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/** ----- 06 SOIL ORDER -----
/**
/** FILE NAME:          06_Soil.txt
/** AUTHOR:            RENEE SCHICKER
/** CREATED*:          10 JUNE 2009
/** UPDATED/MODIFIED:  30 SEPTEMBER 2009
/**
/** The scripts may be supplied in a more readily useable format if the work is acknowledged
/** CONTACT:           Renee_Schicker@hotmail.com
/**
/** * CREATED FROM EARLIER SCRIPTS:   CREATED:          LAST UPDATED:
/**          04_Clip.txt               15 DECEMBER 2008    20 MAY 2009
/**          06_Simpl_Soil.txt          11 MARCH 2009     28 MAY 2009
/**          15_Rasterise.txt           30 APRIL 2009     28 MAY 2009
/**
/** STARTS IN:              ARC
/** SCRIPT USED BY:         00_MASTER.txt
/** USES THE SCRIPT:        CheckProgEdit.txt
/**
/** INPUT COVERS:
/**          nzfsl            D:\renee_GIS\input_data\nzfsl
/**          dem_bnd          D:\Renee_GIS\Output_data\Organised\03_DEM\DEM_Bnd
/**
/** OUTPUT COVERS:          Waik_Soil      soilstest
/** TEMP COVERS:            region_soil    region_soil2
/** OUTPUT GRID:            SoilsGrid
/**
/** FUNCTIONS USED:          &IF &THEN      [EXIST]          KILL
/**                          COPY            ADDITEM         &RUN
/**                          EDITCOVER (EC)   EDITFEATURE (EF)  SELECT
/**                          CALCULATE        &TYPE           SAVE
/**                          QUIT (Q)         DISSOLVE
/**
/** PURPOSE:                Simplify New Zealand Soil Classifications.
/**                          Reduce 74 classes to 17 classes.
/**                          Further reduced from 17 to 13 classes (28 May 2009)
/**
/** HOW CLASSIFIED:          Using the NZSC classification, group same soil groups
/**                          rather than get into specifics.
/**
/** CLASSES MADE:           Count of Sub-classes:  CODE_NUM assigned:
/**          Allophanic soils      4                1
/**          Brown soils            8                2
/**          Gley soils             13               3
/**          Granular soils         2                4
/**          Organic soils          6                5
/**          Oxidic soils           1                6
/**          Pallic soils           2                7
/**          Podzols                2                8
/**          Pumice soils           8                9
/**          Raw soils              7                10

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/**          Recent soils          10          11
/**          Ultic soils           7          12
/**          Non-soil features     5          0
/**
/** Result: 13 classes      from 75 Sub-classes
/**
/** ..... HISTORY .....
/**
/** 15 DECEMBER 2008      3_clip.txt individual clip script created specifically to be run from a
/**                          master script as part of the processing of parameters for Waikato
/**                          region. Important to check input exists before processing.
/** 04 FEBRUARY 2009      (04_Clip.txt) Backed up on "Feb 04 2009" disc
/** 12 FEBRUARY 2009      (04_Clip.txt) Can now clip with the digitised regional boundary I
/**                          made (which has a more representative coast line than the EW one)
/**                          based on the district boundaries layer and cut off points based on
/**                          the EW layer
/** 05 MARCH 2009         (04_Clip.txt) Transferred everything over to new GIS computer
/**                          (other one might be replaced at some stage)
/** 9-10 MARCH 2009       (04_Clip.txt) Formatted listed everything and added descriptions
/**                          and history.
/** 11 MARCH 2009         Created 06_Simpl_Soil.txt script. Added clip nzfsl soil layer to region.
/**                          Renamed 3_clip.txt as 04_clip.txt. Now run from 00_MASTER.txt
/**                          instead of 0_parent.txt.
/** 17 MARCH 2009         (06_Simpl_Soil.txt) Changed additem column from Soil_reclassified to
/**                          NZSC_Rclassd Added SELECT ROT (Typic Orthic Recent Soil) and
/**                          CALCULATE as RECENT SOILS. Added SELECT GRT (Typic Recent Gley
/**                          Soils) and CALCULATE as GLEY SOILS. (04_Clip.txt) Set a fuzzy
/**                          tolerance for clipping the soil layer to get rid of the polygons with
/**                          nothing set as the NZSC class which generally occur in
/**                          deltas/estuaries/rivers as the clip was not fine enough. Have set
/**                          fuzzy tolerance to 1 for all layers clipped by region_bnd.
/** 26 MARCH 2009         (06_Simpl_Soil.txt) Checked metadata, MSOIL mentioned earlier =
/**                          Mountain Soil.
/** 28 MARCH 2009         (06_Simpl_Soil.txt) Figured out what RFM and WH soils were
/** 30 MARCH 2009         (06_Simpl_Soil.txt) Fixed comment for RFM and WH to say Mottled
/**                          Fluvial Recent Soils (RFM) and Hydrothermal Raw Soils (WH).
/** 31 MARCH 2009         (06_Simpl_Soil.txt) Discussed odd NZSC classifications in nzfsl
/**                          ('MOBA', 'GOM' and 'GOP') in a meeting with Dr. Megan Balks. Could
/**                          not find them in the "New Zealand Soil Classification" (A.E. Hewitt,
/**                          1992) handbook so we e-mailed Allan Hewitt at Landcare Research
/**                          to find out.
/** 07 APRIL 2009         E-mail response from Allan Hewitt regarding NZSC classifications
/**                          'MOBA', 'GOM' and 'GOP' in the nzfsl database, are likely to be
/**                          typos.
/** 27 APRIL 2009         Check scripts are consistent with others, update script information.
/** 30 APRIL 2009         First attempt to rasterise vector data using POLYGRID, as a result I
/**                          created the 15_Rasterise.txt script to convert Covers to Grids.
/** 06-10 MAY 2009        (in 15_Rasterise.txt) Added an additional step to rasterising text
/**                          type polygon data - pseudo code assigned to each parameter's class,
/**                          making water 0 where possible. This works now, just have to Add a
/**                          field to the GRID and make the text edits in ArcMap (this works so

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/**      long as the raster data is an integer type, can't access attribute table
/**      if it is a float type).
/**      12 MAY 2009      (in 06_Simpl_Soil.txt) Added &IF [EXIST -COVER] &THEN KILL for
/**      both region_soil and region_soil2.
/**      20 MAY 2009      (04_Clip.txt) Separate Input data and output data directories, so
/**      workspace is set to a separate output folder, so reduces the chance
/**      of deleting input data by accident.
/**      28 MAY 2009      (in 06_Simpl_Soil.txt) Grouped all non-soil features together (water,
/**      ice, town & quarry to make and region_soil2 non-soil features).
/**      Regrouped Mountain Soil in with Raw Soils as would probably fit
/**      that description better. Modified classes in 06_Simpl_Soil.txt which
/**      carry across to 15_Rasterise.txt, and have also been updated there.
/**      10 JUNE 2009      Combined the soil content of 04_Clip.txt and 15_Rasterise.txt with
/**      06_Simpl_Soil.txt to create 06_Soil.txt. Now clip by DEM_Bnd
/**      instead of region_bnd.
/**      30 SEPTEMBER 2009 Added separate workspaces for each script, so have to add file path
/**      to find input files, also corrected input and output sections.
/*****
/*****

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&CALL Clip
&CALL Reclass
&CALL Rasterise
&RETURN

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/*****
&ROUTINE Clip
&IF [EXIST region_soil -cover] &THEN KILL region_soil
CLIP D:\renee_GIS\input_data\nzfs\ D:\Renee_GIS\Output_data\Organised\03_DEM\DEM_Bnd
region_soil POLY 1
&TYPE soil clipped
&RETURN
/*****
&ROUTINE Reclass
&IF [EXIST region_soil2 -COVER] &THEN KILL region_soil2

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COPY region_soil region_soil2
&TYPE region_soil copied to create region_soil2

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/* Add column for reclassification/ simplification of classification
ADDITEM region_soil2.pat region_soil2.pat NZSC_Rclassd 30 30 C

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&RUN d:\renee_gis\scripts\CheckProgEdit.txt /* Need to use ArcEdit so run the associated script
to do this

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EC region_soil2
EF polygon /* edit feature
SELECT ALL

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/*.....BROWN SOILS .....
&TYPE calculating BROWN SOILS (x 8)

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SELECT for NZSC = 'BLAD'	/* Acidic-pedal Allophanic Brown Soils
CALCULATE NZSC_Rclassd = 'Brown soils'	
SELECT for NZSC = 'BOA'	/* Acidic Orthic Brown Soils
CALCULATE NZSC_Rclassd = 'Brown soils'	
SELECT for NZSC = 'BOM'	/* Mottled Orthic Brown Soils
CALCULATE NZSC_Rclassd = 'Brown soils'	
SELECT for NZSC = 'BOP'	/* Pallic Orthic Brown Soils
CALCULATE NZSC_Rclassd = 'Brown soils'	
SELECT for NZSC = 'BOT'	/* Typic Orthic Brown Soils
CALCULATE NZSC_Rclassd = 'Brown soils'	
SELECT for NZSC = 'BSM'	/* Mottled Sandy Brown Soils
CALCULATE NZSC_Rclassd = 'Brown soils'	
SELECT for NZSC = 'BST'	/* Typic Sandy Brown Soils
CALCULATE NZSC_Rclassd = 'Brown soils'	
SELECT for NZSC = 'BXT'	/* Typic Oxidic Brown Soils
CALCULATE NZSC_Rclassd = 'Brown soils'	

/*.....GLEY SOILS
&TYPE calculating GLEY SOILS (x 13)

SELECT for NZSC = 'GAO'	/* Peaty Acidic Gley Soils
CALCULATE NZSC_Rclassd = 'Gley soils'	
SELECT for NZSC = 'GAT'	/* Typic Acidic Gley Soils
CALCULATE NZSC_Rclassd = 'Gley soils'	
SELECT for NZSC = 'GOA'	/* Acidic Orthic Gley Soils
CALCULATE NZSC_Rclassd = 'Gley soils'	
SELECT for NZSC = 'GOE'	/* Melanic Orthic Gley Soils
CALCULATE NZSC_Rclassd = 'Gley soils'	
SELECT for NZSC = 'GOM'	/* Gley Soils (Possibly a typo?)
CALCULATE NZSC_Rclassd = 'Gley soils'	
SELECT for NZSC = 'GOO'	/* Peaty Orthic Gley Soils
CALCULATE NZSC_Rclassd = 'Gley soils'	
SELECT for NZSC = 'GOP'	/* Gley Soils (Possibly a typo?)
CALCULATE NZSC_Rclassd = 'Gley soils'	
SELECT for NZSC = 'GOT'	/* Typic orthic Gley Soils
CALCULATE NZSC_Rclassd = 'Gley soils'	
SELECT for NZSC = 'GRA'	/* Acidic Recent Gley Soils
CALCULATE NZSC_Rclassd = 'Gley soils'	
SELECT for NZSC = 'GRO'	/* Peaty Recent Gley Soils
CALCULATE NZSC_Rclassd = 'Gley soils'	
SELECT for NZSC = 'GRT'	/* Typic Recent Gley Soils
CALCULATE NZSC_Rclassd = 'Gley soils'	
SELECT for NZSC = 'GSO'	/* Peaty Sandy Gley Soils
CALCULATE NZSC_Rclassd = 'Gley soils'	
SELECT for NZSC = 'GUFQ'	/* Fluid-saline Sulphuric Gley Soils
CALCULATE NZSC_Rclassd = 'Gley soils'	

/*.....ALLOPHANIC SOILS
&TYPE calculating ALLOPHANIC SOILS (x 4)

SELECT for NZSC = 'LIT'	/* Typic Impeded Allophanic Soils
CALCULATE NZSC_Rclassd = 'Allophanic soils'	
SELECT for NZSC = 'LOA'	/* Acidic Orthic Allophanic Soils
CALCULATE NZSC_Rclassd = 'Allophanic soils'	
SELECT for NZSC = 'LOT'	/* Typic Orthic Allophanic Soils
CALCULATE NZSC_Rclassd = 'Allophanic soils'	
SELECT for NZSC = 'LOV'	/* Vitric Orthic Allophanic Soils
CALCULATE NZSC_Rclassd = 'Allophanic soils'	
/*..... PUMICE SOILS	
&TYPE calculating PUMICE SOILS (x 8)	
SELECT for NZSC = 'MIM'	/* Mottled Impeded Pumice Soils
CALCULATE NZSC_Rclassd = 'Pumice soils'	
SELECT for NZSC = 'MIW'	/* Welded Impeded Pumice Soils
CALCULATE NZSC_Rclassd = 'Pumice soils'	
SELECT for NZSC = 'MOBA'	/* Pumice Soils (Possibly a typo? meant to be
MOBL?)	
CALCULATE NZSC_Rclassd = 'Pumice soils'	
SELECT for NZSC = 'MOBL'	/* Buried-allophanic Orthic Pumice Soils
CALCULATE NZSC_Rclassd = 'Pumice soils'	
SELECT for NZSC = 'MOI'	/* Immature Orthic Pumice Soils
CALCULATE NZSC_Rclassd = 'Pumice soils'	
SELECT for NZSC = 'MOM'	/* Mottled orthic Pumice Soils
CALCULATE NZSC_Rclassd = 'Pumice soils'	
SELECT for NZSC = 'MOT'	/* Typic Orthic Pumice Soils
CALCULATE NZSC_Rclassd = 'Pumice soils'	
SELECT for NZSC = 'MOZ'	/* Podzolic Orthic Pumice Soils
CALCULATE NZSC_Rclassd = 'Pumice soils'	
/*..... GRANULAR SOILS	
&TYPE calculating GRANULAR SOILS (x 2)	
SELECT for NZSC = 'NOT'	/* Typic Orthic Granular Soils
CALCULATE NZSC_Rclassd = 'Granular soils'	
SELECT for NZSC = 'NXT'	/* Typic Oxidic Granular Soils
CALCULATE NZSC_Rclassd = 'Granular soils'	
/*..... ORGANIC SOILS	
&TYPE calculating ORGANIC SOILS (x 6)	
SELECT for NZSC = 'OFA'	/* Acid Fibiric Organic Soils
CALCULATE NZSC_Rclassd = 'Organic soils'	
SELECT for NZSC = 'OFS'	/* Sphagmic Fibiric Organic Soils
CALCULATE NZSC_Rclassd = 'Organic soils'	
SELECT for NZSC = 'OHA'	/* Acid Humic Organic Soils
CALCULATE NZSC_Rclassd = 'Organic soils'	
SELECT for NZSC = 'OHM'	/* Mellow Humic Organic Soils
CALCULATE NZSC_Rclassd = 'Organic soils'	
SELECT for NZSC = 'OMA'	/* Acid Mesic Organic Soils
CALCULATE NZSC_Rclassd = 'Organic soils'	

SELECT for NZSC = 'OMM'	/* Mellow Mesic Organic Soils
CALCULATE NZSC_Rclassd = 'Organic soils'	

/*..... PALLIC SOILS
 &TYPE calculating PALLIC SOILS (x 2)

SELECT for NZSC = 'PIM'	/* Mottled Immature Pallic Soils
CALCULATE NZSC_Rclassd = 'Pallic soils'	
SELECT for NZSC = 'PJT'	/* Typic Argillic Pallic Soils
CALCULATE NZSC_Rclassd = 'Pallic soils'	

/*..... RECENT SOILS
 &TYPE calculating RECENT SOILS (x 10)

SELECT for NZSC = 'RFM'	/* Mottled Fluvial Recent Soils
CALCULATE NZSC_Rclassd = 'Recent soils'	
SELECT for NZSC = 'RFT'	/* Typic Fluvial Recent Soils
CALCULATE NZSC_Rclassd = 'Recent soils'	
SELECT for NZSC = 'RFW'	/* Weathered Fluvial Recent Soils
CALCULATE NZSC_Rclassd = 'Recent soils'	
SELECT for NZSC = 'ROA'	/* Acidic Orthic Recent Soils
CALCULATE NZSC_Rclassd = 'Recent soils'	
SELECT for NZSC = 'ROM'	/* Mottled Orthic Recent Soils
CALCULATE NZSC_Rclassd = 'Recent soils'	
SELECT for NZSC = 'ROT'	/* Typic Orthic Recent Soils
CALCULATE NZSC_Rclassd = 'Recent soils'	
SELECT for NZSC = 'ROW'	/* Weathered Orthic Recent Soils
CALCULATE NZSC_Rclassd = 'Recent soils'	
SELECT for NZSC = 'RST'	/* Typic Sandy Recent Soils
CALCULATE NZSC_Rclassd = 'Recent soils'	
SELECT for NZSC = 'RTM'	/* Mottled Tephric Recent Soils
CALCULATE NZSC_Rclassd = 'Recent soils'	
SELECT for NZSC = 'RTT'	/* Typic Tephric Recent Soils
CALCULATE NZSC_Rclassd = 'Recent soils'	

/*..... ULTIC SOILS
 &TYPE calculating ULTIC SOILS (x 7)

SELECT for NZSC = 'UDM'	/* Mottled Densipan Ultic Soils
CALCULATE NZSC_Rclassd = 'Ultic soils'	
SELECT for NZSC = 'UEM'	/* Mottled Albic Ultic Soils
CALCULATE NZSC_Rclassd = 'Ultic soils'	
SELECT for NZSC = 'UEP'	/* Perch-gleyed Albic Ultic Soils
CALCULATE NZSC_Rclassd = 'Ultic soils'	
SELECT for NZSC = 'UPT'	/* Typic Perch-gley Ultic Soils
CALCULATE NZSC_Rclassd = 'Ultic soils'	
SELECT for NZSC = 'UST'	/* Typic Sandy Ultic Soils
CALCULATE NZSC_Rclassd = 'Ultic soils'	
SELECT for NZSC = 'UYM'	/* Mottled Yellow Ultic Soils
CALCULATE NZSC_Rclassd = 'Ultic soils'	
SELECT for NZSC = 'UYT'	/* Typic Yellow Ultic Soils

CALCULATE NZSC_Rclassd = 'Ultic soils'

/*..... RAW SOILS

&TYPE calculating RAW SOILS (x 7)

SELECT for NZSC = 'WGFU'

/* Fluid-sulphidic Gley Raw Soils

CALCULATE NZSC_Rclassd = 'Raw soils'

SELECT for NZSC = 'WH'

/* Hydrothermal Raw Soils

CALCULATE NZSC_Rclassd = 'Raw soils'

SELECT for NZSC = 'WHA'

/* Active Hydrothermal Raw Soils

CALCULATE NZSC_Rclassd = 'Raw soils'

SELECT for NZSC = 'WS'

/* Sandy Raw Soils

CALCULATE NZSC_Rclassd = 'Raw soils'

SELECT for NZSC = 'WT'

/* Tephric Raw Soils

CALCULATE NZSC_Rclassd = 'Raw soils'

SELECT for NZSC = 'WX'

/* Rocky Raw Soils

CALCULATE NZSC_Rclassd = 'Raw soils'

SELECT for NZSC = 'MSoil'

/* metadata says "Mountain Soils" - assume it fits

with Raw.

CALCULATE NZSC_Rclassd = 'Raw soils'

/*..... OXIDIC SOILS

&TYPE calculating OXIDIC SOILS (x 1)

SELECT for NZSC = 'XOT'

/* Typic Orthic Oxidic Soils

CALCULATE NZSC_Rclassd = 'Oxidic soils'

/*..... PODZOLS

&TYPE calculating PODZOLS (x 2)

SELECT for NZSC = 'ZOH'

/* Humose Orthic Podzols

CALCULATE NZSC_Rclassd = 'Podzols'

SELECT for NZSC = 'ZOT'

/* Typic Orthic Podzols

CALCULATE NZSC_Rclassd = 'Podzols'

/*..... OTHER FEATURES

&TYPE calculating OTHER NON-SOIL FEATURES (x5)

&TYPE Calculating WATER BODIES (x 2)

SELECT for NZSC = 'lake'

/* Lake

CALCULATE NZSC_Rclassd = 'Non-soil features'

SELECT for NZSC = 'rive'

/* River

CALCULATE NZSC_Rclassd = 'Non-soil features'

&TYPE calculating ICE (x 1)

SELECT for NZSC = 'ice'

/* Ice

CALCULATE NZSC_Rclassd = 'Non-soil features'

&TYPE calculating TOWN (x 1)

SELECT for NZSC = 'town'

/* Town

CALCULATE NZSC_Rclassd = 'Non-soil features'

&TYPE calculating QUARRY (x 1)

SELECT for NZSC = 'quar' /* Quarry

CALCULATE NZSC_Rclassd = 'Non-soil features'

SAVE

Q

&IF [EXIST Waik_soil -COVER] &THEN KILL Waik_soil

/*Combine neighbouring polygons of the same class_name

DISSOLVE region_soil2 Waik_soil NZSC_Rclassd POLY

&IF [EXIST region_soil -COVER] &THEN KILL region_soil

&IF [EXIST region_soil2 -COVER] &THEN KILL region_soil2

&RETURN

/*****

&ROUTINE Rasterise

&IF [EXIST soilstest -COVER] &THEN KILL soilstest

COPY Waik_Soil soilstest

DROPITEM soilstest.pat soilstest.pat SoilCodeNum

ADDITEM soilstest.pat soilstest.pat SoilCodeNum 5 5 I

&RUN d:\renee_gis\scripts\CheckProgEdit.txt

EC soilstest

EF polygon

SELECT for NZSC_Rclassd = 'Non-soil features'

CALCULATE SoilCodeNum = 0

SELECT for NZSC_Rclassd = 'Allophanic soils'

CALCULATE SoilCodeNum = 1

SELECT for NZSC_Rclassd = 'Brown soils'

CALCULATE SoilCodeNum = 2

SELECT for NZSC_Rclassd = 'Gley soils'

CALCULATE SoilCodeNum = 3

SELECT for NZSC_Rclassd = 'Granular soils'

CALCULATE SoilCodeNum = 4

SELECT for NZSC_Rclassd = 'Organic soils'

CALCULATE SoilCodeNum = 5

SELECT for NZSC_Rclassd = 'Oxidic soils'

CALCULATE SoilCodeNum = 6

SELECT for NZSC_Rclassd = 'Pallic soils'

CALCULATE SoilCodeNum = 7

SELECT for NZSC_Rclassd = 'Podzols'

CALCULATE SoilCodeNum = 8

SELECT for NZSC_Rclassd = 'Pumice soils'

CALCULATE SoilCodeNum = 9

SELECT for NZSC_Rclassd = 'Raw soils'


```
CALCULATE SoilCodeNum = 10  
SELECT for NZSC_Rclassd = 'Recent soils'  
CALCULATE SoilCodeNum = 11  
SELECT for NZSC_Rclassd = 'Ultic soils'  
CALCULATE SoilCodeNum = 12  
SAVE  
Q
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```
&IF [EXIST SoilsGrid -GRID] &THEN KILL SoilsGrid ALL  
POLYGRID soilstest SoilsGrid SoilCodeNum  
25  
Y
```

```
&RETURN
```