PEDON DESCRIPTION -- NEON Site DCFS

Print Date: Apr 4 2018
Description Date: May 23 2017
Describer: Kyle Thomson, Jordaan Thompson, Jeanne Heileg
NEON Plot ID: DCFS_001
Site ID: S2017ND093001

Pedon ID: S2017ND093001
Site Note:
Pedon Note: This pedon description is being entered from field observations as part of the NEON Sampling Initiative. Pedons were described at the NEON Dakota Coteau Field School Site located in Stutsman County, North Dakota. ; This pedon met the criteria for a mollic epipedon after mixing the top 18 centimeters.
Lab Source ID:
Lab Pedon #:
Soil Name as Described/Sampled: Zahl
Classification: Fine-loamy, mixed, superactive, frigid Typic Calciustolls
Soil Name as Correlated:
Classification:
Pedon Type: undefined observation
Pedon Purpose: research site
Taxon Kind: series
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: on shoulder of nose slope of disintegration moraine on till plain
Upslope Shape: convex
Cross Slope Shape: convex
Particle Size Control Section: 25 to 100 cm.
Description origin: NASIS
Diagnostic Features: mollic epipedon 0 to 18 cm.
calcic horizon 15 to 42 cm.

Country:
State: North Dakota
County: Stutsman
MLRA: 53B -- Central Dark Brown Glaciated Plains
Soil Survey Area: ND093 -- Stutsman County, North Dakota
10-BIS -- Bismarck, North Dakota
Map Unit:
Pit Location:
Quad Name:
Std Latitude: 47.2077000
Std Longitude: -99.1669830
Latitude:
Longitude:
Datum: WGS84
UTM Zone: 14
UTM Easting:
UTM Northing:
Primary Earth Cover: Grass/herbaceous cover
Secondary Earth Cover: Tame pastureland
Existing Vegetation:
Parent Material: till
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments:
Description database: NSSC Pangaea

Cont. Site ID: S2017ND093001 **Pedon ID:** S2017ND093001

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
15.0	575.0	270						well		

A--0 to 15 centimeters (0.0 to 5.9 inches); dark gray (10YR 4/1) loam, black (10YR 2/1), moist; 35 percent sand; 22 percent clay; moderate medium granular structure; slightly hard, friable, slightly sticky, slightly plastic; many very fine roots throughout and common fine roots throughout; many very fine dendritic tubular and common fine dendritic tubular pores; 2 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; noneffervescent; clear smooth boundary.

Bk--15 to 42 centimeters (5.9 to 16.5 inches); light brownish gray (10YR 6/2) clay loam, dark grayish brown (10YR 4/2), moist; 45 percent sand; 28 percent clay; moderate medium prismatic parts to moderate medium subangular blocky structure; moderately hard, firm, moderately sticky, moderately plastic; many very fine roots throughout; common very fine dendritic tubular pores; carbonate, finely disseminated and 2 percent fine irregular carbonate masses throughout; 5 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; violent effervescence; clear wavy boundary.

C--42 to 100 centimeters (16.5 to 39.4 inches); light gray (10YR 7/2) loam, light brownish gray (10YR 6/2), moist; 43 percent sand; 25 percent clay; massive; slightly hard, friable, moderately sticky, moderately plastic; common very fine roots throughout; common very fine dendritic tubular pores; 10 percent fine irregular carbonate masses throughout and 3 percent medium irregular carbonate bands throughout; 8 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; violent effervescence.

PEDON DESCRIPTION -- NEON Site DCFS

Print Date: Apr 4 2018
Description Date: May 22 2017
Describer: Kyle Thomson, Perry Sullivan, John Kempenich
NEON Plot ID: DCFS_004
Site ID: S2017ND093004

Pedon ID: S2017ND093004
Site Note:
Pedon Note: This pedon description is being entered from field observations as part of the NEON Sampling Initiative. Pedons were described at the NEON Dakota Coteau Field School Site located in Stutsman County, North Dakota. ; This pedon met the criteria for a mollic epipedon after mixing the top 18 centimeters.
Lab Source ID:
Lab Pedon #:
Soil Name as Described/Sampled: Sioux
Classification: Sandy or sandy-skeletal, mixed, superactive, frigid Entic Hapludolls
Soil Name as Correlated:
Classification:
Pedon Type: undefined observation
Pedon Purpose: research site
Taxon Kind: series
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: on backslope of side slope of outwash plain on till plain
Upslope Shape: convex
Cross Slope Shape: convex
Particle Size Control Section: 25 to 100 cm.

Description origin: NASIS
Diagnostic Features: mollic epipedon 0 to 18 cm.
calcic horizon 11 to 40 cm.

Country:
State: North Dakota
County: Stutsman
MLRA: 55B -- Central Black Glaciated Plains
Soil Survey Area: ND093 -- Stutsman County, North Dakota
10-DVL -- Devils Lake, North Dakota
Map Unit:
Pit Location:

Quad Name:

Std Latitude: 47.1714350
Std Longitude: -99.0513450

Latitude:
Longitude:
Datum: WGS84
UTM Zone: 14
UTM Easting:
UTM Northing:

Primary Earth Cover: Grass/herbaceous cover
Secondary Earth Cover: Grassland rangeland
Existing Vegetation:
Parent Material: outwash
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments: 3.0 percent nonflat subangular indurated 250- to 600-millimeter Mixed rock fragments

Description database: NSSC Pangaea

Cont. Site ID: S2017ND093004 **Pedon ID:** S2017ND093004

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
18.0	505.0	200						excessively		

A--0 to 11 centimeters (0.0 to 4.3 inches); very dark grayish brown (10YR 3/2) very gravelly loam, dark grayish brown (10YR 4/2), dry; 48 percent sand; 22 percent clay; moderate medium granular structure; soft, very friable, slightly sticky, slightly plastic; many very fine roots throughout and common fine roots throughout; common very fine dendritic tubular and common fine dendritic tubular pores; 40 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; noneffervescent; clear wavy boundary.

Bk--11 to 40 centimeters (4.3 to 15.7 inches); dark yellowish brown (10YR 4/4) very gravelly loamy coarse sand, dark yellowish brown (10YR 4/4), dry; 85 percent sand; 10 percent clay; weak medium subangular blocky structure; loose, loose, nonsticky, nonplastic; common very fine roots throughout; carbonate, finely disseminated; 55 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; strong effervescence; clear wavy boundary.

C--40 to 100 centimeters (15.7 to 39.4 inches); dark yellowish brown (10YR 4/4) extremely gravelly coarse sand, yellowish brown (10YR 5/6), dry; 90 percent sand; 4 percent clay; single grain; loose, loose, nonsticky, nonplastic; common very fine roots throughout; 1 percent fine carbonate masses throughout; 67 percent nonflat subangular indurated 2 to 75-millimeter Mixed rock fragments; violent effervescence.

PEDON DESCRIPTION -- NEON Site DCFS

Print Date: Apr 4 2018
Description Date: May 24 2017
Describer: John, Kempenich, Keith Anderson, Andrea Williams
NEON Plot ID: DCFS_007
Site ID: S2017ND093007

Pedon ID: S2017ND093007
Site Note:
Pedon Note: This pedon description is being entered from field observations as part of the NEON Sampling Initiative. Pedons were described at the NEON Dakota Coteau Field School Site located in Stutsman County, North Dakota.
Lab Source ID:
Lab Pedon #:
Soil Name as Described/Sampled: Williams
Classification: Fine-loamy, mixed, superactive, frigid Typic Argiustolls
Soil Name as Correlated:
Classification:
Pedon Type: undefined observation
Pedon Purpose: research site
Taxon Kind: series
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: on backslope of side slope of disintegration moraine on till plain
Upslope Shape: linear
Cross Slope Shape: linear
Particle Size Control Section: 27 to 40 cm.
Description origin: NASIS
Diagnostic Features: mollic epipedon 0 to 27 cm.
argillic horizon 27 to 40 cm.
calcic horizon 40 to 70 cm.

Country:
State: North Dakota
County: Stutsman
MLRA: 53B -- Central Dark Brown Glaciated Plains
Soil Survey Area: ND093 -- Stutsman County, North Dakota
10-BIS -- Bismarck, North Dakota
Map Unit:
Pit Location:
Quad Name:
Std Latitude: 47.1633383
Std Longitude: -99.1159183
Latitude:
Longitude:
Datum: WGS84
UTM Zone: 14
UTM Easting:
UTM Northing:
Primary Earth Cover: Grass/herbaceous cover
Secondary Earth Cover: Grassland rangeland
Existing Vegetation:
Parent Material: till
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments:
Description database: NSSC Pangaea

Cont. Site ID: S2017ND093007 **Pedon ID:** S2017ND093007

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
10.0	570.0	135						well		

A--0 to 27 centimeters (0.0 to 10.6 inches); very dark grayish brown (2.5Y 3/2) silt loam, black (2.5Y 2.5/1), moist; 30 percent sand; 19 percent clay; moderate coarse subangular blocky parts to moderate coarse granular structure; soft, very friable, slightly sticky, slightly plastic; many very fine roots throughout and common fine roots throughout; common very fine dendritic tubular pores; 3 percent nonflat subrounded indurated 2 to 10-millimeter Mixed rock fragments; noneffervescent; clear wavy boundary.

Bt--27 to 40 centimeters (10.6 to 15.7 inches); light olive brown (2.5Y 5/4) clay loam, olive brown (2.5Y 4/4), moist; 30 percent sand; 30 percent clay; moderate medium prismatic parts to moderate medium subangular blocky structure; slightly hard, friable, moderately sticky, moderately plastic; common very fine roots throughout; common very fine dendritic tubular pores; 70 percent distinct 2.5Y 3/2), moist, clay films on all faces of peds; 4 percent nonflat subrounded indurated 2 to 10-millimeter Mixed rock fragments; noneffervescent; clear wavy boundary.

Bk--40 to 70 centimeters (15.7 to 27.6 inches); light olive brown (2.5Y 5/3) clay loam, light brownish gray (2.5Y 6/2), moist; 40 percent sand; 28 percent clay; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky, moderately plastic; common very fine roots throughout; common very fine dendritic tubular pores; carbonate coats on bottom of rock fragments; carbonate, finely disseminated throughout and 6 percent fine irregular carbonate masses throughout; 6 percent flat angular moderately cemented 2 to 75-millimeter Shale fragments and 8 percent nonflat subrounded indurated 2 to 10-millimeter Mixed rock fragments; strong effervescence; gradual wavy boundary.

C--70 to 104 centimeters (27.6 to 40.9 inches); light yellowish brown (2.5Y 6/3) clay loam, light olive brown (2.5Y 5/3), moist; 40 percent sand; 28 percent clay; massive; slightly hard, friable, moderately sticky, moderately plastic; common very fine roots throughout; common very fine dendritic tubular pores; carbonate coats on bottom of rock fragments; 3 percent fine prominent masses of oxidized iron In matrix; carbonate, finely disseminated in matrix and 8 percent coarse irregular carbonate masses in matrix; 5 percent flat angular moderately cemented 2 to 75-millimeter Shale fragments and 7 percent nonflat subrounded indurated 2 to 10-millimeter Mixed rock fragments; strong effervescence.

PEDON DESCRIPTION -- NEON Site DCFS

Print Date: Apr 4 2018
Description Date: May 23 2017
Describer: Perry Sullivan, Brianna Wegner, Andrea Williams
NEON Plot ID: DCFS_010
Site ID: S2017ND093010

Pedon ID: S2017ND093010
Site Note:
Pedon Note: This pedon description is being entered from field observations as part of the NEON Sampling Initiative. Pedons were described at the NEON Dakota Coteau Field School Site located in Stutsman County, North Dakota.
Lab Source ID:
Lab Pedon #:
Soil Name as Described/Sampled: Grail
Classification: Fine, smectitic, frigid Vertic Argiustolls
Soil Name as Correlated:
Classification:
Pedon Type: undefined observation
Pedon Purpose: research site
Taxon Kind: series
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: on toeslope of base slope of swale on till plain
Upslope Shape: linear
Cross Slope Shape: linear
Particle Size Control Section: 38 to 87 cm.
Description origin: NASIS
Diagnostic Features: mollic epipedon 0 to 87 cm.
argillic horizon 38 to 87 cm.
slickensides 38 to 87 cm.

Country:
State: North Dakota
County: Stutsman
MLRA: 53B -- Central Dark Brown Glaciated Plains
Soil Survey Area: ND093 -- Stutsman County, North Dakota
10-BIS -- Bismarck, North Dakota
Map Unit:
Pit Location:
Quad Name:
Std Latitude: 47.2100116
Std Longitude: -99.1721616
Latitude:
Longitude:
Datum: WGS84
UTM Zone: 14
UTM Easting:
UTM Northing:
Primary Earth Cover: Grass/herbaceous cover
Secondary Earth Cover: Grassland rangeland
Existing Vegetation:
Parent Material: local alluvium
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments:
Description database: NSSC Pangaea

Cont. Site ID: S2017ND093010 **Pedon ID:** S2017ND093010

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
7.0	577.0	196						well		

A1--0 to 21 centimeters (0.0 to 8.3 inches); very dark brown (10YR 2/2) silt loam, black (10YR 2/1), moist; 22 percent sand; 22 percent clay; weak medium subangular blocky parts to moderate fine granular structure; slightly hard, friable, slightly sticky, slightly plastic; many very fine roots throughout and common fine roots throughout; noneffervescent; clear smooth boundary.

A2--21 to 38 centimeters (8.3 to 15.0 inches); black (10YR 2/1) clay loam, black (10YR 2/1), moist; 35 percent sand; 30 percent clay; weak medium subangular blocky parts to moderate fine granular structure; slightly hard, friable, slightly sticky, slightly plastic; many very fine roots throughout and common fine roots throughout; common fine dendritic tubular pores; noneffervescent; gradual smooth boundary.

Btss1--38 to 70 centimeters (15.0 to 27.6 inches); black (2.5Y 2.5/1) clay, black (2.5Y 2.5/1), moist; 20 percent sand; 50 percent clay; weak coarse prismatic parts to moderate medium angular blocky structure; moderately hard, firm, moderately sticky, moderately plastic; common fine roots throughout; common fine dendritic tubular pores; 20 percent 10YR 2/1), moist, slickensides (pedogenic) on all faces of peds and 20 percent 10YR 2/1), moist, clay films on all faces of peds; noneffervescent; gradual wavy boundary.

Btss2--70 to 87 centimeters (27.6 to 34.3 inches); very dark gray (2.5Y 3/1) silty clay, very dark gray (2.5Y 3/1), moist; 15 percent sand; 44 percent clay; weak coarse prismatic structure; moderately hard, firm, moderately sticky, moderately plastic; common fine roots throughout; common fine dendritic tubular pores; 20 percent 10YR 2/1), moist, clay films on all faces of peds and 20 percent slickensides (pedogenic) on all faces of peds; noneffervescent; gradual wavy boundary.

2C--87 to 100 centimeters (34.3 to 39.4 inches); grayish brown (2.5Y 5/2) sandy clay loam, dark grayish brown (2.5Y 4/2), moist; 55 percent sand; 10 percent silt; 30 percent clay; massive; slightly hard, friable, slightly sticky, slightly plastic; few fine roots throughout; common very fine dendritic tubular pores; 5 percent fine distinct 2.5Y 5/4), moist, masses of oxidized iron In matrix and 15 percent medium prominent 2.5Y 6/8), moist, masses of oxidized iron In matrix; 10 percent nonflat subrounded indurated 2 to 20-millimeter Mixed rock fragments; noneffervescent.

PEDON DESCRIPTION -- NEON Site DCFS

Print Date: Apr 4 2018
Description Date: May 23 2017
Describer: John Kempenich, Keith Anderson, Beth Burdolski
NEON Plot ID: DCFS_011
Site ID: S2017ND093011

Pedon ID: S2017ND093011
Site Note:
Pedon Note: This pedon description is being entered from field observations as part of the NEON Sampling Initiative. Pedons were described at the NEON Dakota Coteau Field School Site located in Stutsman County, North Dakota.
Lab Source ID:
Lab Pedon #:
Soil Name as Described/Sampled: Bowbells
Classification: Fine-loamy, mixed, superactive, frigid Pachic Argiustolls
Soil Name as Correlated:
Classification:
Pedon Type: undefined observation
Pedon Purpose: research site
Taxon Kind: series
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: on footslope of base slope of ground moraine on till plain
Upslope Shape: concave
Cross Slope Shape: linear
Particle Size Control Section: 25 to 75 cm.
Description origin: NASIS
Diagnostic Features: mollic epipedon 0 to 68 cm.
argillic horizon 25 to 108 cm.

Country:
State: North Dakota
County: Stutsman
MLRA: 53B -- Central Dark Brown Glaciated Plains
Soil Survey Area: ND093 -- Stutsman County, North Dakota
10-BIS -- Bismarck, North Dakota
Map Unit:
Pit Location:
Quad Name:
Std Latitude: 47.2019883
Std Longitude: -99.1739916
Latitude:
Longitude:
Datum: WGS84
UTM Zone: 14
UTM Easting:
UTM Northing:
Primary Earth Cover: Grass/herbaceous cover
Secondary Earth Cover: Grassland rangeland
Existing Vegetation:
Parent Material: till
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments:
Description database: NSSC Pangaea

Cont. Site ID: S2017ND093011 **Pedon ID:** S2017ND093011

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
4.0	579.0	45						moderately well		

A--0 to 25 centimeters (0.0 to 9.8 inches); very dark gray (10YR 3/1) loam, black (10YR 2/1), moist; 30 percent sand; 20 percent clay; moderate medium subangular blocky parts to moderate medium granular structure; soft, very friable, slightly sticky, slightly plastic; common fine roots throughout; many fine dendritic tubular pores; 1 percent nonflat subrounded indurated 20 to 75-millimeter Mixed rock fragments; noneffervescent; clear wavy boundary.

Bt1--25 to 68 centimeters (9.8 to 26.8 inches); dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2), moist; 35 percent sand; 26 percent clay; strong medium prismatic parts to moderate medium subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; common fine roots throughout; common fine dendritic tubular pores; 50 percent faint 10YR 2/2), moist, clay films on all faces of peds; 1 percent nonflat subrounded indurated 20 to 75-millimeter Mixed rock fragments; noneffervescent; clear irregular boundary.

Bt2--68 to 108 centimeters (26.8 to 42.5 inches); light olive brown (2.5Y 5/3) clay loam, olive brown (2.5Y 4/3), moist; 40 percent sand; 34 percent clay; strong medium prismatic parts to moderate medium angular blocky structure; moderately hard, firm, moderately sticky, moderately plastic; common fine dendritic tubular pores; 75 percent faint 2.5Y 3/3), moist, clay films on all faces of peds; 15 percent medium 10YR 5/6), moist, masses of oxidized iron In matrix; 3 percent nonflat subrounded indurated 2 to 20-millimeter Mixed rock fragments; noneffervescent; gradual wavy boundary.

Bk--108 to 120 centimeters (42.5 to 47.2 inches); olive brown (2.5Y 4/4) clay loam, olive brown (2.5Y 4/4), moist; 10 percent sand; 32 percent clay; moderate medium subangular blocky structure; moderately hard, firm, moderately sticky, moderately plastic; common fine roots throughout; 1 percent fine 7.5YR 5/8), moist, masses of oxidized iron In matrix and 3 percent medium 2.5Y 5/2), moist, iron depletions In matrix; 7 percent coarse irregular carbonate masses in matrix; 5 percent nonflat subrounded indurated 2 to 20-millimeter Mixed rock fragments; strong effervescence.

PEDON DESCRIPTION -- NEON Site DCFS

Print Date: Apr 4 2018

Description Date: May 24 2017

Describer: John Kempenich, Keith Anderson, Andrea Williams, Beth Burdolski

NEON Plot ID: DCFS_014

Site ID: S2017ND093014

Pedon ID: S2017ND093014

Site Note:

Pedon Note: This pedon description is being entered from field observations as part of the NEON Sampling Initiative. Pedons were described at the NEON Dakota Coteau Field School Site located in Stutsman County, North Dakota.

Lab Source ID:

Lab Pedon #:

Soil Name as Described/Sampled: Arnegard

Classification: Fine-loamy, mixed, superactive, frigid Pachic Haplustolls

Soil Name as Correlated:

Classification:

Pedon Type: undefined observation

Pedon Purpose: research site

Taxon Kind: series

Associated Soils:

Physiographic Division:

Physiographic Province:

Physiographic Section:

State Physiographic Area:

Local Physiographic Area:

Geomorphic Setting: on footslope of base slope of disintegration moraine on till plain

Upslope Shape: concave

Cross Slope Shape: linear

Particle Size Control Section: 25 to 100 cm.

Description origin: NASIS

Diagnostic Features: mollic epipedon 0 to 57 cm.
calcic horizon 57 to 105 cm.

Country:

State: North Dakota

County: Stutsman

MLRA: 53B -- Central Dark Brown Glaciated Plains

Soil Survey Area: ND093 -- Stutsman County, North Dakota
10-BIS -- Bismarck, North Dakota

Map Unit:

Pit Location:

Quad Name:

Std Latitude: 47.1193733

Std Longitude: -99.0575633

Latitude:

Longitude:

Datum: WGS84

UTM Zone: 14

UTM Easting:

UTM Northing:

Primary Earth Cover: Grass/herbaceous cover

Secondary Earth Cover: Grassland rangeland

Existing Vegetation:

Parent Material: till

Bedrock Kind:

Bedrock Depth:

Bedrock Hardness:

Bedrock Fracture Interval:

Surface Fragments:

Description database: NSSC Pangaea

Cont. Site ID: S2017ND093014 **Pedon ID:** S2017ND093014

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
6.0	573.0	315						moderately well		

A--0 to 34 centimeters (0.0 to 13.4 inches); very dark gray (10YR 3/1) loam, black (10YR 2/1), moist; 42 percent sand; 25 percent clay; moderate medium granular parts to moderate fine granular structure; slightly hard, friable, slightly sticky, slightly plastic; many very fine roots throughout and common fine roots throughout; noneffervescent; gradual wavy boundary.

Bw--34 to 57 centimeters (13.4 to 22.4 inches); brown (10YR 4/3) clay loam, very dark grayish brown (10YR 3/2), moist; 40 percent sand; 27 percent clay; moderate coarse prismatic parts to moderate coarse subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; common very fine roots throughout and common fine roots throughout; common fine dendritic tubular pores; 30 percent 10YR 2/2), moist, clay films on all faces of peds; 2 percent nonflat subrounded indurated 10 to 50-millimeter Mixed rock fragments; noneffervescent; clear wavy boundary.

Bk1--57 to 93 centimeters (22.4 to 36.6 inches); light olive brown (2.5Y 5/3) clay loam, olive brown (2.5Y 4/3), moist; 40 percent sand; 28 percent clay; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; common very fine roots throughout and common fine roots throughout; many fine dendritic tubular pores; carbonate, finely disseminated in matrix and 5 percent medium irregular carbonate masses in matrix; 2 percent nonflat subrounded indurated 10 to 50-millimeter Mixed rock fragments; violent effervescence; gradual wavy boundary.

Bk2--93 to 105 centimeters (36.6 to 41.3 inches); light yellowish brown (2.5Y 6/3) loam, light olive brown (2.5Y 5/3), moist; 30 percent sand; 25 percent clay; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; common very fine roots throughout; many fine dendritic tubular pores; 2 percent fine prominent 5YR 4/6) masses of oxidized iron In matrix; carbonate, finely disseminated in matrix and 4 percent fine irregular carbonate masses in matrix; 2 percent nonflat subrounded indurated 10 to 50-millimeter Mixed rock fragments; violent effervescence.

PEDON DESCRIPTION -- NEON Site DCFS

Print Date: Apr 4 2018
Description Date: May 24 2017
Describer: Perry Sullivan, Brianna Wegner, Beth Burdolski
NEON Plot ID: DCFS_016
Site ID: S2017ND093016

Pedon ID: S2017ND093016
Site Note:
Pedon Note: This pedon description is being entered from field observations as part of the NEON Sampling Initiative. Pedons were described at the NEON Dakota Coteau Field School Site located in Stutsman County, North Dakota.
Lab Source ID:
Lab Pedon #:
Soil Name as Described/Sampled: Bowbells
Classification: Fine-loamy, mixed, superactive, frigid Pachic Argiustolls
Soil Name as Correlated:
Classification:
Pedon Type: undefined observation
Pedon Purpose: research site
Taxon Kind: series
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: on backslope of ground moraine on till plain
Upslope Shape: convex
Cross Slope Shape: convex
Particle Size Control Section: 18 to 51 cm.
Description origin: NASIS
Diagnostic Features: mollic epipedon 0 to 51 cm.
argillic horizon 18 to 80 cm.
calcic horizon 51 to 80 cm.

Country:
State: North Dakota
County: Stutsman
MLRA: 53B -- Central Dark Brown Glaciated Plains
Soil Survey Area: ND093 -- Stutsman County, North Dakota
10-BIS -- Bismarck, North Dakota
Map Unit:
Pit Location:
Quad Name:
Std Latitude: 47.1568433
Std Longitude: -99.1139900
Latitude:
Longitude:
Datum: WGS84
UTM Zone: 14
UTM Easting:
UTM Northing:
Primary Earth Cover: Grass/herbaceous cover
Secondary Earth Cover: Grassland rangeland
Existing Vegetation:
Parent Material: till
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments:
Description database: NSSC Pangaea

Cont. Site ID: S2017ND093016 **Pedon ID:** S2017ND093016

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
2.0	575.0	0						well		

A--0 to 18 centimeters (0.0 to 7.1 inches); very dark gray (10YR 3/1) loam, black (10YR 2/1), moist; 45 percent sand; 18 percent clay; moderate medium subangular blocky parts to moderate medium granular structure; slightly hard, friable, slightly sticky, slightly plastic; many very fine roots throughout and common medium roots throughout and common fine roots throughout; noneffervescent; clear wavy boundary.

Bt--18 to 51 centimeters (7.1 to 20.1 inches); brown (10YR 4/3) clay loam, very dark grayish brown (10YR 3/2), moist; 37 percent sand; 30 percent clay; moderate medium prismatic parts to moderate medium subangular blocky structure; moderately hard, firm, moderately sticky, moderately plastic; common very fine roots throughout and common fine roots throughout; common very fine dendritic tubular and common fine dendritic tubular pores; 5 percent faint 10YR 2/2), moist, clay films on all faces of peds; 1 percent nonflat subrounded indurated 2 to 10-millimeter Mixed rock fragments; noneffervescent; clear wavy boundary.

Btk--51 to 80 centimeters (20.1 to 31.5 inches); light olive brown (2.5Y 5/4) clay loam, olive brown (2.5Y 4/4), moist; 35 percent sand; 32 percent clay; moderate medium prismatic parts to moderate medium subangular blocky structure; moderately hard, firm, moderately sticky, moderately plastic; common very fine roots throughout and common fine roots throughout; many fine dendritic tubular pores; 1 percent faint 2.5Y 4/3), moist, clay films on all faces of peds; 4 percent fine distinct 10YR 6/4), moist, masses of oxidized iron In matrix; carbonate, finely disseminated in matrix and 7 percent medium irregular 2.5Y 7/2), moist, carbonate masses in matrix; 3 percent nonflat subrounded indurated 10 to 75-millimeter Mixed rock fragments and 7 percent nonflat subrounded indurated 2 to 10-millimeter Mixed rock fragments; strong effervescence; gradual wavy boundary.

C--80 to 110 centimeters (31.5 to 43.3 inches); light yellowish brown (2.5Y 6/3) clay loam, light olive brown (2.5Y 5/3), moist; 40 percent sand; 31 percent clay; massive; moderately hard, firm, moderately sticky, moderately plastic; many fine dendritic tubular pores; 3 percent fine prominent 7.5YR 5/8), moist, masses of oxidized iron In matrix and 7 percent medium prominent 10YR 6/6), moist, masses of reduced iron In matrix; carbonate, finely disseminated in matrix and 10 percent medium irregular 2.5Y 7/2), moist, carbonate masses in matrix; 1 percent nonflat subrounded indurated 5 to 75-millimeter Mixed rock fragments and 2 percent nonflat subrounded indurated 2 to 5-millimeter Mixed rock fragments; strong effervescence.

PEDON DESCRIPTION -- NEON Site DCFS

Print Date: Apr 4 2018

Description Date: May 22 2017

Describer: Beth Burdolski, Jordaan Thompson, Brianna Wegner, Keith Anderson

NEON Plot ID: DCFS_020

Site ID: S2017ND093020

Pedon ID: S2017ND093020

Site Note:

Pedon Note: This pedon description is being entered from field observations as part of the NEON Sampling Initiative. Pedons were described at the NEON Dakota Coteau Field School Site located in Stutsman County, North Dakota.

Lab Source ID:

Lab Pedon #:

Soil Name as Described/Sampled: Aastad

Classification: Fine-loamy, mixed, superactive, frigid Pachic Argiudolls

Soil Name as Correlated:

Classification:

Pedon Type: undefined observation

Pedon Purpose: research site

Taxon Kind: series

Associated Soils:

Physiographic Division:

Physiographic Province:

Physiographic Section:

State Physiographic Area:

Local Physiographic Area:

Geomorphic Setting: on summit of interfluve of ground moraine on till plain

Upslope Shape: linear

Cross Slope Shape: linear

Particle Size Control Section: 24 to 74 cm.

Description origin: NASIS

Diagnostic Features: mollic epipedon 0 to 50 cm.
argillic horizon 24 to 74 cm.
calcic horizon 50 to 74 cm.

Country:

State: North Dakota

County: Stutsman

MLRA: 55B -- Central Black Glaciated Plains

Soil Survey Area: ND093 -- Stutsman County, North Dakota
10-DVL -- Devils Lake, North Dakota

Map Unit:

Pit Location:

Quad Name:

Std Latitude: 47.1692650

Std Longitude: -99.0569183

Latitude:

Longitude:

Datum: WGS84

UTM Zone: 14

UTM Easting:

UTM Northing:

Primary Earth Cover: Grass/herbaceous cover

Secondary Earth Cover: Grassland rangeland

Existing Vegetation:

Parent Material: till

Bedrock Kind:

Bedrock Depth:

Bedrock Hardness:

Bedrock Fracture Interval:

Surface Fragments: 2.0 percent nonflat subrounded indurated 76- to 250-millimeter Mixed rock fragments and 5.0 percent nonflat subrounded indurated 250- to 600-millimeter Mixed rock fragments

Description database: NSSC Pangaea

Cont. Site ID: S2017ND093020 **Pedon ID:** S2017ND093020

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
2.0	521.0	141						well		

A--0 to 24 centimeters (0.0 to 9.4 inches); dark brown (10YR 3/3) loam, brown (10YR 4/3), dry; 35 percent sand; 20 percent clay; moderate medium prismatic parts to moderate medium subangular blocky structure; soft, friable, slightly sticky, slightly plastic; many fine roots throughout; many fine dendritic tubular pores; 5 percent nonflat subrounded indurated 76 to 250-millimeter Mixed rock fragments and 7 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; noneffervescent; clear smooth boundary.

Bt--24 to 50 centimeters (9.4 to 19.7 inches); very dark grayish brown (10YR 3/2) extremely cobbly sandy clay loam, brown (10YR 4/3), dry; 55 percent sand; 34 percent clay; strong medium prismatic parts to moderate medium subangular blocky structure; soft, friable, slightly sticky, slightly plastic; common medium roots throughout and many fine roots throughout; many medium dendritic tubular pores; 10 percent 10YR 3/3), moist, clay films on all faces of peds; 20 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments and 50 percent nonflat subrounded indurated 76 to 250-millimeter Mixed rock fragments; noneffervescent; clear smooth boundary.

Btk--50 to 74 centimeters (19.7 to 29.1 inches); olive brown (2.5Y 4/3) clay loam, olive brown (2.5Y 4/4), dry; 30 percent sand; 30 percent clay; strong medium prismatic parts to moderate medium subangular blocky structure; soft, friable, moderately sticky, moderately plastic; common fine roots throughout; common fine dendritic tubular pores; 10 percent 2.5Y 4/3), moist, clay films on all faces of peds; carbonate, finely disseminated in matrix; 4 percent nonflat subangular indurated 2 to 75-millimeter Mixed rock fragments; strong effervescence; gradual smooth boundary.

C--74 to 105 centimeters (29.1 to 41.3 inches); light olive brown (2.5Y 5/4) clay loam, light yellowish brown (2.5Y 6/4), dry; 30 percent sand; 30 percent clay; massive; soft, friable, moderately sticky, moderately plastic; 5 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; strong effervescence.

PEDON DESCRIPTION -- NEON Site DCFS

Print Date: Apr 4 2018
Description Date: May 24 2017
Describer: Kyle Thomson, Perry Sullivan, Brianna Wegner, Jeanne Heileg
NEON Plot ID: DCFS_022
Site ID: S2017ND093022

Pedon ID: S2017ND093022
Site Note:
Pedon Note: This pedon description is being entered from field observations as part of the NEON Sampling Initiative. Pedons were described at the Dakota Coteau Field School which is located in Stutsman County, North Dakota.
Lab Source ID:
Lab Pedon #:
Soil Name as Described/Sampled: Badger
Classification: Fine, smectitic, frigid Vertic Argiaquolls
Soil Name as Correlated:
Classification:
Pedon Type: undefined observation
Pedon Purpose: research site
Taxon Kind: series
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: swale on till plain
Upslope Shape: concave
Cross Slope Shape: linear
Particle Size Control Section: 18 to 33 cm.
Description origin: NASIS
Diagnostic Features: mollic epipedon 0 to 33 cm.
argillic horizon 18 to 33 cm.
aquic conditions 18 to 100 cm.

Country:
State: North Dakota
County: Stutsman
MLRA: 53B -- Central Dark Brown Glaciated Plains
Soil Survey Area: ND093 -- Stutsman County, North Dakota
10-BIS -- Bismarck, North Dakota
Map Unit:
Pit Location:
Quad Name:
Std Latitude: 47.1549240
Std Longitude: -99.1068200
Latitude:
Longitude:
Datum: WGS84
UTM Zone: 14
UTM Easting:
UTM Northing:
Primary Earth Cover: Grass/herbaceous cover
Secondary Earth Cover: Grassland rangeland
Existing Vegetation:
Parent Material: Local alluvium
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments:
Description database: NSSC Pangaea

Cont. Site ID: S2017ND093022 **Pedon ID:** S2017ND093022

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
0.0	561.0	350						somewhat poorly		

A--0 to 18 centimeters (0.0 to 7.1 inches); black (10YR 2/1) clay loam, black (10YR 2/1), dry; 35 percent sand; 28 percent clay; moderate medium subangular blocky parts to weak fine granular structure; soft, friable, slightly sticky, slightly plastic; many very fine roots throughout and many fine roots throughout; many fine tubular pores; noneffervescent, by HCl, 1 normal; gradual wavy boundary.

Bt--18 to 33 centimeters (7.1 to 13.0 inches); very dark brown (10YR 2/2) clay, very dark grayish brown (10YR 3/2), dry; 22 percent sand; 42 percent clay; moderate medium prismatic parts to moderate medium subangular blocky structure; slightly hard, friable, moderately sticky, moderately plastic; common very fine roots throughout and common medium roots throughout and common fine roots throughout; many fine tubular pores; 5 percent 10YR 3/1) organic stains on all faces of peds and 10 percent 10YR 3/1) clay films on all faces of peds; 5 percent fine 10YR 4/2) masses of oxidized iron On faces of peds; noneffervescent, by HCl, 1 normal; clear wavy boundary.

Bk1--33 to 66 centimeters (13.0 to 26.0 inches); brown (10YR 4/3) loam, brown (10YR 5/3), dry; 34 percent sand; 26 percent clay; weak medium prismatic parts to moderate medium subangular blocky structure; soft, friable, slightly sticky, moderately plastic; common fine roots throughout; common fine tubular pores; 7 percent fine 2.5Y 5/6) masses of oxidized iron On faces of peds; 10 percent fine carbonate masses; 3 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; violent effervescence, by HCl, 1 normal; gradual wavy boundary.

Bk2--66 to 100 centimeters (26.0 to 39.4 inches); light olive brown (2.5Y 5/3) loam, light olive brown (2.5Y 5/3), dry; 36 percent sand; 25 percent clay; weak medium prismatic parts to moderate medium subangular blocky structure; soft, friable, slightly sticky, moderately plastic; common medium roots throughout and many fine roots throughout; common medium tubular and many fine tubular pores; 10 percent fine 2.5Y 5/6) masses of oxidized iron On faces of peds; 5 percent fine carbonate masses; 3 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; violent effervescence, by HCl, 1 normal.

PEDON DESCRIPTION -- NEON Site DCFS

Print Date: Apr 4 2018
Description Date: May 23 2017
Describer: John Kempenich, Keith Anderson, Beth Burdolski
NEON Plot ID: DCFS_023
Site ID: S2017ND093023

Pedon ID: S2017ND093023
Site Note:
Pedon Note: This pedon description is being entered from field observations as part of the NEON Sampling Initiative. Pedons were described at the Dakota Coteau Field School which is located in Stutsman County, North Dakota. Strata of gravel and sandy loam material. 2.5cm duff layer on surface (Oi)

Lab Source ID:
Lab Pedon #:
Soil Name as Described/Sampled: Williams
Classification: Fine-loamy, mixed, superactive, frigid Typic Argiustolls
Soil Name as Correlated:
Classification:
Pedon Type: undefined observation
Pedon Purpose: research site
Taxon Kind: series
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: on backslope of side slope of disintegration moraine on till plain
Upslope Shape: linear
Cross Slope Shape: convex
Particle Size Control Section: 18 to 63 cm.
Description origin: NASIS
Diagnostic Features: mollic epipedon 0 to 35 cm.
argillic horizon 35 to 63 cm.

Country:
State: North Dakota
County: Stutsman
MLRA: 53B -- Central Dark Brown Glaciated Plains
Soil Survey Area: ND093 -- Stutsman County, North Dakota
10-BIS -- Bismarck, North Dakota
Map Unit:
Pit Location:
Quad Name:
Std Latitude: 47.2108400
Std Longitude: -99.1710250
Latitude:
Longitude:
Datum: WGS84
UTM Zone: 14
UTM Easting:
UTM Northing:
Primary Earth Cover: Grass/herbaceous cover
Secondary Earth Cover: Grassland rangeland
Existing Vegetation:
Parent Material: till
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments:
Description database: NSSC Pangaea

Cont. Site ID: S2017ND093023 **Pedon ID:** S2017ND093023

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
11.0	582.0	135						well		

A--0 to 18 centimeters (0.0 to 7.1 inches); very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2), moist; 40 percent sand; 23 percent clay; weak medium granular structure; soft, very friable, slightly sticky, slightly plastic; many very fine roots throughout and common medium roots throughout and common fine roots throughout; common fine tubular pores; 7 percent nonflat subrounded indurated 2 to 5-millimeter Granite fragments; noneffervescent, by HCl, 1 normal; clear wavy boundary.

Bt--18 to 35 centimeters (7.1 to 13.8 inches); clay loam; 44 percent sand; 28 percent clay; weak medium prismatic parts to weak medium granular structure; soft, very friable, slightly sticky, slightly plastic; many very fine roots throughout and common medium roots throughout and common fine roots throughout; common fine tubular pores; 10 percent faint 10YR 3/2) clay bridges on all faces of peds; 12 percent nonflat subrounded indurated 5 to 20-millimeter Mixed rock fragments; noneffervescent, by HCl, 1 normal; clear wavy boundary.

Btk--35 to 63 centimeters (13.8 to 24.8 inches); light brownish gray (10YR 6/2) gravelly sandy clay loam, brown (10YR 4/3), moist; 50 percent sand; 31 percent clay; weak medium prismatic parts to weak medium subangular blocky structure; soft, very friable, slightly sticky, slightly plastic; common very fine roots throughout and common fine roots throughout; common fine tubular pores; 5 percent faint clay bridges on all faces of peds; 5 percent fine 10YR 5/6) masses of oxidized iron; carbonate, finely disseminated; 18 percent nonflat subrounded indurated 10 to 20-millimeter Mixed rock fragments; strong effervescence, by HCl, 1 normal; gradual wavy boundary.

C--63 to 148 centimeters (24.8 to 58.3 inches); light brownish gray (2.5Y 6/2) gravelly sandy clay loam, light olive brown (2.5Y 5/3), moist; 55 percent sand; 29 percent clay; massive; soft, very friable, slightly sticky, slightly plastic; common very fine roots throughout; 5 percent medium 10YR 5/6) masses of oxidized iron; carbonate, finely disseminated; 20 percent nonflat subrounded indurated 10 to 20-millimeter Mixed rock fragments; strong effervescence, by HCl, 1 normal.

PEDON DESCRIPTION -- NEON Site DCFS

Print Date: Apr 4 2018
Description Date: May 23 2017
Describer: Perry Sullivan, Brianna Wegner, Andrea Williams
NEON Plot ID: DCFS_027
Site ID: S2017ND093027

Pedon ID: S2017ND093027
Site Note:
Pedon Note: This pedon description is being entered from field observations as part of the NEON Sampling Initiative. Pedons were described at the Dakota Coteau Field School which is located in Stutsman County, North Dakota.
Lab Source ID:
Lab Pedon #:
Soil Name as Described/Sampled: Bowbells
Classification: Fine-loamy, superactive, frigid Pachic Argiustolls
Soil Name as Correlated:
Classification:
Pedon Type: undefined observation
Pedon Purpose: research site
Taxon Kind: series
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: on backslope of side slope of disintegration moraine on till plain
Upslope Shape: linear
Cross Slope Shape: linear
Particle Size Control Section: 38 to 87 cm.
Description origin: NASIS
Diagnostic Features: mollic epipedon 0 to 59 cm.
argillic horizon 38 to 87 cm.

Country:
State: North Dakota
County: Stutsman
MLRA: 53B -- Central Dark Brown Glaciated Plains
Soil Survey Area: ND093 -- Stutsman County, North Dakota
10-BIS -- Bismarck, North Dakota
Map Unit:
Pit Location:
Quad Name:
Std Latitude: 47.2055580
Std Longitude: -99.1756200
Latitude:
Longitude:
Datum: WGS84
UTM Zone: 14
UTM Easting:
UTM Northing:
Primary Earth Cover: Grass/herbaceous cover
Secondary Earth Cover: Grassland rangeland
Existing Vegetation:
Parent Material: till
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments:
Description database: NSSC Pangaea

Cont. Site ID: S2017ND093027 **Pedon ID:** S2017ND093027

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
10.0	586.0	303						well		

A--0 to 12 centimeters (0.0 to 4.7 inches); very dark brown (10YR 2/2) silt loam, black (10YR 2/1), moist; 25 percent sand; 18 percent clay; moderate medium subangular blocky parts to moderate fine granular, and moderate fine subangular blocky structure; soft, friable, slightly sticky, slightly plastic; many very fine roots throughout and many fine roots throughout; many very fine dendritic tubular pores; 5 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; noneffervescent, by HCl, 1 normal; clear wavy boundary.

AB--12 to 38 centimeters (4.7 to 15.0 inches); dark brown (10YR 3/3) loam, very dark grayish brown (10YR 3/2), moist; 35 percent sand; 20 percent clay; moderate coarse subangular blocky parts to moderate medium subangular blocky structure; soft, friable, slightly sticky, slightly plastic; many very fine roots throughout and many fine roots throughout; common very fine dendritic tubular pores; 1 percent nonflat subrounded indurated 75 to 250-millimeter Mixed rock fragments and 3 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; noneffervescent, by HCl, 1 normal; clear wavy boundary.

Bt1--38 to 59 centimeters (15.0 to 23.2 inches); dark yellowish brown (10YR 3/4) silty clay loam, dark brown (10YR 3/3), moist; 18 percent sand; 30 percent clay; weak medium prismatic parts to weak fine subangular blocky structure; soft, friable, slightly sticky, slightly plastic; common fine roots throughout; many very fine dendritic tubular pores; 10YR 3/3) clay films on all faces of peds; 1 percent nonflat subrounded indurated 75 to 250-millimeter Mixed rock fragments and 3 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; noneffervescent, by HCl, 1 normal; gradual wavy boundary.

Bt2--59 to 87 centimeters (23.2 to 34.3 inches); gray (10YR 5/1) silty clay loam, gray (10YR 5/1), moist; 19 percent sand; 32 percent clay; 5 percent fine distinct (10YR 5/8) and 10 percent fine faint (10YR 3/4) mottles; weak fine prismatic parts to weak medium subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; common very fine roots throughout; many very fine dendritic tubular pores; 10YR 3/3) clay films on all faces of peds; 1 percent nonflat subrounded indurated 75 to 250-millimeter Mixed rock fragments and 5 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; noneffervescent, by HCl, 1 normal; gradual wavy boundary.

C--87 to 100 centimeters (34.3 to 39.4 inches); light olive brown (2.5Y 5/4) clay loam, olive brown (2.5Y 4/4), moist; 30 percent sand; 30 percent clay; 5 percent fine distinct (10YR 5/8) and 10 percent fine faint (10YR 4/6) mottles; massive; slightly hard, friable, slightly sticky, slightly plastic; many very fine dendritic tubular pores; carbonate, finely disseminated; 2 percent nonflat subrounded indurated 75 to 250-millimeter Mixed rock fragments and 6 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; strong effervescence, by HCl, 1 normal.

PEDON DESCRIPTION -- NEON Site DCFS

Print Date: Apr 4 2018
Description Date: May 22 2017
Describer: Kyle Thomson, Jeanne Heileg, Jordaan Thompson
NEON Plot ID: DCFS_029
Site ID: S2017ND093029

Pedon ID: S2017ND093029
Site Note:
Pedon Note: This pedon description is being entered from field observations as part of the NEON Sampling Initiative. Pedons were described at the Dakota Coteau Field School which is located in Stutsman County, North Dakota.
Lab Source ID:
Lab Pedon #:
Soil Name as Described/Sampled: Grail
Classification: Fine, smectitic, nonacid, frigid Pachic Vertic Argiustolls
Soil Name as Correlated:
Classification:
Pedon Type: undefined observation
Pedon Purpose: research site
Taxon Kind: series
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: on footslope of side slope of disintegration moraine on till plain
Upslope Shape: concave
Cross Slope Shape: linear
Particle Size Control Section: 36 to 52 cm.
Description origin: NASIS
Diagnostic Features: mollic epipedon 0 to 76 cm.
argillic horizon 36 to 52 cm.

Country:
State: North Dakota
County: Stutsman
MLRA: 53B -- Central Dark Brown Glaciated Plains
Soil Survey Area: ND093 -- Stutsman County, North Dakota
10-BIS -- Bismarck, North Dakota
Map Unit:
Pit Location:
Quad Name:
Std Latitude: 47.1993080
Std Longitude: -99.1740980
Latitude:
Longitude:
Datum: WGS84
UTM Zone: 14
UTM Easting:
UTM Northing:
Primary Earth Cover: Grass/herbaceous cover
Secondary Earth Cover: Grassland rangeland
Existing Vegetation:
Parent Material: till
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments:
Description database: NSSC Pangaea

Cont. Site ID: S2017ND093029 **Pedon ID:** S2017ND093029

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
8.0	574.0	225						moderately well		

A1--0 to 15 centimeters (0.0 to 5.9 inches); very dark grayish brown (10YR 3/2) loam, black (10YR 2/1), moist; 32 percent sand; 22 percent clay; moderate medium subangular blocky parts to moderate medium granular structure; slightly hard, friable, slightly sticky, slightly plastic; common very fine roots throughout and many fine roots throughout; common very fine tubular and common fine tubular pores; noneffervescent, by HCl, 1 normal; clear smooth boundary.

A2--15 to 36 centimeters (5.9 to 14.2 inches); very dark grayish brown (10YR 3/2) loam, black (10YR 2/1), moist; 32 percent sand; 22 percent clay; moderate medium prismatic parts to moderate medium subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; common very fine roots throughout and common fine roots throughout; common very fine tubular and common fine tubular pores; noneffervescent, by HCl, 1 normal; abrupt smooth boundary.

Bt--36 to 52 centimeters (14.2 to 20.5 inches); dark brown (10YR 3/3) clay loam, very dark grayish brown (10YR 3/2), moist; 40 percent sand; 32 percent clay; moderate medium prismatic parts to moderate medium subangular blocky structure; moderately hard, firm, moderately sticky, moderately plastic; common very fine roots throughout; common very fine tubular and common fine tubular pores; 30 percent 10YR 2/1) organic stains on all faces of peds and 40 percent 10YR 2/1) clay films on all faces of peds; noneffervescent, by HCl, 1 normal; clear smooth boundary.

Ab--52 to 76 centimeters (20.5 to 29.9 inches); very dark grayish brown (10YR 3/2) clay loam, very dark brown (10YR 2/2), moist; 35 percent sand; 38 percent clay; weak medium prismatic parts to moderate medium subangular blocky structure; moderately hard, firm, moderately sticky, moderately plastic; common very fine roots throughout; common very fine tubular pores; 60 percent 10YR 2/1) clay films on all faces of peds; noneffervescent, by HCl, 1 normal; clear smooth boundary.

BC--76 to 100 centimeters (29.9 to 39.4 inches); light brownish gray (10YR 6/2) clay, dark grayish brown (10YR 4/2), moist; 25 percent sand; 48 percent clay; 25 percent medium prominent (5YR 4/6) mottles; strong medium prismatic parts to moderate medium subangular blocky structure; hard, very firm, very sticky, very plastic; common very fine roots throughout; common very fine tubular pores; 80 percent 10YR 3/2) clay films on all faces of peds; 3 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; noneffervescent, by HCl, 1 normal. Lag line at the top of the horizon.

PEDON DESCRIPTION -- NEON Site DCFS

Print Date: Apr 4 2018

Description Date: May 22 2017

Describer: Kyle Thomson, Brianna Wegner, Jordaan Thompson, Perry Sullivan

NEON Plot ID: DCFS_030

Site ID: S2017ND093030

Pedon ID: S2017ND093030

Site Note:

Pedon Note: This pedon description is being entered from field observations as part of the NEON Sampling Initiative. Pedons were described at the Dakota Coteau Field School which is located in Stutsman County, North Dakota.

Lab Source ID:

Lab Pedon #:

Soil Name as Described/Sampled: Renshaw

Classification: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Calcic Hapludolls

Soil Name as Correlated:

Classification:

Pedon Type: undefined observation

Pedon Purpose: research site

Taxon Kind: series

Associated Soils:

Physiographic Division:

Physiographic Province:

Physiographic Section:

State Physiographic Area:

Local Physiographic Area:

Geomorphic Setting: on backslope of side slope of outwash plain on till plain

Upslope Shape: convex

Cross Slope Shape: linear

Particle Size Control Section: 25 to 100 cm.

Description origin: NASIS

Diagnostic Features: mollic epipedon 0 to 26 cm.
calcic horizon 26 to 40 cm.

Country:

State: North Dakota

County: Stutsman

MLRA: 55B -- Central Black Glaciated Plains

Soil Survey Area: ND093 -- Stutsman County, North Dakota
10-DVL -- Devils Lake, North Dakota

Map Unit:

Pit Location:

Quad Name:

Std Latitude: 47.1708970

Std Longitude: -99.0566420

Latitude:

Longitude:

Datum: WGS84

UTM Zone: 14

UTM Easting:

UTM Northing:

Primary Earth Cover: Grass/herbaceous cover

Secondary Earth Cover: Grassland rangeland

Existing Vegetation:

Parent Material: outwash

Bedrock Kind:

Bedrock Depth:

Bedrock Hardness:

Bedrock Fracture Interval:

Surface Fragments:

Description database: NSSC Pangaea

Cont. Site ID: S2017ND093030 **Pedon ID:** S2017ND093030

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
3.0	511.0	162						somewhat excessively		

A--0 to 15 centimeters (0.0 to 5.9 inches); black (10YR 2/1) loam, very dark brown (10YR 2/2), dry; 50 percent sand; 20 percent clay; moderate medium subangular blocky parts to moderate medium granular, and moderate medium subangular blocky parts to moderate fine granular structure; soft, friable, slightly sticky, nonplastic; many fine roots throughout; interstitial pores; 10 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; noneffervescent, by HCl, 1 normal; clear smooth boundary.

Bw--15 to 26 centimeters (5.9 to 10.2 inches); very dark grayish brown (10YR 3/2) very gravelly sandy clay loam, dark brown (10YR 3/3), dry; 70 percent sand; 22 percent clay; weak medium subangular blocky parts to structureless single grain; soft, friable, slightly sticky, nonplastic; many very fine roots throughout; interstitial pores; 20 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments and 20 percent nonflat subrounded indurated 75 to 250-millimeter Mixed rock fragments; noneffervescent, by HCl, 1 normal; clear smooth boundary.

Bk--26 to 40 centimeters (10.2 to 15.7 inches); dark yellowish brown (10YR 3/4) very gravelly loamy coarse sand, dark yellowish brown (10YR 4/4), dry; 85 percent sand; 10 percent clay; structureless single grain; loose, loose, slightly sticky, nonplastic; many fine roots throughout; interstitial pores; carbonate, finely disseminated; 22 percent nonflat subrounded indurated 75 to 250-millimeter Mixed rock fragments and 33 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; violent effervescence, by HCl, 1 normal; gradual wavy boundary.

C--40 to 100 centimeters (15.7 to 39.4 inches); olive brown (2.5Y 4/3) extremely gravelly loamy coarse sand, dark yellowish brown (10YR 4/4), dry; 85 percent sand; 10 percent clay; structureless single grain; loose, loose, slightly sticky, nonplastic; many fine roots throughout; interstitial pores; carbonate, finely disseminated; 30 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments and 40 percent nonflat subrounded indurated 75 to 250-millimeter Mixed rock fragments; strong effervescence, by HCl, 1 normal.

PEDON DESCRIPTION -- NEON Site DCFS

Print Date: Apr 4 2018
Description Date: May 24 2017
Describer: Kyle Thomson, Jeanne Heileg, Jordaan Thompson
NEON Plot ID: DCFS_063
Site ID: S2017ND093063

Pedon ID: S2017ND093063
Site Note:
Pedon Note: This pedon description is being entered from field observations as part of the NEON Sampling Initiative. Pedons were described at the Dakota Coteau Field School which is located in Stutsman County, North Dakota.
Lab Source ID:
Lab Pedon #:
Soil Name as Described/Sampled: Parnell
Classification: Fine, smectitic, frigid Vertic Argiaquolls
Soil Name as Correlated:
Classification:
Pedon Type: undefined observation
Pedon Purpose: research site
Taxon Kind: series
Associated Soils:
Physiographic Division:
Physiographic Province:
Physiographic Section:
State Physiographic Area:
Local Physiographic Area:
Geomorphic Setting: depression on till plain
Upslope Shape: linear
Cross Slope Shape: concave
Particle Size Control Section: 40 to 80 cm.
Description origin: NASIS
Diagnostic Features: mollic epipedon 0 to 40 cm.
aquic conditions 40 to 100 cm.

Country:
State: North Dakota
County: Stutsman
MLRA: 53B -- Central Dark Brown Glaciated Plains
Soil Survey Area: ND093 -- Stutsman County, North Dakota
10-BIS -- Bismarck, North Dakota
Map Unit:
Pit Location:
Quad Name:
Std Latitude: 47.1648570
Std Longitude: -99.1108630
Latitude:
Longitude:
Datum: WGS84
UTM Zone: 14
UTM Easting:
UTM Northing:
Primary Earth Cover: Grass/herbaceous cover
Secondary Earth Cover: Marshland
Existing Vegetation:
Parent Material: Local alluvium
Bedrock Kind:
Bedrock Depth:
Bedrock Hardness:
Bedrock Fracture Interval:
Surface Fragments:
Description database: NSSC Pangaea

Cont. Site ID: S2017ND093063 **Pedon ID:** S2017ND093063

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
1.0	569.0	45						very poorly		

A1--0 to 27 centimeters (0.0 to 10.6 inches); black (10YR 2/1) silty clay loam, black (10YR 2/1), dry; 15 percent sand; 32 percent clay; slightly hard, friable, moderately sticky, moderately plastic; many very fine roots throughout and common fine roots throughout; noneffervescent, by HCl, 1 normal; gradual wavy boundary.

A2--27 to 40 centimeters (10.6 to 15.7 inches); very dark grayish brown (2.5Y 3/2) clay loam, dark grayish brown (2.5Y 4/2), dry; 25 percent sand; 38 percent clay; moderately hard, firm, moderately sticky, moderately plastic; common very fine roots throughout; 30 percent fine distinct 7.5YR 4/4) masses of oxidized iron; noneffervescent, by HCl, 1 normal; gradual wavy boundary.

Btg1--40 to 57 centimeters (15.7 to 22.4 inches); dark grayish brown (2.5Y 4/2) silty clay, grayish brown (2.5Y 5/2), dry; 15 percent sand; 45 percent clay; hard, very firm, very sticky, very plastic; common fine roots throughout; and 10 percent fine distinct 10YR 2/1) masses of reduced iron and 85 percent medium prominent 7.5YR 5/6) masses of oxidized iron; noneffervescent, by HCl, 1 normal; gradual wavy boundary.

Btg2--57 to 80 centimeters (22.4 to 31.5 inches); 50 percent 3/2 3/2) and 50 percent olive (5Y 5/3) clay, 50 percent pale olive (5Y 6/3) and 50 percent olive (5Y 4/3), dry; 43 percent sand; 55 percent clay; hard, very firm, very sticky, very plastic; common very fine roots throughout; 10 percent coarse distinct 2.5Y 6/3) masses of reduced iron and 20 percent fine prominent 7.5YR 5/6) masses of oxidized iron; 10 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; noneffervescent, by HCl, 1 normal; clear wavy boundary.

Cg--80 to 100 centimeters (31.5 to 39.4 inches); olive gray (5Y 5/2) clay, light olive gray (5Y 6/2), dry; 12 percent sand; 50 percent clay; hard, very firm, very sticky, very plastic; 2 percent fine faint 10YR 2/1) masses of reduced iron and 10 percent coarse prominent 7.5YR 5/6) masses of oxidized iron and 25 percent medium prominent 7.5YR 5/6) masses of oxidized iron; 3 percent nonflat subrounded indurated 2 to 75-millimeter Mixed rock fragments; noneffervescent, by HCl, 1 normal.