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clear all; clc; clear variables;

% Recharge
rch2 = [];

% Stress period 1-10
for i = 1:10
    data1= readtable('C:\Users\nyamaa.mendsaikhan\CPTS575_project\Data\rch_1_10.xlsx','Sheet',
    data2 = table2array(data1);
    data3 = transpose(data2);
    data4 = data3(:);
    nana = isnan(data4);
    data4(nana) = [];
    rch2 = [rch2 data4];
    i=i+1;
end

% Stress period 10-30
for i = 1:20
    data1= readtable('C:\Users\nyamaa.mendsaikhan\CPTS575_project\Data\rch_10_30.xlsx','Sheet',
    data2 = table2array(data1);
    data3 = transpose(data2);
    data4 = data3(:);
    nana = isnan(data4);
    data4(nana) = [];
    rch2 = [rch2 data4];
    i=i+1;
end

% Stress period 30-50
for i = 1:20
    data1= readtable('C:\Users\nyamaa.mendsaikhan\CPTS575_project\Data\rch_30_50.xlsx','Sheet',
    data2 = table2array(data1);
    data3 = transpose(data2);
    data4 = data3(:);
    nana = isnan(data4);
    data4(nana) = [];
    rch2 = [rch2 data4];
    i=i+1;
end

% Stress period 50-70
for i = 1:20
    data1= readtable('C:\Users\nyamaa.mendsaikhan\CPTS575_project\Data\rch_50_70.xlsx','Sheet',
    data2 = table2array(data1);
    data3 = transpose(data2);
    data4 = data3(:);
    nana = isnan(data4);
    data4(nana) = [];
    rch2 = [rch2 data4];
    i=i+1;
end

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% Stress period 70-90
for i = 1:20
    data1= readtable('C:\Users\nyamaa.mendsaikhan\CPTS575_project\Data\rch_70_90.xlsx','Sheet',
    data2 = table2array(data1);
    data3 = transpose(data2);
    data4 = data3(:);
    nana = isnan(data4);
    data4(nana) = [];
    rch2 = [rch2 data4];
    i=i+1;
end

% Collecting all
% Zone file
ibound =[];

% Layers 1-33
for i = 1:33
    data1= readtable('C:\Users\nyamaa.mendsaikhan\CPTS575_project\Data\ibound_1_33.xlsx','Sheet',
    data2 = table2array(data1);
    data3 = transpose(data2);
    data4 = data3(:);
    nana = isnan(data4);
    data4(nana) = [];
    ibound = [ibound data4];
    i=i+1;
end

% Layers 34-67
for i = 1:34
    data1= readtable('C:\Users\nyamaa.mendsaikhan\CPTS575_project\Data\ibound_34_67.xlsx','Sheet',
    data2 = table2array(data1);
    data3 = transpose(data2);
    data4 = data3(:);
    nana = isnan(data4);
    data4(nana) = [];
    ibound = [ibound data4];
    i=i+1;
end

% Layers 68-100
for i = 1:33
    data1= readtable('C:\Users\nyamaa.mendsaikhan\CPTS575_project\Data\ibound_68_100.xlsx','Sheet',
    data2 = table2array(data1);
    data3 = transpose(data2);
    data4 = data3(:);
    nana = isnan(data4);
    data4(nana) = [];
    ibound = [ibound data4];
    i=i+1;
end

% Finding the top cells to assign the recharge
ibound1 = ibound;
ncells = 16506;

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layers = 100;
for j = 1:ncells
    for i = 1:layers
        if i==1 & ibound1(j,i)==1
            ibound1(j,:)=0;
            ibound1(j,i)=1;
        elseif i>1 & ibound1(j,i)==1
            ibound1(j,:)=0;
            ibound1(j,i)=1;
        else
            ibound1(j,i)=0;
            %ibound1(j,i+1)=0;
        end
    end
end

% Checking if for any horizontal location there is only one top cells is
% found
% Total number of cells matched 423,394 cells
% In total top 9,241 horizontal cells
ibound_top = sum(ibound1,2);

recharge = [];
for i=1:90
    rch_stp=rch2(:,i);
    rch_stps = repmat(rch_stp,1,100);
    rech= rch_stps.*ibound1;
    recha = rech(:);
    recharge = [recharge recha];
    i=i+1;
end

project_rch = recharge(:,71:90);
project_rch = array2table(project_rch);
writetable(project_rch, 'C:\Users\nyamaa.mendsaikhan\CPTS575_project\Data\final\project_rch.csv')

```