clark County, Nevada; approximately 4.5 miles west on State Highway 164 (Joshua Tree Highway) and 500 feet north of the highway from Searchlight, Nevada in the north end of Piute Valley; about 705 feet north and 1,290 feet west of the southeast corner of section 24, T. 28 S., R. 62 E.; USGS Searchlight, NV 7.5 minute topographic quadrangle; 35 degrees, 29 minutes, 21 seconds north latitude and 114 degrees, 59 minutes, 40 seconds west longitude; UTM 11, 681926e, 3929140n; NAD 83.

RANGE IN CHARACTERISTICS:

Soil moisture - Usually dry, moist in some part for short periods during winter and early spring and for 10 to 20 days cumulative between July to October following convection storms.
Soil temperature - 59 to 65 degrees F.
Depth to base of argillic horizon - 22 to 56 inches.
Depth to secondary calcium carbonate - 2 to 8 inches.
Depth to calcic horizon 22 to 56 inches.

Control section - Percent clay: 20 to 35 percent.
Rock fragments: Averages 5 to 20 percent.

A horizons - Value: 5 or 6 dry, 3 or 4 moist.
Chroma: 3 or 4.

Bk horizon - Value: 5 or 6 dry, 3 or 4 moist.
Chroma: 3 or 4.
Texture: Sandy loam or loam.
Clay content: 5 to 15 percent.
Rock fragments: 15 to 25 percent.
Effervescence: Noneffervescent through violently effervescent.
Reaction: Moderately alkaline or strongly alkaline.
Calcium carbonate equivalent in the fine earth fraction: 1 to 5 percent.

Btk horizon - Value 5 or 6 dry.
Texture: Sandy clay loam or clay loam.
Clay content: 20 to 35 percent.
Rock fragments: 5 to 30 percent.
Reaction: Moderately alkaline or strongly alkaline.
Calcium carbonate equivalent in the fine earth fraction: 5 to 15 percent.

Bkq horizons Hue: 7.5 YR or 10YR.
Value: 5 or 6 dry.
Chroma: 3 and 4.
Clay content: 4 to 15 percent.
Texture: Loamy sand to sandy loam.
Rock fragments: 15 to 50 percent.
Structure: Subangular blocky or massive.
Reaction: Moderately alkaline or strongly alkaline.
Calcium carbonate equivalent in the fine earth fraction: 5 to 15 percent.

COMPETING SERIES: These are the Blackmagic (CA), Brenda (NM), Cornville (AZ), Dona Ana (NM), Elizario (NM), Hap (NM), Jagerson (AZ), Kidwell (NV), Madurez (NM), Mcnew (NM), Mohave (AZ), Nutt (NM), Poachie (AZ), and Tres Hermanos (NM) series. Brenda, Cornville, Dona Ana, Elizario, Hap, Madurez, Mcnew, Mohave, Nutt, Poachie, and Tres Hermanos soils have significant peaks of summer moisture that affect the moisture control section and are not consistent with the moisture distribution of the Mojave Desert. Blackmagic soils have Btky horizons and Btk2 horizons with 30 to 55 percent rock fragments. Jagerson soils are 14 to 24 inches to the base of the argillic horizon and do not have Bk horizons above the argillic. Kidwell soils have non-calcareous argillic horizons and do not have Bk horizons above the argillic.

GEOGRAPHIC SETTING: Lanip soils are on fan remnants. These soils are formed in mixed alluvium. Slope ranges from 2 to 8 percent. Elevations are 2,400 to 4,200 feet. The climate is hot and arid with warm, moist winters and hot, dry summers. The mean annual precipitation is 5 to 7 inches; mean annual air temperature is 57 to 63 degrees F., and the frost-free season is 180 to 240 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Arizo, Filaree, Kidwell, Nickel, Orwash and Tenwell series. Arizo soils have sandy-skeletal particle-size control section and lack an argillic horizon. Filaree soils have coarse-loamy particle-size control section and lack an argillic horizon. Kidwell soils have a calcic horizon. Nickel soils lack an argillic horizon, have a calcic horizon and a loamy-skeletal particle-size control section. Orwash soils have a sandy particle-size control section. Tenwell soils have a moderately deep duripan.

DRAINAGE AND PERMEABILITY: Well drained; medium runoff; moderately slow permeability.

USE AND VEGETATION: These soils are used for rangeland and wildlife habitat. The present vegetation is mainly big galleta, bush muhly, Indian ricegrass, creosotebush, ephedra and winterfat.
DISTRIBUTION AND EXTENT: Mojave Desert of southern Nevada. MLRA 30. These soils are moderately extensive.

MLRA OFFICE RESPONSIBLE: Davis, California


REMARKS: Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon - 0 to 6 inches (A1 and A2 horizons).
Argillic horizon - 15 to 39 inches (Btk horizon).
Calcic horizon 39 to 60 inches (Bkq1 and 2Bkq2 horizons).
Particle-size control section - 15 to 35 inches (upper part of the Btk horizon).

National Cooperative Soil Survey
U.S.A.
The Cetrepas series consists of very shallow and shallow, well drained soils that formed in residuum and colluvium derived from granitic rock. Cetrepas soils are on backslope of mountains and hills. Slope ranges from 30 to 75 percent. The mean annual precipitation is about 9 inches and the mean annual temperature is about 55 degrees F.

**TAXONOMIC CLASS:** Loamy-skeletal, mixed, superactive, mesic, shallow Ustic Haplargids

**TYPICAL PEDON:** Cetrepas extremely stony sandy loam, rangeland and wildlife habitat. (Colors are for dry soil unless otherwise noted.) The soil surface is covered by approximately 20 percent pebbles, 20 percent cobbles and 20 percent stones.

**A1** -- 0 to 2 inches; brown (10YR 5/3) extremely stony sandy loam, very dark grayish brown (10YR 3/2) moist; strong fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial and few fine tubular pores; 20 percent pebbles, 20 percent cobbles and 20 percent stones; neutral (pH 6.8); clear smooth boundary. (1 to 3 inches thick)

**A2** -- 2 to 6 inches; brown (10YR 5/3) very gravelly sandy loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial and common very fine tubular pores; 35 percent pebbles; neutral (pH 6.8); clear wavy boundary. (2 to 5 inches thick)

**Bt1** -- 6 to 10 inches; dark yellowish brown (10YR 4/4) very gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine, few medium roots; common very fine and fine tubular and few fine interstitial pores; common distinct clay films on faces of peds and lining pores; 45 percent pebbles; neutral (pH 6.8); clear wavy boundary. (3 to 7 inches thick)

**Bt2** -- 10 to 13 inches; dark yellowish brown (10YR 4/4) very gravelly sandy clay loam, dark yellowish brown (10YR 3/4) moist; strong fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and moderately plastic; common fine and medium, few coarse roots; common very fine through medium tubular and few fine interstitial pores; common distinct clay films on faces of peds and lining pores; 55 percent pebbles; neutral (pH 6.8); abrupt wavy boundary. (0 to 5 inches thick)
Cr--13 to 24 inches; weathered and fractured granite; 95 percent rock structure; vertical cracks have a horizontal spacing of 5 inches and are filled with very gravelly sandy clay loam; very few roots in fractures; moderate excavation difficulty. (10 to 26 inches thick)

R--24 inches; hard granite.

TYPE LOCATION: Clark County, Nevada; in the Newberry Mountains approximately 2 miles along the road to the White Rock Mine; about 1,240 feet north and 2,470 feet west of the southeast corner of section 26, T. 30 S., R. 65 E.; USGS Spirit Mountain, NV 7.5 minute topographic quadrangle; 35 degrees 15 minutes 18 seconds north latitude and 114 degrees 43 minutes 38 seconds west longitude: UTM 11s, 706764e, 3903710n; NAD 83.

RANGE IN CHARACTERISTICS:

Soil moisture - Usually dry, moist in some part from December to March and intermittently moist for 10 to 20 days during July to October following summer convection storms; aridic moisture regime bordering on ustic. These soils have an aridic moisture regime that borders on ustic.

Mean annual soil temperature - 54 to 58 degrees F.

Depth to argillic: 3 to 7 inches.

Depth to paralithic: contact: 8 to 14 inches.

Depth to bedrock: 20 to 40 inches.

Reaction: Slightly acid or neutral.

Control section - Clay content: 8 to 27 percent;
Rock fragments: Averages 35 to 70 percent, mainly fine gravel.

A horizons - Value: 4 or 5 dry, 3 or 4 moist.
Chroma: 2 or 3, dry or moist.

Bt horizons - Value: 4 or 5 dry, 3 or 4 moist.
Texture: Sandy loam, sandy clay loam.
Clay content: 18 to 27 percent.
Rock fragments: 35 to 60 percent.
Structure: Strong or moderate subangular blocky.
Consistence: Soft or slightly hard dry, slightly sticky or moderately sticky, slightly plastic or moderately plastic wet.

COMPETING SERIES: These are the McClanahan and Zaqua series. McClanahan soils are not dominated by fine gravels. Zaqua soils average 27 to 35 percent clay in the particle-size
control section, have paralithic contacts at depths of 14 to 20 inches from the soil surface, and have paralithic materials that are weathered rhyolitic tuff.

**GEOGRAPHIC SETTING:** Cetrepas soils are on backslopes of mountains and hills. These soils formed in residuum and colluvium derived from granitic rock. Slope ranges from 30 to 75 percent. Elevations are 3,000 to 5,600 feet. The climate is semiarid with cool, moist winters and warm, intermittently moist summers. Precipitation is greatest in the winter with lesser secondary peak in the summer, typical of the Mojave Desert transitional to Sonoran Desert. The mean annual precipitation is 8 to 10 inches, the mean annual temperature is 52 to 56 degrees F., and the frost-free period is 140 to 180 days.

**GEOGRAPHICALLY ASSOCIATED SOILS:** This is the Nolena soil. Nolena soils do not have argillic horizons and have a thermic temperature regime.

**DRAINAGE AND PERMEABILITY:** Well drained; very high runoff; moderate permeability.

**USE AND VEGETATION:** These soils are used for rangland and wildlife habitat. The present vegetation is mainly blackbrush, Utah juniper, desert needlegrass, turbinella oak, Nolina, and yuccas.

**DISTRIBUTION AND EXTENT:** Mojave Desert of southern Nevada; MLRA 30; These soils are moderately extensive.

**MLRA OFFICE RESPONSIBLE:** Davis, California

**SERIES ESTABLISHED:** Clark County Area, Nevada, 2006. Proposed in Clark County, Nevada, 1994. The name is coined.

**REMARKS:** Diagnostic horizons and features recognized in the pedon are:

- Ochric epipedon - 0 to 6 inches (A1 and A2 horizons).
- Argillic horizon - 6 to 13 inches (Bt1 and Bt2 horizons).
- Paralithic contact - 13 inches (Cr layer).
- Particle-size control section - 0 to 13 inches (A1, A2, Bt1, and Bt2 horizons).

National Cooperative Soil Survey
U.S.A.
NOLENA SERIES

The Nolena series consists of very shallow and shallow, well drained soils that formed in residuum and colluvium from granite or altered granite rock sources. Nolena soils are on mountains, hills and rock pediments. Slope ranges from 4 to 75 percent. The mean annual precipitation is about 6 inches and the mean annual air temperature is about 60 degrees F.

TAXONOMIC CLASS: Loamy-skeletal, mixed, superactive, nonacid, thermic, shallow Typic Torriorthents

TYPICAL PEDON: Nolena extremely gravelly sandy loam, wildlife habitat. (Colors are for dry soils unless otherwise noted.) The soil surface is covered with approximately 60 percent pebbles and 15 percent cobbles.

A--0 to 2 inches; brown (10YR 5/3) extremely gravelly sandy loam, dark brown (10YR 3/3) moist; weak medium platy structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial and few fine tubular pores; 60 percent pebbles and 10 percent cobbles; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (1 to 3 inches thick)

C--2 to 5 inches; yellowish brown (10YR 5/4) extremely gravelly coarse sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine and few medium roots; common fine interstitial and few fine tubular pores; 70 percent pebbles; few faint colloidal stains on sand grains; slightly alkaline (pH 7.8); gradual smooth boundary. (3 to 12 inches thick)

Cr--5 to 11 inches; weathered granite bedrock, 70 percent rock structure; gradual wavy boundary. (5 to 10 inches thick)

R--11 inches; hard granite bedrock.

TYPE LOCATION: Clark County, Nevada; about 8 miles west of Laughlin, NV, in the southern end of the Newberry Mountains; about 1,970 feet north and 70 feet west of the southeast corner of section 19, T. 32 S., R. 64 E.; 35 degrees, 8 minutes, 36 seconds north latitude and 114 degrees, 45 minutes, 39 seconds west longitude; USGS Juniper Mine, NV 7.5 minute topographic quadrangle. UTM zone 11, 702282e, 3890534n. NAD27.

RANGE IN CHARACTERISTICS:
Soil moisture - Usually dry, moist in some part for short periods during winter and early spring and for 10 to 20 days cumulative between July to October following convection storms. Has an aridic moisture regime.

Soil temperature - 59 to 65 degrees F.

Depth to paralithic contact - 4 to 14 inches.

Depth to lithic contact - 10 to 20 inches.

Reaction - Slightly alkaline or moderately alkaline.

Control section - Clay content: Averages 8 to 18 percent.

Rock fragments: Averages 60 to 70 percent gravel, 0 to 10 percent cobbles and 0 to 10 percent stones, with half of the pebbles in the 2 to 5 millimeter fraction.

A horizon - Value: 5 or 6 dry, 3 or 4 moist.

Chroma: 3 or 4.

Other features - Noneffervescent in some pedons.

C horizon - Hue: 10YR or 7.5YR.

Value: 5 or 6 dry.

Chroma: 3 or 4.

Structure: Subangular blocky or massive.

Texture of fine earth: Coarse sandy loam or sandy loam.

COMPETING SERIES: These are the Fig (AZ) and Wikieup(T AZ) series. The Fig soils lack a lithic contact. Wikieup soils contain 35 to 60 percent rock fragment in the control section.

GEOGRAPHIC SETTING: Nolena soils are on mountains, hills and rock pediments. These soils formed in residuum and colluvium from granite and altered granitic rock sources. Slope ranges from 4 to 75 percent. Elevations are 2,500 to 5,300 feet. The climate is semiarid with cool, moist winters and hot, intermittently moist summers. The mean annual precipitation is 5 to 7 inches. The mean annual temperature is 57 to 63 degrees F., and the frost free season is 180 to 240 days.

GEOGRAPHICALLY ASSOCIATED SOILS: This is the Cetrepas soil. Cetrepas soils have argillic horizons and mean annual soil temperature of 55 to 58 degrees F.
DRAINAGE AND PERMEABILITY: Well drained; very high runoff; moderately rapid permeability.

USE AND VEGETATION: These soils are used for rangeland and wildlife habitat. The present vegetation is mainly blackbrush, Mojave buckwheat, range ratany and creosotebush.

DISTRIBUTION AND EXTENT: Mojave Desert of southern Nevada; MLRA 30. These soils are moderately extensive.

MLRA OFFICE RESPONSIBLE: Davis, California


REMARKS: Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon 0 to 5 inches (A and C horizons).

Paralithic contact - 5 inches (Cr horizon).

Lithic contact - 11 inches (R horizon).

Particle-size control section - 0 to 5 inches (A and C horizons).