[Suitability for Aerobic Soil Organisms 2](#_Toc16245931)

[Inherent Suitability for Aerobic Soil Organisms 2](#_Toc16245932)

[Criteria Table 3](#_Toc16245933)

[Soil Script Breakdown 4](#_Toc16245934)

[Create AoI Table 4](#_Toc16245935)

[Create summary acres for each landunit 5](#_Toc16245936)

[Populate intersected soil polygon table with geometry 5](#_Toc16245937)

[Populate soil geometry with landunit attribute 5](#_Toc16245938)

[Create Table to Store Survey Area Datestamps (sacatalog.saverest) 6](#_Toc16245939)

[Create Table to Store Landunit Metadata (survey area and saverest) Which Comes From #DateStamps 6](#_Toc16245940)

[Populate #SDV with Interp Metadata 7](#_Toc16245941)

[Populate soil map unit acres, aggregated by mukey (merges polygons together) 8](#_Toc16245942)

[Create Table to Store Survey Area Datestamps (sacatalog.saverest) 9](#_Toc16245943)

[XML Parsing 10](#_Toc16245944)

[Set Interp Rulekey and Ruledesign as a Variable To Be Used in Cointerp Query 10](#_Toc16245945)

[Add Not Rated Phrase to @rating Variables 10](#_Toc16245946)

[Append the Rating Classes for this Interp to the #RatingClasses Table 11](#_Toc16245947)

[Populate the #RatingDomain Table with a Unique Rating\_key for this Interp 11](#_Toc16245948)

[Populate Component Level Ratings Using the Currently Set Soil Interpretation 12](#_Toc16245949)

[Populate Component Level Ratings with Adjusted Component Percent to Account for the Un-used Minor Components 15](#_Toc16245950)

[Populate Component Acres by Multiplying Map Unit Acres with Adjusted Component Percent 20](#_Toc16245951)

[Aggregate the Classes and Sum up the Component Acres by Landunit (Tract and Field number) 23](#_Toc16245952)

[Group of Insert Statements to Populate the Final Output Tables 24](#_Toc16245953)

[Determine Dominant Critical 25](#_Toc16245954)

[Landunit Ratings CART 26](#_Toc16245955)

[Final CART Soil Interpretation Ratings for Each Landunit 27](#_Toc16245956)

[References 27](#_Toc16245957)

# Suitability for Aerobic Soil Organisms

Bob Dobos, Cathy Seybold, Steve Campbell, Steve Peaslee, and Jason Nemecek

2019-07-15

## Inherent Suitability for Aerobic Soil Organisms

Soil health is primarily influenced by human management, which is not captured in soil survey data at this time. This interpretation provides information on inherent soil properties that influence our ability to build healthy soils through management.

Soil is the habitat for a wide variety of organisms. They range from microscopic viruses, bacteria, archaea, fungi, and protozoa through micro- and meso-fauna, including nematodes, mites, and springtails, to macrofauna, such as earthworms, centipedes, and beetles. A healthy soil is a living system that supports an abundant and diverse biological community that aids crop production by providing key services and functions. These include:

1. The decomposition of organic materials and their conversion into soil organic matter;
2. Enhanced nutrient cycling;
3. Improved soil structure and stability, which positively influence water flow, storage, and availability;
4. Plant protection against disease, pests, and environmental stress; and,
5. Detoxification of pollutants. Soil microbes are generally most abundant in the surface layer around plant roots. This area is termed the “rhizosphere”. Soils vary in their inherent ability to foster plant growth and thus also in their ability to support microbial populations. Although bacteria and archaea possess alternative metabolic strategies to survive under low- or no-oxygen content (i.e., anaerobic conditions), all other soil organisms require oxygen. Also, the majority of soil bacteria in agricultural soils function more efficiently in aerobic conditions; therefore, only aerobic organisms are considered.

Several site properties and soil properties make major contributions to the suitability for aerobic organisms. The properties chosen for this table include:

\* Soil temperature, because most biological processes increase, often double, with a 10 degree C increase in temperature;   
\* water, inferred through the average total yearly precipitation, because plant productivity is linked to precipitation and soil microbes thrive in the rhizosphere;   
\* soil organic matter content, because organic carbon is required by many soil organisms as an energy and carbon source;  
\* soil pore space, which influences water and gas movement as well as physical space for organisms to occupy and the tortuosity of paths through which they may move;  
\* soil water content, which is important, for example, because when too much water is present anaerobic processes begin and the population shifts to anaerobic bacteria and when too little is present organisms may die or go dormant; and  
\* osmotic conditions and the presence of toxic materials or the absence of required elements.

The degree of favorability of each of these properties is rated for a soil. The degree of limitation of the least favorable attribute determines the overall rating.

The ratings are both verbal and numerical. Numerical ratings indicate the suitability of the individual soil properties. The ratings are shown in decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest favorability for organisms (1.00) and the point at which the soil feature becomes not favorable (0.00).

Rating class terms indicate the extent to which the soils are favorable considering all the soil features that are examined for this land use. “Very favorable” indicates that the soil has features that are very favorable for aerobic soil organisms. Healthy and thriving populations can be expected on properly managed agricultural systems on these soils. “Somewhat favorable” indicates that the soil has features that are moderately favorable for aerobic soil organisms. The soil can be made more favorable by careful management. Fair performance and moderate maintenance can be expected. “Very limited” indicates that the soil has one or more features that are unfavorable for aerobic soil organisms.

The map unit components listed for each map unit in the accompanying “Summary by Map Unit” table in Web Soil Survey or the “Aggregation Report” in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the extent of each map unit that has the specified rating.

Other components with different ratings can be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

## Criteria Table

| **Site or soil attribute** | **Poorly suited** | **Moderately suited** | **Well suited** | **Impact** |
| --- | --- | --- | --- | --- |
| pH 0-30cm | Less than 4.0 | Between 4.0 and 6.0 | Between 6.0 and 7.0 | Micronutrient availability |
| Mean annual air temperature (C) | Less than 0 or Greater than 50 | Between 0 and 15 or Between 24 and 50 | Between 15 and 24 | Amount of heat required for adapted species |
| Moisture relations Maximum of A-C |  |  |  |  |
| A. Mean annual precipitation minus annual potential evapotranspiration (mm) | Less than -100 | Between -100 and 100 | Greater than 100 | Moisture available for organisms |
| B. Water table depth during the growing season (cm) | 0 or less | Between 0 and 30 or between 50 and 100 | Between 30 and 50 | Moist but not saturated conditions |
| C. Root zone AWC (cm) | Less than 3 | 3 to 30 | Greater than 30 | Retains moisture between rainfall events |
| Electrical Conductivity (dS/m) | Less than 0.3 | Between 0.3 and 0.75 or between 1.5 and 9.0 | Between 0.75 and 1.5 | Cations for mineral needs but not saline |
| Greater than 9.0 |  |  |  |  |
| Aluminum saturation 0 to 30 cm (percent) | 100 | Between 2 and 100 | Less than 2 | Aluminum toxicity |
| Organic matter content 0 to 30 cm (percent) | Less than 0.3 | Between 0.3 and 3.0 | Greater than 3.0 | Energy source for soil organisms |
| Bulk density difference ratio maximum from 0 to 30 cm | Greater than 1.0 | 0 to 1.0 | 0 or less | Metric of pore space and soil strength |
| Clay content weighted average from 0 to 30 cm (percent) | Less than 30 | Between 30 and 40 | Greater than 40 | Surface area for microbes |

## Soil Script Breakdown

### Create AoI Table

CREATE TABLE #AoiTable

( aoiid INT IDENTITY (1,1),

landunit CHAR(20),

aoigeom GEOMETRY);

* Create AOI table with polygon geometry. Coordinate system must be WGS1984 (EPSG 4326).

SELECT @aoiGeom = GEOMETRY::STGeomFromText('MULTIPOLYGON (((-102.12335160658608 45.959173206572416, -102.13402890980223 45.959218442561564, -102.13386921506947 45.944643788188387, -102.12327175652177 45.944703605814198, -102.12335160658608 45.959173206572416)))', 4326);

SELECT @aoiGeomFixed = @aoiGeom.MakeValid().STUnion(@aoiGeom.STStartPoint());

INSERT INTO #AoiTable ( landunit, aoigeom )

VALUES ('T9981 Fld3', @aoiGeomFixed);

SELECT @aoiGeom = GEOMETRY::STGeomFromText('MULTIPOLYGON (((-102.1130336443976 45.959162795100383, -102.12335160658608 45.959173206572416, -102.12327175652177 45.944703605814198, -102.1128892282776 45.944710506326032, -102.1130336443976 45.959162795100383)))', 4326);

SELECT @aoiGeomFixed = @aoiGeom.MakeValid().STUnion(@aoiGeom.STStartPoint());

INSERT INTO #AoiTable ( landunit, aoigeom )

VALUES ('T9981 Fld4', @aoiGeomFixed);

#### Create summary acres for each landunit

CREATE TABLE #AoiAcres

( aoiid INT,

landunit CHAR(20),

landunit\_acres FLOAT

);

INSERT INTO #AoiAcres (aoiid, landunit, landunit\_acres )

SELECT aoiid, landunit,

SUM( ROUND( ( ( GEOGRAPHY::STGeomFromWKB(aoigeom.STAsBinary(), 4326 ).STArea() ) / 4046.8564224 ), 3 ) ) AS landunit\_acres

FROM #AoiTable

GROUP BY aoiid, landunit;

| **aoiid** | **landunit** | **landunit\_acres** |
| --- | --- | --- |
| 1 | T9981 Fld3 | 328.952 |
| 2 | T9981 Fld4 | 318.722 |

#### Populate intersected soil polygon table with geometry

-- Create intersected soil polygon table with geometry

CREATE TABLE #AoiSoils

( polyid INT IDENTITY (1,1),

aoiid INT,

landunit CHAR(20),

mukey INT,

soilgeom GEOMETRY

);

INSERT INTO #AoiSoils (aoiid, landunit, mukey, soilgeom)

SELECT A.aoiid, A.landunit, M.mukey, M.mupolygongeo.STIntersection(A.aoigeom ) AS soilgeom

FROM mupolygon M, #AoiTable A

WHERE mupolygongeo.STIntersects(A.aoigeom) = 1;

#### Populate soil geometry with landunit attribute

-- Soil geometry with landunits

CREATE TABLE #AoiSoils2

( aoiid INT,

polyid INT,

landunit CHAR(20),

mukey INT,

poly\_acres FLOAT,

soilgeog GEOGRAPHY

);

-- Populate Soil geometry with landunit attribute

INSERT INTO #AoiSoils2

SELECT aoiid, polyid, landunit, mukey, ROUND((( GEOGRAPHY::STGeomFromWKB(soilgeom.STAsBinary(), 4326 ).STArea() ) / 4046.8564224 ), 3 ) AS poly\_acres, GEOGRAPHY::STGeomFromWKB(soilgeom.STAsBinary(), 4326 ) AS soilgeog

FROM #AoiSoils;

### Create Table to Store Survey Area Datestamps (sacatalog.saverest)

CREATE TABLE #DateStamps

(landunit CHAR(20),

datestamp VARCHAR(32));

| **landunit** | **datestamp** |
| --- | --- |
| T9981 Fld3 | ND001 2018-09-12 19:21:50 |
| T9981 Fld3 | SD105 2018-09-12 23:49:29 |
| T9981 Fld4 | ND001 2018-09-12 19:21:50 |

INSERT INTO #DateStamps

SELECT DISTINCT AM.landunit, ([SC].[areasymbol] + ' ' + CONVERT(VARCHAR(32),[SC].[saverest],120) ) AS datestamp

FROM #M4 AM

INNER JOIN mapunit Mu ON AM.mukey = Mu.mukey

INNER JOIN legend LG ON Mu.lkey = LG.lkey

INNER JOIN sacatalog SC ON Lg.areasymbol = SC.areasymbol;

* Get survey area dates for all soil map units involved.

### Create Table to Store Landunit Metadata (survey area and saverest) Which Comes From #DateStamps

CREATE TABLE #LandunitMetadata

(landunit CHAR(20),

soils\_metadata VARCHAR(150)

);

INSERT INTO #LandunitMetadata

SELECT DISTINCT

landunit,

STUFF((SELECT ' | ' + CAST([datestamp] AS VARCHAR(30))

FROM #DateStamps dt2

WHERE dt1.landunit = dt2.landunit

FOR XML PATH ('') ), 1, 2, '') AS soils\_metadata

FROM #DateStamps dt1;

* Populate landunit soils-metadata.

| **landunit** | **soils\_metadata** |
| --- | --- |
| T9981 Fld3 | ND001 2018-09-12 19:21:50 SD105 2018-09-12 23:49:29 |
| T9981 Fld4 | ND001 2018-09-12 19:21:50 |

### Populate #SDV with Interp Metadata

CREATE TABLE #SDV

(attributekey BIGINT,

attributename CHAR(60),

attributetablename CHAR(30),

attributecolumnname CHAR(30),

attributelogicaldatatype CHAR(20),

attributefieldsize SMALLINT,

attributeprecision TINYINT,

attributedescription NVARCHAR(MAX),

attributeuom NVARCHAR(60),

attributeuomabbrev NVARCHAR(30),

attributetype CHAR(20),

nasisrulename CHAR(60),

ruledesign NVARCHAR(60),

notratedphrase CHAR(15),

mapunitlevelattribflag TINYINT,

complevelattribflag TINYINT,

cmonthlevelattribflag TINYINT,

horzlevelattribflag TINYINT,

tiebreakdomainname CHAR(40),

tiebreakruleoptionflag TINYINT,

tiebreaklowlabel CHAR(20),

tiebreakhighlabel CHAR(20),

tiebreakrule SMALLINT,

resultcolumnname CHAR(10),

sqlwhereclause CHAR(255),

primaryconcolname CHAR(30),

pcclogicaldatatype CHAR(20),

primaryconstraintlabel CHAR(30),

secondaryconcolname CHAR(30),

scclogicaldatatype CHAR(20),

secondaryconstraintlabel CHAR(30),

dqmodeoptionflag TINYINT,

depthqualifiermode CHAR(20),

layerdepthtotop FLOAT,

layerdepthtobottom FLOAT,

layerdepthuom CHAR(20),

monthrangeoptionflag TINYINT,

beginningmonth CHAR(9),

endingmonth CHAR(9),

horzaggmeth CHAR(30),

interpnullsaszerooptionflag TINYINT,

interpnullsaszeroflag TINYINT,

nullratingreplacementvalue CHAR(254),

basicmodeflag TINYINT,

maplegendkey SMALLINT,

maplegendclasses TINYINT,

maplegendxml XML,

nasissiteid BIGINT,

wlupdated DATETIME,

algorithmname CHAR(50),

componentpercentcutoff TINYINT,

readytodistribute TINYINT,

effectivelogicaldatatype CHAR(20),

rulekey CHAR(30)

);

INSERT INTO #SDV (attributename, nasisrulename, rulekey, ruledesign, notratedphrase, resultcolumnname, maplegendxml, attributedescription)

SELECT sdv.attributename, sdv.nasisrulename, md.rulekey, md.ruledesign, sdv.notratedphrase, sdv.resultcolumnname, sdv.maplegendxml, sdv.attributedescription

FROM sdvattribute sdv

LEFT OUTER JOIN distinterpmd md ON sdv.nasisrulename = md.rulename

WHERE sdv.attributename IN ('Agricultural Organic Soil Subsidence', 'Soil Susceptibility to Compaction', 'Organic Matter Depletion', 'Surface Salt Concentration', 'Hydric Rating by Map Unit', 'Suitability for Aerobic Soil Organisms', 'Ponding Frequency Class','Flooding Frequency Class',

'Available Water Storage','Depth to Water Table', 'Drainage Class', 'Farmland Classification')

GROUP BY md.rulekey, sdv.attributename, sdv.nasisrulename, sdv.resultcolumnname, md.ruledesign, sdv.notratedphrase, sdv.maplegendxml, sdv.attributedescription;

* Begin populating static tables. These are for the base soils data and metadata. No interpretation data yet.
* Create a table containing necessary interpretation data.
* Please note that if we instead get ruledesign from sdvattribute, those values change to integer as in 1:limitation, 2:suitability.

#### Populate soil map unit acres, aggregated by mukey (merges polygons together)

-- Soil map unit acres, aggregated by mukey (merges polygons together)

CREATE TABLE #M2

( aoiid INT,

landunit CHAR(20),

mukey INT,

mapunit\_acres FLOAT

);

INSERT INTO #M2

SELECT DISTINCT M1.aoiid, M1.landunit, M1.mukey,

ROUND (SUM (M1.poly\_acres) OVER(PARTITION BY M1.landunit, M1.mukey), 3) AS mapunit\_acres

FROM #AoiSoils2 AS M1

GROUP BY M1.aoiid, M1.landunit, M1.mukey, M1.poly\_acres;

| **aoiid** | **landunit** | **mukey** | **mapunit\_acres** |
| --- | --- | --- | --- |
| 1 | T9981 Fld3 | 354627 | 0.426 |
| 1 | T9981 Fld3 | 354648 | 0.287 |
| 1 | T9981 Fld3 | 2494708 | 1.729 |
| 1 | T9981 Fld3 | 2525720 | 56.699 |
| 1 | T9981 Fld3 | 2525732 | 1.35 |
| 1 | T9981 Fld3 | 2525733 | 0.129 |
| 1 | T9981 Fld3 | 2525739 | 28.479 |
| 1 | T9981 Fld3 | 2525745 | 4.983 |
| 1 | T9981 Fld3 | 2525746 | 16.106 |
| 1 | T9981 Fld3 | 2525754 | 12.638 |
| 1 | T9981 Fld3 | 2525764 | 17.691 |
| 1 | T9981 Fld3 | 2525766 | 0.032 |
| 1 | T9981 Fld3 | 2525769 | 181.356 |
| 1 | T9981 Fld3 | 2755648 | 2.449 |
| 1 | T9981 Fld3 | 2755654 | 4.599 |
| 2 | T9981 Fld4 | 2525720 | 8.623 |
| 2 | T9981 Fld4 | 2525724 | 0.458 |
| 2 | T9981 Fld4 | 2525730 | 31.514 |
| 2 | T9981 Fld4 | 2525745 | 62.205 |
| 2 | T9981 Fld4 | 2525746 | 63.55 |
| 2 | T9981 Fld4 | 2525754 | 23.138 |
| 2 | T9981 Fld4 | 2525767 | 3.86 |
| 2 | T9981 Fld4 | 2525769 | 103.909 |
| 2 | T9981 Fld4 | 2755639 | 0.443 |
| 2 | T9981 Fld4 | 2755643 | 9.641 |
| 2 | T9981 Fld4 | 2755648 | 11.382 |

| **aoiid** | **landunit** | **aoigeom** |
| --- | --- | --- |
| 1 | T9981 Fld3 | POLYGON ((-102.13386921506947 45.944643788188387, -102.12327175652177 45.9447036058142, -102.12335160658608 45.959173206572416, -102.13402890980223 45.959218442561564, -102.13386921506947 45.944643788188387)) |
| 2 | T9981 Fld4 | POLYGON ((-102.12327175652177 45.9447036058142, -102.1128892282776 45.944710506326032, -102.1130336443976 45.959162795100383, -102.12335160658608 45.959173206572416, -102.12327175652177 45.9447036058142)) |

### Create Table to Store Survey Area Datestamps (sacatalog.saverest)

CREATE TABLE #DateStamps

(landunit CHAR(20),

datestamp VARCHAR(32));

SELECT @attributeName = 'Suitability for Aerobic Soil Organisms';

SELECT @minPct = 10;

SELECT @minAcres = 10;

* Defines the soil interpretation.
* Sets the minimum cutoff percent for a resource concern at 10 percent or 10 acres for a given landunit.

### XML Parsing

SELECT @rating1 = (SELECT maplegendxml FROM #SDV WHERE attributename = @attributeName).value('(/Map\_Legend/Legend\_Elements/Labels/@value)[1]', 'VARCHAR(100)');

SELECT @rating2 = (SELECT maplegendxml FROM #SDV WHERE attributename = @attributeName).value('(/Map\_Legend/Legend\_Elements/Labels/@value)[2]', 'VARCHAR(100)');

SELECT @rating3 = (SELECT maplegendxml FROM #SDV WHERE attributename = @attributeName).value('(/Map\_Legend/Legend\_Elements/Labels/@value)[3]', 'VARCHAR(100)');

SELECT @rating4 = (SELECT maplegendxml FROM #SDV WHERE attributename = @attributeName).value('(/Map\_Legend/Legend\_Elements/Labels/@value)[4]', 'VARCHAR(100)');

SELECT @rating5 = (SELECT maplegendxml FROM #SDV WHERE attributename = @attributeName).value('(/Map\_Legend/Legend\_Elements/Labels/@value)[5]', 'VARCHAR(100)');

SELECT @rating6 = (SELECT maplegendxml FROM #SDV WHERE attributename = @attributeName).value('(/Map\_Legend/Legend\_Elements/Labels/@value)[6]', 'VARCHAR(100)');

* Get ordered set of interphrc values from sdvattribute.maplegendxml. This is assumed to begin with the “worst” rating. Need to double-check this for all interpretations.

### Set Interp Rulekey and Ruledesign as a Variable To Be Used in Cointerp Query

SELECT @ruleKey = (SELECT rulekey FROM #SDV WHERE attributename = @attributeName);

SELECT @ruleDesign = (SELECT ruledesign FROM #SDV WHERE attributename = @attributeName)

SELECT @notRatedPhrase = (SELECT notratedphrase FROM #SDV WHERE attributename = @attributeName);

### Add Not Rated Phrase to @rating Variables

IF @notRatedPhrase IS NOT NULL

IF @rating1 IS NULL (SELECT @rating1 = @notRatedPhrase)

ELSE

IF @rating2 IS NULL (SELECT @rating2 = @notRatedPhrase)

ELSE

IF @rating3 IS NULL (SELECT @rating3 = @notRatedPhrase)

ELSE

IF @rating4 IS NULL (SELECT @rating4 = @notRatedPhrase)

ELSE

IF @rating5 IS NULL (SELECT @rating5 = @notRatedPhrase)

ELSE

IF @rating6 IS NULL (SELECT @rating6 = @notRatedPhrase)

### Append the Rating Classes for this Interp to the #RatingClasses Table

INSERT INTO #RatingClasses (attributename, ruledesign, rating1, rating2, rating3, rating4, rating5, rating6)

SELECT @attributeName AS attributename, @ruleDesign AS ruledesign, @rating1 AS rating1, @rating2 AS rating2, @rating3 AS rating3, @rating4 AS rating4, @rating5 AS rating5, @rating6 AS rating6;

| **id** | **rating\_key** | **attributename** | **rating** | **rating\_num** |
| --- | --- | --- | --- | --- |
| 20 | Suitability for Aerobic Soil Organisms:1 | Suitability for Aerobic Soil Organisms | Not favorable | 1 |
| 21 | Suitability for Aerobic Soil Organisms:2 | Suitability for Aerobic Soil Organisms | Somewhat favorable | 2 |
| 22 | Suitability for Aerobic Soil Organisms:3 | Suitability for Aerobic Soil Organisms | Very favorable | 3 |
| 23 | Suitability for Aerobic Soil Organisms:4 | Suitability for Aerobic Soil Organisms | Not rated | 4 |

### Populate the #RatingDomain Table with a Unique Rating\_key for this Interp

SELECT @ratingKey = RTRIM(@attributeName) + ':1'

IF NOT @rating1 IS NULL INSERT INTO #RatingDomain VALUES( @ratingKey, @attributename, @rating1, 1)

SELECT @ratingKey = RTRIM(@attributeName) + ':2'

IF NOT @rating2 IS NULL INSERT INTO #RatingDomain VALUES( @ratingKey, @attributename, @rating2, 2)

SELECT @ratingKey = RTRIM(@attributeName) + ':3'

IF NOT @rating3 IS NULL INSERT INTO #RatingDomain VALUES( @ratingKey, @attributename, @rating3, 3)

SELECT @ratingKey = RTRIM(@attributeName) + ':4'

IF NOT @rating4 IS NULL INSERT INTO #RatingDomain VALUES( @ratingKey, @attributename, @rating4, 4)

SELECT @ratingKey = RTRIM(@attributeName) + ':5'

IF NOT @rating5 IS NULL INSERT INTO #RatingDomain VALUES( @ratingKey, @attributename, @rating5, 5)

SELECT @ratingKey = RTRIM(@attributeName) + ':6'

IF NOT @rating6 IS NULL INSERT INTO #RatingDomain VALUES( @ratingKey, @attributename, @rating6, 6)

| **id** | **rating\_key** | **attributename** | **rating** | **rating\_num** |
| --- | --- | --- | --- | --- |
| 20 | Suitability for Aerobic Soil Organisms:1 | Suitability for Aerobic Soil Organisms | Not favorable | 1 |
| 21 | Suitability for Aerobic Soil Organisms:2 | Suitability for Aerobic Soil Organisms | Somewhat favorable | 2 |
| 22 | Suitability for Aerobic Soil Organisms:3 | Suitability for Aerobic Soil Organisms | Very favorable | 3 |
| 23 | Suitability for Aerobic Soil Organisms:4 | Suitability for Aerobic Soil Organisms | Not rated | 4 |

### Populate Component Level Ratings Using the Currently Set Soil Interpretation

TRUNCATE TABLE #M5

INSERT INTO #M5

SELECT M4.aoiid, M4.landunit, M4.mukey, mapunit\_acres, M4.cokey, M4.compname, M4.comppct\_r, TP.interphrc AS rating, SUM (M4.comppct\_r) OVER(PARTITION BY M4.landunit, M4.mukey) AS mu\_pct\_sum

FROM #M4 AS M4

LEFT OUTER JOIN cointerp AS TP ON M4.cokey = TP.cokey AND rulekey = @ruleKey

WHERE M4.majcompflag = 'yes';

| **aoiid** | **landunit** | **mukey** | **mapunit\_acres** | **cokey** | **compname** | **comppct\_r** | **rating** | **mu\_pct\_sum** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | T9981 Fld3 | 354627 | 0.426 | 16464494 | Daglum | 25 | Somewhat favorable | 90 |
| 1 | T9981 Fld3 | 354627 | 0.426 | 16464495 | Farnuf | 65 | Somewhat favorable | 90 |
| 1 | T9981 Fld3 | 354648 | 0.287 | 16464607 | Amor | 25 | Somewhat favorable | 85 |
| 1 | T9981 Fld3 | 354648 | 0.287 | 16464612 | Reeder | 60 | Somewhat favorable | 85 |
| 1 | T9981 Fld3 | 2494708 | 1.729 | 16663930 | Amor | 49 | Somewhat favorable | 81 |
| 1 | T9981 Fld3 | 2494708 | 1.729 | 16663931 | Cabba | 32 | Somewhat favorable | 81 |
| 1 | T9981 Fld3 | 2525720 | 56.699 | 16663899 | Daglum | 33 | Somewhat favorable | 88 |
| 1 | T9981 Fld3 | 2525720 | 56.699 | 16663903 | Rhoades | 55 | Somewhat favorable | 88 |
| 1 | T9981 Fld3 | 2525732 | 1.35 | 16663796 | Ekalaka | 55 | Somewhat favorable | 72 |
| 1 | T9981 Fld3 | 2525732 | 1.35 | 16663797 | Yegen | 17 | Somewhat favorable | 72 |
| 1 | T9981 Fld3 | 2525733 | 0.129 | 16663951 | Vebar | 50 | Somewhat favorable | 75 |
| 1 | T9981 Fld3 | 2525733 | 0.129 | 16663952 | Cohagen | 25 | Somewhat favorable | 75 |
| 1 | T9981 Fld3 | 2525739 | 28.479 | 16663915 | Parshall | 20 | Somewhat favorable | 78 |
| 1 | T9981 Fld3 | 2525739 | 28.479 | 16663917 | Vebar | 58 | Somewhat favorable | 78 |
| 1 | T9981 Fld3 | 2525745 | 4.983 | 16663921 | Shambo | 75 | Somewhat favorable | 75 |
| 1 | T9981 Fld3 | 2525746 | 16.106 | 16663927 | Shambo | 78 | Somewhat favorable | 78 |
| 1 | T9981 Fld3 | 2525754 | 12.638 | 16663602 | Harriet | 75 | Somewhat favorable | 75 |
| 1 | T9981 Fld3 | 2525764 | 17.691 | 16663611 | Regan | 55 | Somewhat favorable | 55 |
| 1 | T9981 Fld3 | 2525766 | 0.032 | 16663539 | Water | 100 | Not rated | 100 |
| 1 | T9981 Fld3 | 2525769 | 181.356 | 16663985 | Belfield | 48 | Somewhat favorable | 88 |
| 1 | T9981 Fld3 | 2525769 | 181.356 | 16663987 | Daglum | 40 | Somewhat favorable | 88 |
| 1 | T9981 Fld3 | 2755648 | 2.449 | 16663766 | Reeder | 58 | Somewhat favorable | 78 |
| 1 | T9981 Fld3 | 2755648 | 2.449 | 16663767 | Janesburg | 20 | Somewhat favorable | 78 |
| 1 | T9981 Fld3 | 2755654 | 4.599 | 16663846 | Reeder | 60 | Somewhat favorable | 85 |
| 1 | T9981 Fld3 | 2755654 | 4.599 | 16663847 | Amor | 25 | Somewhat favorable | 85 |
| 2 | T9981 Fld4 | 2525720 | 8.623 | 16663899 | Daglum | 33 | Somewhat favorable | 88 |
| 2 | T9981 Fld4 | 2525720 | 8.623 | 16663903 | Rhoades | 55 | Somewhat favorable | 88 |
| 2 | T9981 Fld4 | 2525724 | 0.458 | 16664017 | Savage | 30 | Somewhat favorable | 85 |
| 2 | T9981 Fld4 | 2525724 | 0.458 | 16664018 | Daglum | 20 | Somewhat favorable | 85 |
| 2 | T9981 Fld4 | 2525724 | 0.458 | 16664022 | Belfield | 35 | Somewhat favorable | 85 |
| 2 | T9981 Fld4 | 2525730 | 31.514 | 16663991 | Regent | 68 | Somewhat favorable | 85 |
| 2 | T9981 Fld4 | 2525730 | 31.514 | 16663992 | Savage | 17 | Somewhat favorable | 85 |
| 2 | T9981 Fld4 | 2525745 | 62.205 | 16663921 | Shambo | 75 | Somewhat favorable | 75 |
| 2 | T9981 Fld4 | 2525746 | 63.55 | 16663927 | Shambo | 78 | Somewhat favorable | 78 |
| 2 | T9981 Fld4 | 2525754 | 23.138 | 16663602 | Harriet | 75 | Somewhat favorable | 75 |
| 2 | T9981 Fld4 | 2525767 | 3.86 | 16663540 | Water | 100 | Not rated | 100 |
| 2 | T9981 Fld4 | 2525769 | 103.909 | 16663985 | Belfield | 48 | Somewhat favorable | 88 |
| 2 | T9981 Fld4 | 2525769 | 103.909 | 16663987 | Daglum | 40 | Somewhat favorable | 88 |
| 2 | T9981 Fld4 | 2755639 | 0.443 | 16663554 | Savage | 62 | Somewhat favorable | 80 |
| 2 | T9981 Fld4 | 2755639 | 0.443 | 16663555 | Grail | 18 | Somewhat favorable | 80 |
| 2 | T9981 Fld4 | 2755643 | 9.641 | 16663957 | Flasher | 30 | Somewhat favorable | 88 |
| 2 | T9981 Fld4 | 2755643 | 9.641 | 16663958 | Vebar | 40 | Somewhat favorable | 88 |
| 2 | T9981 Fld4 | 2755643 | 9.641 | 16663959 | Tally | 18 | Somewhat favorable | 88 |
| 2 | T9981 Fld4 | 2755648 | 11.382 | 16663766 | Reeder | 58 | Somewhat favorable | 78 |
| 2 | T9981 Fld4 | 2755648 | 11.382 | 16663767 | Janesburg | 20 | Somewhat favorable | 78 |

### Populate Component Level Ratings with Adjusted Component Percent to Account for the Un-used Minor Components

TRUNCATE TABLE #M6

INSERT INTO #M6

SELECT aoiid, landunit, mukey, mapunit\_acres, cokey, compname, comppct\_r, rating, mu\_pct\_sum, (1.0 \* comppct\_r / mu\_pct\_sum) AS adj\_comp\_pct

FROM #M5;

| **aoiid** | **landunit** | **mukey** | **mapunit\_acres** | **cokey** | **compname** | **comppct\_r** | **rating** | **MU\_pct\_sum** | **adj\_comp\_pct** | **co\_acres** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | T9981 Fld3 | 354627 | 0.426 | 16464494 | Daglum | 25 | Somewhat favorable | 90 | 0.277777778 | 0.1183 |
| 1 | T9981 Fld3 | 354627 | 0.426 | 16464495 | Farnuf | 65 | Somewhat favorable | 90 | 0.722222222 | 0.3077 |
| 1 | T9981 Fld3 | 354648 | 0.287 | 16464607 | Amor | 25 | Somewhat favorable | 85 | 0.294117647 | 0.0844 |
| 1 | T9981 Fld3 | 354648 | 0.287 | 16464612 | Reeder | 60 | Somewhat favorable | 85 | 0.705882353 | 0.2026 |
| 1 | T9981 Fld3 | 2494708 | 1.729 | 16663930 | Amor | 49 | Somewhat favorable | 81 | 0.604938272 | 1.0459 |
| 1 | T9981 Fld3 | 2494708 | 1.729 | 16663931 | Cabba | 32 | Somewhat favorable | 81 | 0.395061728 | 0.6831 |
| 1 | T9981 Fld3 | 2525720 | 56.699 | 16663899 | Daglum | 33 | Somewhat favorable | 88 | 0.375 | 21.2621 |
| 1 | T9981 Fld3 | 2525720 | 56.699 | 16663903 | Rhoades | 55 | Somewhat favorable | 88 | 0.625 | 35.4369 |
| 1 | T9981 Fld3 | 2525732 | 1.35 | 16663796 | Ekalaka | 55 | Somewhat favorable | 72 | 0.763888889 | 1.0312 |
| 1 | T9981 Fld3 | 2525732 | 1.35 | 16663797 | Yegen | 17 | Somewhat favorable | 72 | 0.236111111 | 0.3187 |
| 1 | T9981 Fld3 | 2525733 | 0.129 | 16663951 | Vebar | 50 | Somewhat favorable | 75 | 0.666666667 | 0.086 |
| 1 | T9981 Fld3 | 2525733 | 0.129 | 16663952 | Cohagen | 25 | Somewhat favorable | 75 | 0.333333333 | 0.043 |
| 1 | T9981 Fld3 | 2525739 | 28.479 | 16663915 | Parshall | 20 | Somewhat favorable | 78 | 0.256410256 | 7.3023 |
| 1 | T9981 Fld3 | 2525739 | 28.479 | 16663917 | Vebar | 58 | Somewhat favorable | 78 | 0.743589744 | 21.1767 |
| 1 | T9981 Fld3 | 2525745 | 4.983 | 16663921 | Shambo | 75 | Somewhat favorable | 75 | 1 | 4.983 |
| 1 | T9981 Fld3 | 2525746 | 16.106 | 16663927 | Shambo | 78 | Somewhat favorable | 78 | 1 | 16.106 |
| 1 | T9981 Fld3 | 2525754 | 12.638 | 16663602 | Harriet | 75 | Somewhat favorable | 75 | 1 | 12.638 |
| 1 | T9981 Fld3 | 2525764 | 17.691 | 16663611 | Regan | 55 | Somewhat favorable | 55 | 1 | 17.691 |
| 1 | T9981 Fld3 | 2525766 | 0.032 | 16663539 | Water | 100 | Not rated | 100 | 1 | 0.032 |
| 1 | T9981 Fld3 | 2525769 | 181.356 | 16663985 | Belfield | 48 | Somewhat favorable | 88 | 0.545454545 | 98.9215 |
| 1 | T9981 Fld3 | 2525769 | 181.356 | 16663987 | Daglum | 40 | Somewhat favorable | 88 | 0.454545455 | 82.4345 |
| 1 | T9981 Fld3 | 2755648 | 2.449 | 16663766 | Reeder | 58 | Somewhat favorable | 78 | 0.743589744 | 1.8211 |
| 1 | T9981 Fld3 | 2755648 | 2.449 | 16663767 | Janesburg | 20 | Somewhat favorable | 78 | 0.256410256 | 0.6279 |
| 1 | T9981 Fld3 | 2755654 | 4.599 | 16663846 | Reeder | 60 | Somewhat favorable | 85 | 0.705882353 | 3.2464 |
| 1 | T9981 Fld3 | 2755654 | 4.599 | 16663847 | Amor | 25 | Somewhat favorable | 85 | 0.294117647 | 1.3526 |
| 2 | T9981 Fld4 | 2525720 | 8.623 | 16663899 | Daglum | 33 | Somewhat favorable | 88 | 0.375 | 3.2336 |
| 2 | T9981 Fld4 | 2525720 | 8.623 | 16663903 | Rhoades | 55 | Somewhat favorable | 88 | 0.625 | 5.3894 |
| 2 | T9981 Fld4 | 2525724 | 0.458 | 16664017 | Savage | 30 | Somewhat favorable | 85 | 0.352941176 | 0.1616 |
| 2 | T9981 Fld4 | 2525724 | 0.458 | 16664018 | Daglum | 20 | Somewhat favorable | 85 | 0.235294118 | 0.1078 |
| 2 | T9981 Fld4 | 2525724 | 0.458 | 16664022 | Belfield | 35 | Somewhat favorable | 85 | 0.411764706 | 0.1886 |
| 2 | T9981 Fld4 | 2525730 | 31.514 | 16663991 | Regent | 68 | Somewhat favorable | 85 | 0.8 | 25.2112 |
| 2 | T9981 Fld4 | 2525730 | 31.514 | 16663992 | Savage | 17 | Somewhat favorable | 85 | 0.2 | 6.3028 |
| 2 | T9981 Fld4 | 2525745 | 62.205 | 16663921 | Shambo | 75 | Somewhat favorable | 75 | 1 | 62.205 |
| 2 | T9981 Fld4 | 2525746 | 63.55 | 16663927 | Shambo | 78 | Somewhat favorable | 78 | 1 | 63.55 |
| 2 | T9981 Fld4 | 2525754 | 23.138 | 16663602 | Harriet | 75 | Somewhat favorable | 75 | 1 | 23.138 |
| 2 | T9981 Fld4 | 2525767 | 3.86 | 16663540 | Water | 100 | Not rated | 100 | 1 | 3.86 |
| 2 | T9981 Fld4 | 2525769 | 103.909 | 16663985 | Belfield | 48 | Somewhat favorable | 88 | 0.545454545 | 56.6776 |
| 2 | T9981 Fld4 | 2525769 | 103.909 | 16663987 | Daglum | 40 | Somewhat favorable | 88 | 0.454545455 | 47.2314 |
| 2 | T9981 Fld4 | 2755639 | 0.443 | 16663554 | Savage | 62 | Somewhat favorable | 80 | 0.775 | 0.3433 |
| 2 | T9981 Fld4 | 2755639 | 0.443 | 16663555 | Grail | 18 | Somewhat favorable | 80 | 0.225 | 0.0997 |
| 2 | T9981 Fld4 | 2755643 | 9.641 | 16663957 | Flasher | 30 | Somewhat favorable | 88 | 0.340909091 | 3.2867 |
| 2 | T9981 Fld4 | 2755643 | 9.641 | 16663958 | Vebar | 40 | Somewhat favorable | 88 | 0.454545455 | 4.3823 |
| 2 | T9981 Fld4 | 2755643 | 9.641 | 16663959 | Tally | 18 | Somewhat favorable | 88 | 0.204545455 | 1.972 |
| 2 | T9981 Fld4 | 2755648 | 11.382 | 16663766 | Reeder | 58 | Somewhat favorable | 78 | 0.743589744 | 8.4635 |
| 2 | T9981 Fld4 | 2755648 | 11.382 | 16663767 | Janesburg | 20 | Somewhat favorable | 78 | 0.256410256 | 2.9185 |

### Populate Component Acres by Multiplying Map Unit Acres with Adjusted Component Percent

TRUNCATE TABLE #M8

INSERT INTO #M8

SELECT aoiid, landunit, mukey, mapunit\_acres, cokey, compname, comppct\_r, rating, MU\_pct\_sum, adj\_comp\_pct, ROUND ( (adj\_comp\_pct \* mapunit\_acres), 4) AS co\_acres

FROM #M6;

| **aoiid** | **landunit** | **mukey** | **mapunit\_acres** | **cokey** | **compname** | **comppct\_r** | **rating** | **MU\_pct\_sum** | **adj\_comp\_pct** | **co\_acres** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | T9981 Fld3 | 354627 | 0.426 | 16464494 | Daglum | 25 | Mineral soil | 90 | 0.277777778 | 0.1183 |
| 1 | T9981 Fld3 | 354627 | 0.426 | 16464495 | Farnuf | 65 | Mineral soil | 90 | 0.722222222 | 0.3077 |
| 1 | T9981 Fld3 | 354648 | 0.287 | 16464607 | Amor | 25 | Mineral soil | 85 | 0.294117647 | 0.0844 |
| 1 | T9981 Fld3 | 354648 | 0.287 | 16464612 | Reeder | 60 | Mineral soil | 85 | 0.705882353 | 0.2026 |
| 1 | T9981 Fld3 | 2494708 | 1.729 | 16663930 | Amor | 49 | Mineral soil | 81 | 0.604938272 | 1.0459 |
| 1 | T9981 Fld3 | 2494708 | 1.729 | 16663931 | Cabba | 32 | Mineral soil | 81 | 0.395061728 | 0.6831 |
| 1 | T9981 Fld3 | 2525720 | 56.699 | 16663899 | Daglum | 33 | Mineral soil | 88 | 0.375 | 21.2621 |
| 1 | T9981 Fld3 | 2525720 | 56.699 | 16663903 | Rhoades | 55 | Mineral soil | 88 | 0.625 | 35.4369 |
| 1 | T9981 Fld3 | 2525732 | 1.35 | 16663796 | Ekalaka | 55 | Mineral soil | 72 | 0.763888889 | 1.0312 |
| 1 | T9981 Fld3 | 2525732 | 1.35 | 16663797 | Yegen | 17 | Mineral soil | 72 | 0.236111111 | 0.3187 |
| 1 | T9981 Fld3 | 2525733 | 0.129 | 16663951 | Vebar | 50 | Mineral soil | 75 | 0.666666667 | 0.086 |
| 1 | T9981 Fld3 | 2525733 | 0.129 | 16663952 | Cohagen | 25 | Mineral soil | 75 | 0.333333333 | 0.043 |
| 1 | T9981 Fld3 | 2525739 | 28.479 | 16663915 | Parshall | 20 | Mineral soil | 78 | 0.256410256 | 7.3023 |
| 1 | T9981 Fld3 | 2525739 | 28.479 | 16663917 | Vebar | 58 | Mineral soil | 78 | 0.743589744 | 21.1767 |
| 1 | T9981 Fld3 | 2525745 | 4.983 | 16663921 | Shambo | 75 | Mineral soil | 75 | 1 | 4.983 |
| 1 | T9981 Fld3 | 2525746 | 16.106 | 16663927 | Shambo | 78 | Mineral soil | 78 | 1 | 16.106 |
| 1 | T9981 Fld3 | 2525754 | 12.638 | 16663602 | Harriet | 75 | Mineral soil | 75 | 1 | 12.638 |
| 1 | T9981 Fld3 | 2525764 | 17.691 | 16663611 | Regan | 55 | Mineral soil | 55 | 1 | 17.691 |
| 1 | T9981 Fld3 | 2525766 | 0.032 | 16663539 | Water | 100 | Not rated | 100 | 1 | 0.032 |
| 1 | T9981 Fld3 | 2525769 | 181.356 | 16663985 | Belfield | 48 | Mineral soil | 88 | 0.545454545 | 98.9215 |
| 1 | T9981 Fld3 | 2525769 | 181.356 | 16663987 | Daglum | 40 | Mineral soil | 88 | 0.454545455 | 82.4345 |
| 1 | T9981 Fld3 | 2755648 | 2.449 | 16663766 | Reeder | 58 | Mineral soil | 78 | 0.743589744 | 1.8211 |
| 1 | T9981 Fld3 | 2755648 | 2.449 | 16663767 | Janesburg | 20 | Mineral soil | 78 | 0.256410256 | 0.6279 |
| 1 | T9981 Fld3 | 2755654 | 4.599 | 16663846 | Reeder | 60 | Mineral soil | 85 | 0.705882353 | 3.2464 |
| 1 | T9981 Fld3 | 2755654 | 4.599 | 16663847 | Amor | 25 | Mineral soil | 85 | 0.294117647 | 1.3526 |
| 2 | T9981 Fld4 | 2525720 | 8.623 | 16663899 | Daglum | 33 | Mineral soil | 88 | 0.375 | 3.2336 |
| 2 | T9981 Fld4 | 2525720 | 8.623 | 16663903 | Rhoades | 55 | Mineral soil | 88 | 0.625 | 5.3894 |
| 2 | T9981 Fld4 | 2525724 | 0.458 | 16664017 | Savage | 30 | Mineral soil | 85 | 0.352941176 | 0.1616 |
| 2 | T9981 Fld4 | 2525724 | 0.458 | 16664018 | Daglum | 20 | Mineral soil | 85 | 0.235294118 | 0.1078 |
| 2 | T9981 Fld4 | 2525724 | 0.458 | 16664022 | Belfield | 35 | Mineral soil | 85 | 0.411764706 | 0.1886 |
| 2 | T9981 Fld4 | 2525730 | 31.514 | 16663991 | Regent | 68 | Mineral soil | 85 | 0.8 | 25.2112 |
| 2 | T9981 Fld4 | 2525730 | 31.514 | 16663992 | Savage | 17 | Mineral soil | 85 | 0.2 | 6.3028 |
| 2 | T9981 Fld4 | 2525745 | 62.205 | 16663921 | Shambo | 75 | Mineral soil | 75 | 1 | 62.205 |
| 2 | T9981 Fld4 | 2525746 | 63.55 | 16663927 | Shambo | 78 | Mineral soil | 78 | 1 | 63.55 |
| 2 | T9981 Fld4 | 2525754 | 23.138 | 16663602 | Harriet | 75 | Mineral soil | 75 | 1 | 23.138 |
| 2 | T9981 Fld4 | 2525767 | 3.86 | 16663540 | Water | 100 | Not rated | 100 | 1 | 3.86 |
| 2 | T9981 Fld4 | 2525769 | 103.909 | 16663985 | Belfield | 48 | Mineral soil | 88 | 0.545454545 | 56.6776 |
| 2 | T9981 Fld4 | 2525769 | 103.909 | 16663987 | Daglum | 40 | Mineral soil | 88 | 0.454545455 | 47.2314 |
| 2 | T9981 Fld4 | 2755639 | 0.443 | 16663554 | Savage | 62 | Mineral soil | 80 | 0.775 | 0.3433 |
| 2 | T9981 Fld4 | 2755639 | 0.443 | 16663555 | Grail | 18 | Mineral soil | 80 | 0.225 | 0.0997 |
| 2 | T9981 Fld4 | 2755643 | 9.641 | 16663957 | Flasher | 30 | Mineral soil | 88 | 0.340909091 | 3.2867 |
| 2 | T9981 Fld4 | 2755643 | 9.641 | 16663958 | Vebar | 40 | Mineral soil | 88 | 0.454545455 | 4.3823 |
| 2 | T9981 Fld4 | 2755643 | 9.641 | 16663959 | Tally | 18 | Mineral soil | 88 | 0.204545455 | 1.972 |
| 2 | T9981 Fld4 | 2755648 | 11.382 | 16663766 | Reeder | 58 | Mineral soil | 78 | 0.743589744 | 8.4635 |
| 2 | T9981 Fld4 | 2755648 | 11.382 | 16663767 | Janesburg | 20 | Mineral soil | 78 | 0.256410256 | 2.9185 |

### Aggregate the Classes and Sum up the Component Acres by Landunit (Tract and Field number)

TRUNCATE TABLE #M10

INSERT INTO #M10

SELECT landunit, rating, SUM (co\_acres) AS rating\_acres

FROM #M8

GROUP BY landunit, rating

ORDER BY landunit, rating\_acres DESC;

| **landunit** | **rating rati** | **ng\_acres** |
| --- | --- | --- |
| T9981 Fld3 |  | Not rated 0.032 |
| T9981 Fld4 |  | Not rated 3.86 |
| T9981 Fld3 |  | Somewhat favorable 328.9209 |
| T9981 Fld4 |  | Somewhat favorable 314.863 |

### Group of Insert Statements to Populate the Final Output Tables

INSERT INTO #LandunitRatingsDetailed1 (aoiid, landunit, attributename, rating, rating\_key, rating\_num, rating\_pct, rating\_acres, landunit\_acres)

SELECT aoiid, M10.landunit, @attributeName AS attributename, M10.rating, RD.rating\_key, RD.rating\_num,

ROUND ((rating\_acres/ landunit\_acres) \* 100.0, 2) AS rating\_pct,

ROUND (rating\_acres,2) AS rating\_acres,

ROUND ( landunit\_acres, 2) AS landunit\_acres

FROM #M10 M10

LEFT OUTER JOIN #AoiAcres ON #AoiAcres.landunit = M10.landunit

INNER JOIN #RatingDomain RD ON M10.rating = RD.rating

WHERE RD.attributename = @attributeName

GROUP BY aoiid, M10.landunit, M10.rating, rating\_key, rating\_acres, landunit\_acres, rating\_num

ORDER BY landunit, attributename, rating\_num DESC;

| **aoiid** | **landunit** | **attributename** | **rating** | **rating\_num** | **rating\_key** | **rating\_pct** | **rating\_acres** | **landunit\_acres** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | T9981 Fld3 | Suitability for Aerobic Soil Organisms | Not rated | 4 | Suitability for Aerobic Soil Organisms:4 | 0.01 | 0.03 | 328.95 |
| 1 | T9981 Fld3 | Suitability for Aerobic Soil Organisms | Somewhat favorable | 2 | Suitability for Aerobic Soil Organisms:2 | 99.99 | 328.92 | 328.95 |
| 2 | T9981 Fld4 | Suitability for Aerobic Soil Organisms | Not rated | 4 | Suitability for Aerobic Soil Organisms:4 | 1.21 | 3.86 | 318.72 |
| 2 | T9981 Fld4 | Suitability for Aerobic Soil Organisms | Somewhat favorable | 2 | Suitability for Aerobic Soil Organisms:2 | 98.79 | 314.86 | 318.72 |

* Detailed Landunit Ratings1: Rating acres and rating percent by area for each soil-landunit polygon.
* These will be summarized to a single set of interpretation ratings for each landunit. Currently there are 5 interpretations.

### Determine Dominant Critical

INSERT INTO #LandunitRatingsDetailed2 (landunit, attributename, rating, rating\_num, rating\_key, rating\_pct, rating\_acres, landunit\_acres, rolling\_pct, rolling\_acres)

SELECT landunit, attributename, rating, rating\_num, rating\_key, rating\_pct, rating\_acres, landunit\_acres,

rolling\_pct = SUM(rating\_pct) OVER

(

PARTITION BY landunit

ORDER BY rating\_key ROWS UNBOUNDED PRECEDING

),

rolling\_acres = SUM(rating\_acres) OVER

(

PARTITION BY landunit

ORDER BY rating\_key ROWS UNBOUNDED PRECEDING

)

FROM #LandunitRatingsDetailed1

WHERE attributename = @attributeName

ORDER BY landunit, attributename;

| **landunit attr** | **ibutename rati** | **ng rating\_num rating\_key rating\_pct rating\_a** | **cres landunit** | **acres rolling** | **pct rolling\_acre** | **s** |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| T9981 Fld3 | Suitabil | ity for Aerobic Soil Organisms | Somewhat | favorable |  |  | 2 Suit | ability for Aero | bic Soil Organisms:2 99.99 328.92 328.95 99.99 328.92 |
| T9981 Fld3 | Suitabil | ity for Aerobic Soil Organisms | Not rate | d |  |  | 4 Suit | ability for Aero | bic Soil Organisms:4 0.01 0.03 328.95 100 328.95 |
| T9981 Fld4 | Suitabil | ity for Aerobic Soil Organisms | Somewhat | favorable |  |  | 2 Suit | ability for Aero | bic Soil Organisms:2 98.79 314.86 318.72 98.79 314.86 |
| T9981 Fld4 | Suitabil | ity for Aerobic Soil Organisms | Not rate | d |  |  | 4 Suit | ability for Aero | bic Soil Organisms:4 1.21 3.86 318.72 100 318.72 |

* LandunitRatingsDetailed2 is populated with all information plus rolling\_pct and rolling\_acres which are using in the landunit summary rating.
* Detailed Landunit Ratings2 table columns: landunit, attributename, rating, rating\_key, rating\_num, rating\_pct, rating\_acres, landunit\_acres, rolling\_pct, rolling\_acres.

### Landunit Ratings CART

INSERT INTO #LandunitRatingsCART (id, landunit, attributename, rating, rating\_key, rolling\_pct, rolling\_acres, landunit\_acres)

SELECT ROW\_NUMBER() OVER(PARTITION BY landunit ORDER BY rating\_key ASC) AS "id",

landunit, attributename, rating, rating\_key, rolling\_pct, rolling\_acres, landunit\_acres

FROM #LandunitRatingsDetailed2

WHERE attributename = @attributeName AND (rolling\_pct >= @minPct OR rolling\_acres >= @minAcres)

* Identifies the single, most limiting rating (per landunit) that comprises at least 10% by area or 10 acres.
* This record will have an id value of 1.

| **id** | **landunit** | **attributename** | **rating** | **rating\_key** | **rolling\_pct** | **rolling\_acres** | **landunit\_acres** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | T9981 Fld3 | Suitability for Aerobic Soil Organisms | Somewhat favorable | Suitability for Aerobic Soil Organisms:2 | 99.99 | 328.92 | 328.95 |
| 2 | T9981 Fld3 | Suitability for Aerobic Soil Organisms | Not rated | Suitability for Aerobic Soil Organisms:4 | 100 | 328.95 | 328.95 |
| 1 | T9981 Fld4 | Suitability for Aerobic Soil Organisms | Somewhat favorable | Suitability for Aerobic Soil Organisms:2 | 98.79 | 314.86 | 318.72 |
| 2 | T9981 Fld4 | Suitability for Aerobic Soil Organisms | Not rated | Suitability for Aerobic Soil Organisms:4 | 100 | 318.72 | 318.72 |

### Final CART Soil Interpretation Ratings for Each Landunit

INSERT INTO #LandunitRatingsCART2 (landunit, attributename, rating, rating\_key, rolling\_pct, rolling\_acres, landunit\_acres, soils\_metadata)

SELECT LC.landunit, LC.attributename, LC.rating, LC.rating\_key, rolling\_pct, rolling\_acres, landunit\_acres, MD.soils\_metadata

FROM #LandunitRatingsCART LC

INNER JOIN #RatingDomain RD ON LC.attributename = RD.attributename AND LC.rating = RD.rating

INNER JOIN #LandunitMetadata MD ON LC.landunit = MD.landunit

WHERE LC.id = 1

ORDER BY landunit, rating\_key;

* The LandunitRatingsCART table will have all data, but the record for the overall landunit rating will have an id = 1.

| **landunit** | **rating\_key** | **soils\_metadata** |
| --- | --- | --- |
| T9981 Fld3 | Suitability for Aerobic Soil Organisms:2 | ND001 2018-09-12 19:21:50 SD105 2018-09-12 23:49:29 |
| T9981 Fld4 | Suitability for Aerobic Soil Organisms:2 | ND001 2018-09-12 19:21:50 |

## References

1. Blanco-Canqui, H., M.M. Mikha, D.R. Presley, and M.M. Claassen. 2011. Addition of cover crops enhances no-till potential for improving soil physical properties. Soil Sci. Soc. Am. J. 75:1471--1482.  doi:10.2136/sssaj2010.0430.
2. Carr, B. 2015. Winter cover crop species adapted to North-Central West Texas and Southwestern Oklahoma. USDA-NRCS James E. Bud Smith Plant Material Center. Knox City, TX. June 2015. 8p. ID# 12635.
3. Duiker, S.W. 2014. Effects of soil compaction. Penn State Extension.
4. Fernandez-Calvino, D., E. Baath. 2010. Growth response of the bacterial community to pH in soils differing in pH. FEMS Microbiol Ecol. (2010) 73:149--156.
5. Fierer, N., and R.B. Jackson. 2006. The diversity and biogeography of soil bacterial communities. Proceedings of the National Academy of Sciences of the United States of America 103:626--631.
6. Hooper D.U., D.E. Bignell, V.K. Brown, and L. Brussaard. 2000. Interactions between aboveground and belowground biodiversity in terrestrial ecosystems: Patterns, mechanisms, and feedbacks. Bioscience 50 (12):1049--1061.
7. Kemper W.D., and E.J. Koch. 1966. Aggregate stability of soils from western United States and Canada. Technical Bulletin No. 1355. United States Department of Agriculture Agricultural Research Service. U S Government Printing Office Washington, DC. pp 52.
8. Kieft, T.L., E.D. Soroker, and M. Firestone. 1987. Microbial biomass response to rapid increase in water potential when dry soil is wetted. Soil Biology and Biochemistry 19(2): I 19--I 26.
9. Lauber, C.L., M. Hamady, R. Knight, and N. Fierer. 2009. Pyrosequencing-based assessment of soil pH as a predictor of soil bacterial community structure at the continental scale. Applied and Environmental Microbiology 75:5111--5120.
10. Olson, Kenneth, S.E. Ebelhar, and James M. Lang. 2014. Long-term effects of cover crops on crop yields, soil organic carbon stocks and sequestration. Open Journal of Soil Science 4(8):9. doi:10.4236/ojss.2014.48030.
11. Owojori, O.J., A.J. Reinecke, P. Voua-Otomo, and S.A. Reinecke. 2009. Comparative study of the effects of salinity on life-cycle parameters of four soil-dwelling species (Folsomia candida, Enchytraeus doerjesi, Eisenia fetida and Aporrectodea caliginosa). Pedobiologia 52 (6):351--360. <https://doi.org/10.1016/j.pedobi.2008.12.002>.
12. Porazinska D.L., R.D. Bardgett, M.B. Blaauw, W.H. Hunt, A.N. Parsons, T.R. Seastedt, and D.H. Wall. 2003. Relationships at the aboveground-belowground interface: Plants, soil biota, and soil processes. Ecological Monographs 73 (3):377--395. doi:10.1890/0012-9615(2003)073[0377:RATAIP]2.0.CO;2.
13. Schenk, H.R., and R.B. Jackson. Rooting depths, lateral root spreads and below-ground/above-ground allometries of plants in water-limited ecosystems. Journal of Ecology 90(3):480--494.
14. U.S. Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI.
15. U.S. Department of Agriculture, Natural Resources Conservation Service. 2008. Soil Quality Indicators. USDA-NRCS Publication.
16. U.S. Department of Agriculture, Natural Resources Conservation Service. 2014. Soil quality kit---Guide for educators. Bulk density, moisture, aeration. USDA-NRCS Publication.