**Re-running the managed aquifer recharge suitability rating scripts**

*Some examples of potential updates*

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**NOTE:** The following MUST be checked and re-defined as needed for any update below:

1. Input geodatabase full path location and name in the \_InputsTable
2. Output geodatabase full path location and name in the \_InputsTable
3. The full path location and name of the \_InputsTable in each script itself (open the script in a Python editor such as IDLE [provided with ArcGIS] and edit the tbl\_inputs variable)

It is highly recommended that a copy of the inputs and outputs geodatabases are processed, leaving the original versions unaltered for reference. Each script is designed to be run from a Python editor. If autorun\_yn is set to ‘y’, the script will run through the processing steps specified in the relevant \_ProcessingStepsTable / \_ProcessingStepsUnsatTable table with the “Process\_YN” field set to ‘y’. If not, individual processing steps can be run by copying and pasting the relevant text from the header of the script to the Python prompt.

# To update with a new water table:

This will affect depth to water, hydraulic gradient, the saturated and unsaturated zone thicknesses of geologic units, and all methods that are influenced by these thicknesses. Rasters and tables potentially affected/recreated by the script:

In ABCWUA\_DataForProcessing.gdb:

1. SatThicks
2. AllowableInjectionRates
3. Transmissivities
4. Ratings\_Geologic

In ABCWUA\_ProcessingRasters.gdb:

1. All AllowableInjectionRates\_ rasters
2. All Ratings\_Geologic\_ rasters
3. All SatThicks\_ rasters
4. All Transmissivities\_ rasters
5. All Ratings\_DTW rasters
6. Ratings\_HydrGradient
7. Ratings\_MudAbundanceRas
8. Ratings\_PercolationTimeRas
9. Ratings\_SaturatedThicknessFinal
10. Ratings\_UnsaturatedThicknessFinal

Either rename/delete these files prior to running the script, or delete each when prompted by the script. Copy the new water table raster to the ABCWUA\_DataForProcessing.gdb geodatabase, and either rename to WT\_surface\_modelext or change the input water table raster name in the \_InputsTable. Processing steps to re-run:

Deep injection (in \_ProcessingStepsTable):

1. RateDTW
2. RateHydraulicGradient
3. CalculateSaturatedThicknesses
4. RateTransmissivities
5. RateAllowableInjectionRates
6. Compile\_DepthThicknessWeightedRasters
7. Compile\_FinalRatings

Shallow recharge (in \_ProcessingStepsUnsatTable):

1. RateDTWUnsat
2. CalculateUnsaturatedThicknesses (if not done with deep injection script)
3. RatePercolationTime
4. RateMudAbundance
5. RateTransmissivities (if not done with deep injection script)
6. Compile\_DepthThicknessWeightedRasters (if not done with deep injection script)
7. Compile\_FinalRatingsUnsat

# To change existing final compilation weightings:

This will only affect the relevant Ratings\_SaturatedThicknessFinal or Ratings\_UnsaturatedThicknessFinal raster. Delete or rename the relevant raster. Modify weights in either \_Weightings\_SaturatedRatingsCompilation or \_Weightings\_UnsaturatedRatingsCompilation as needed. Only the Compile\_FinalRatings or Compile\_FinalRatingsUnsat methods need be run from the relevant script.

# To change existing thickness or depth weightings:

This will affect all Ratings\_Geologic\_\* rasters, as well as the Ratings\_...Final rasters. Modify weights as needed in the \_Weightings\_DepthThickness table. Rows can be added or deleted as necessary. However, a maximum depth is advised to clip the compilation to a maximum depth of interest. The maximum depth is the depth below which a weight of 0 is applied (1,500 ft in the original study).

Affected rasters and tables:

In ABCWUA\_DataForProcessing.gdb:

1. Ratings\_Geologic

In ABCWUA\_ProcessingRasters.gdb:

1. All Ratings\_Geologic\_ rasters
2. Ratings\_SaturatedThicknessFinal
3. Ratings\_UnsaturatedThicknessFinal

Delete or rename these rasters and tables. Then run the following processes:

Deep injection (in \_ProcessingStepsTable):

1. Compile\_DepthThicknessWeightedRasters
2. Compile\_FinalRatings

Shallow recharge (in \_ProcessingStepsUnsatTable):

1. Compile\_DepthThicknessWeightedRasters (if not done with deep injection script)
2. Compile\_FinalRatingsUnsat

# To modify weights of parameters that vary with geologic unit:

This includes:

1. Allowable injection rates
2. Transmissivities
3. Storage zone thicknesses

This may affect the following tables and rasters:

In ABCWUA\_DataForProcessing.gdb:

1. AllowableInjectionRates (if changing this parameter weighting)
2. Transmissivities (if changing this parameter weighting)
3. StorageZones (if changing this parameter weighting)
4. Ratings\_Geologic (will be affected)

In ABCWUA\_ProcessingRasters.gdb:

1. All AllowableInjectionRates\_ rasters (if changing this parameter weighting)
2. All Transmissivities\_ rasters (if changing this parameter weighting)
3. All StorageZones\_ rasters (if changing this parameter weighting)
4. All Ratings\_Geologic\_ rasters (will be affected)
5. Ratings\_SaturatedThicknessFinal (will be affected)
6. Ratings\_UnsaturatedThicknessFinal (will be affected unless modifying injection rate weightings)

Change weights in the relevant tables:

1. Ratings\_AllowableInjectionRate
2. Ratings\_Transmissivity
3. Ratings\_StorageZoneThickness

Rows can be added or deleted as needed. Note that in each table each row entry is for a lower limit and the weight to apply to all values above that lower limit. Upper limits are implied by the lower limits given in the remaining rows.

The following processing steps may be run:

Deep injection (in \_ProcessingStepsTable):

1. RateAllowableInjectionRates (if changing this parameter)
2. RateTransmissivities (if changing this parameter)
3. RateStorageZoneThicknesses (if changing this parameter)
4. Compile\_DepthThicknessWeightedRasters (will need to run)
5. Compile\_FinalRatings (will need to run)

Shallow recharge (in \_ProcessingStepsUnsatTable):

1. RateTransmissivities (if not done with deep injection script, and if changing this parameter)
2. RateStorageZoneThicknesses (if not done with deep injection script, and if changing this parameter)
3. Compile\_DepthThicknessWeightedRasters (will need to run)
4. Compile\_FinalRatingsUnsat (will need to run)

# To modify weights of parameters that do not vary with geologic unit:

Only the individual ratings raster and the final compilation raster will need to be recreated. Delete or rename the relevant rasters. Modify the entries of the relevant Ratings\_ table. Rows can be added or deleted as needed. Note that in each table each row entry is for a lower limit and the weight to apply to all values above that lower limit. Upper limits are implied by the lower limits given in the remaining rows. Then run the relevant processing step and the relevant “Compile\_FinalRatings” method.