

06_ReducingDATA

Data frequently are added or retrieved from data bases in a 3-column format. For example, groundwater levels from multiple sites might be retrieved as, Site, Date, and water level. 3-column format is more useful where a table is populated sparsely as with water-quality (QW) data.

Populate table from 3-column data – 01_3columnQW.xlsx

Define Table Guides

Our QW example is in the form.

Site Name, Constituent, and Value.

A table with all constituents from each site on a single row will be created from the 3-column data.

	B	C	D
3	Site Name	Constituent	Value
4	Cave Spring #1	Ca, mg/L	51
5	Cave Spring #1	Cl, mg/L	0.6
6	Cave Spring #1	F, mg/L	0.2
7	Cave Spring #1	HCO3, mg/L	200
8	Cave Spring #1	K, mg/L	0.4
9	Cave Spring #1	Mg, mg/L	10
10	Cave Spring #1	Na, mg/L	1
11	Cave Spring #1	Silica, mg/L	3.9
12	Cave Spring #1	SO4, mg/L	3.4
13	Cave Spring #1	Specific Conductance, uS/cm	240
14	Cave Spring #1	Temperature, deg C	5.3
15	Clark Spring	Ca, mg/L	75
16	Clark Spring	Cl, mg/L	1.5

Copy site names with heading.

Open a new workbook (**Alt, F, N, L**).

Paste Special as values in new book.

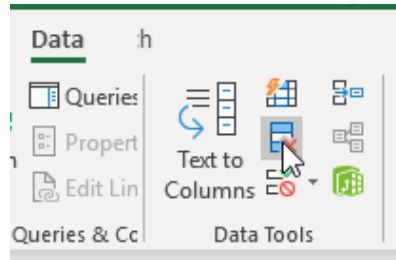
	A
1	Site Name
2	Cave Spring #1
3	Cave Spring #1
4	Cave Spring #1
5	Cave Spring #1
6	Cave Spring #1
7	Cave Spring #1
8	Cave Spring #1
9	Cave Spring #1
10	Cave Spring #1
11	Cave Spring #1
12	Cave Spring #1
13	Clark Spring
14	Clark Spring
15	Clark Spring
16	Clark Spring

Select pasted range.

Select Data tab on ribbon,

Select “Remove Duplicates” tool,

(Alt, A, M)



“Remove Duplicates” form will appear.

Check “My data has headers.

Click OK.

Dismiss message box.

Copy range **A1:A37**.

A screenshot of an Excel spreadsheet. Column A is selected, and the range A1:A37 is highlighted with a green dashed border. The data in column A is as follows:

1	Site Name
2	Cave Spring #1
3	Clark Spring
4	Craig Ranch Country Club #2
5	Deer Cr Picnic Area Spg
6	Deer Creek Spring #1
7	Deer Creek Spring #2
8	East Spring #2
9	G.P. Apex Well
10	Gilbert Well
11	Grapevine Springs
12	GS-13 Franklin Lake Nr Death Valley

Return to workbook,
01_3columnQW.xlsx.

Paste Special as Values in cell G3.

A screenshot of an Excel spreadsheet. Cell G3 is selected, and the range G3:H7 is highlighted with a blue border. The data in column G is as follows:

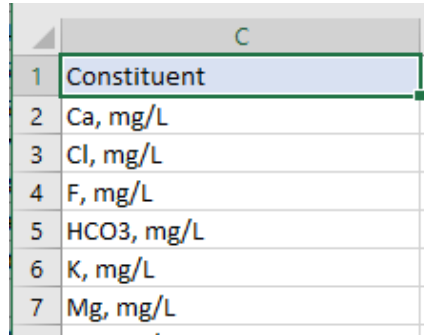
	G	H
2		
3	Site Name	
4	Cave Spring #1	
5	Clark Spring	
6	Craig Ranch Country Club #2	
7	Deer Cr Picnic Area Spg	

Copy Constituents from range **C2:C529**
on QW page in 01_3columnQW.xlsx.

A screenshot of an Excel spreadsheet. Column C is selected, and the range C2:C529 is highlighted with a green dashed border. The data in column C is as follows:

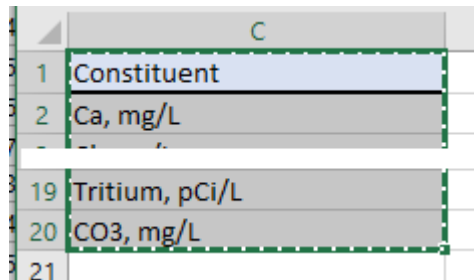
	C
2	
3	Constituent
4	Ca, mg/L
5	Cl, mg/L
6	F, mg/L
7	HCO3, mg/L
8	K, mg/L
9	Mg, mg/L
10	Na, mg/L
11	Silica, mg/L

Select cell C1 in new workbook.
Paste Special as values in new book.



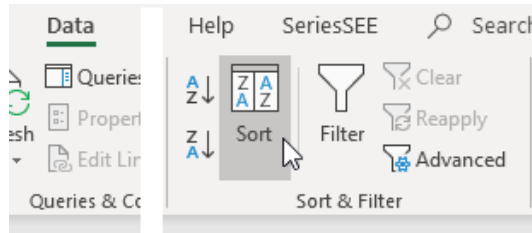
1	Constituent
2	Ca, mg/L
3	Cl, mg/L
4	F, mg/L
5	HCO3, mg/L
6	K, mg/L
7	Mg, mg/L

Reduce to list of unique constituents with
"Remove Duplicates"
Select range **C1:C20**.

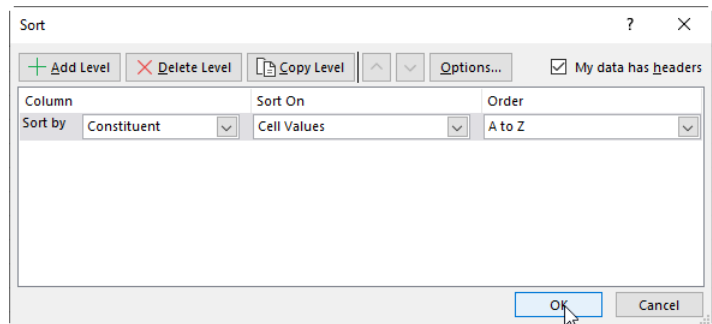


1	Constituent
2	Ca, mg/L
...	...
19	Tritium, pCi/L
20	CO3, mg/L
21	

Select Data tab on ribbon,
Select "Remove Duplicates" tool,
(Alt, A, SS)



Click OK on "Sort" form to sort.



Copy range **C2:C20** into memory.
Do NOT include header, **C1**.

	C
1	Constituent
2	C-13, permil
3	C-14, permil
4	Ca, mg/L
5	Cl, mg/L
6	CO3, mg/L
7	Deuterium, permil
8	Dissolved oxygen, mg/L
9	F, mg/L
10	HCO3, mg/L
11	K, mg/L

Return to workbook,
01_3columnQW.xlsx.
Paste Special to cell H3.
Select as Values and Transpose.

Paste Special

Paste

☐ All
☐ Formulas
☒ Values
☐ Formats
☐ Comments
☐ Validation

☐ All using Source theme
☐ All except borders
☐ Column widths
☐ Formulas and number formats
☐ Values and number formats
☐ All merging conditional formats

Operation

☒ None
☐ Add
☐ Subtract

☐ Multiply
☐ Divide

☐ Skip blanks
☒ Transpose

Paste Link OK Cancel

Table guides are defined.

	G	H	I	J
3	Site Name	C-13, permil	C-14, permil	Ca, mg/L Cl
4	Cave Spring #1			
5	Clark Spring			
6	Craig Ranch Country Club #2			
7	Deer Cr Picnic Area Spg			
8	Deer Creek Spring #1			
9	Deer Creek Spring #2			

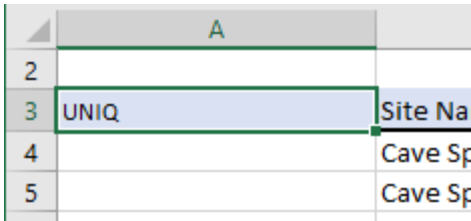
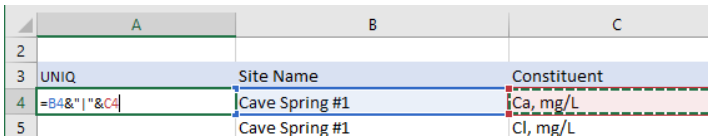
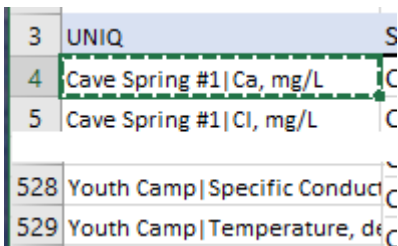
QWfinal QW +

Close the new workbook without saving.

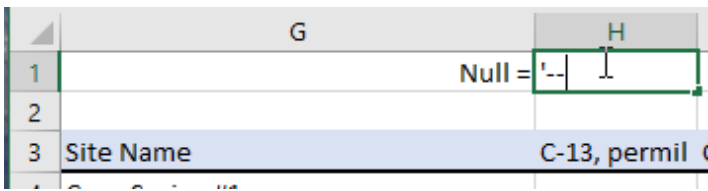
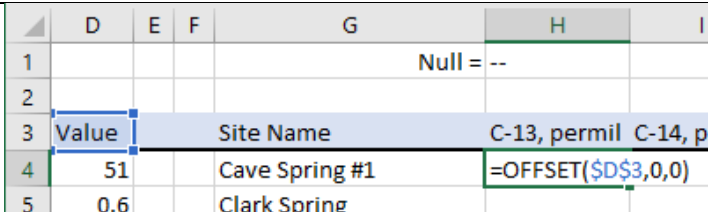
Microsoft Excel

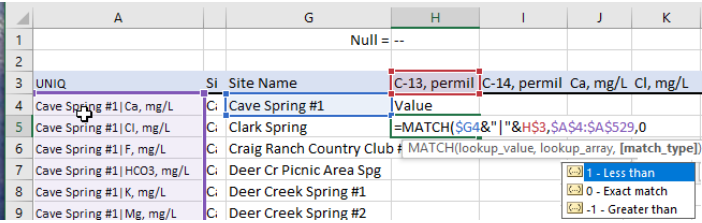
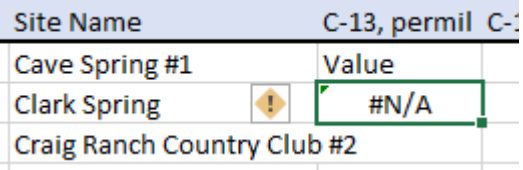
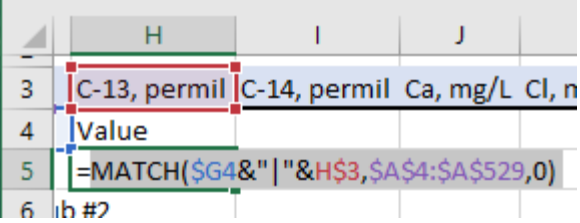
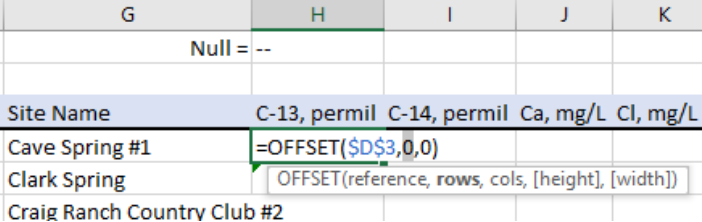
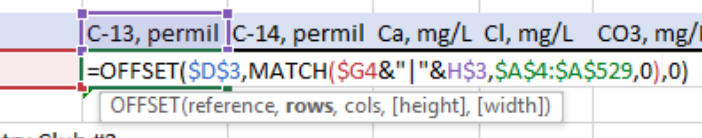
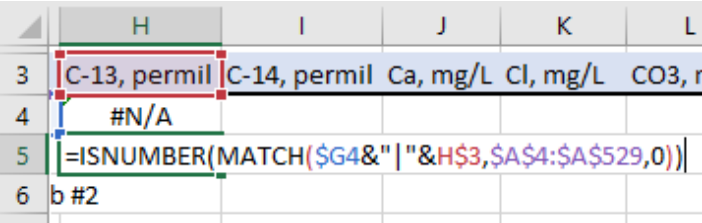
Want to save your changes to 'Book2'?

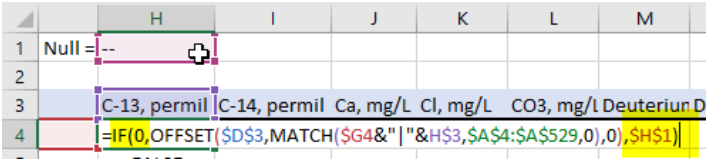
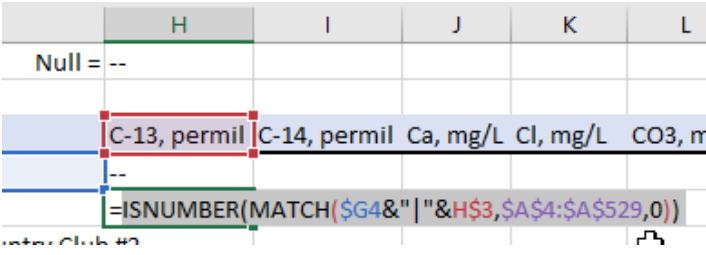
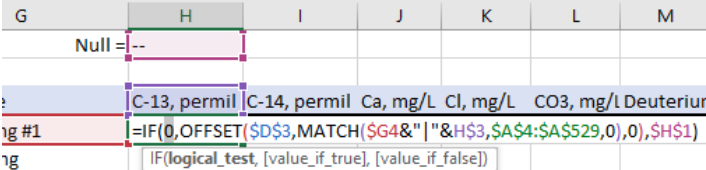
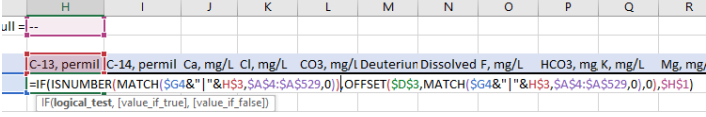
Populate table from 3-column data – 01_3columnQW.xlsx

Add Unique Identifiers to 3-Column Data	
Label new column "UNIQ" in cell A3 .	
Concatenate Site Name and Constituent in column A . Add formula, " <code>=B4&" "&C4</code> " to cell A4 .	
Copy cell A4 . Paste to range A4:A529 .	

Populate table from 3-column data – 01_3columnQW.xlsx

Populate table from 3-Column Data	
Define null value in cell H1 . Note leading apostrophe (') before – Define with "Null =" in cell G1 .	
Add indirect reference to cell H4 , " <code>=OFFSET(\$D\$3,0,0)</code> ".	

<p>Add equation to find entry in 3-column data in cell H5, <code>"=MATCH(\$G4&" "&H\$3,\$A\$4:\$A\$529,0)"</code>.</p> <p>Absolute and relative references mixed because of guides spanning columns and rows.</p> <p>Note: Equation is on wrong row. This is a temporary location as we build parts for final equation.</p>	
<p>MATCH returns an error because, Cave Spring #1 C-13, permit does not exist.</p>	
<p>Open cell H5 for editing with F2.</p> <p>Highlight equation without = sign, <code>"MATCH(\$G4&" "&H\$3,\$A\$4:\$A\$529,0)"</code></p> <p>Copy, ctrl+c, text string into memory.</p> <p>Close cell H5.</p>	
<p>Open cell H4 for editing with F2.</p> <p>Highlight rows entry in OFFSET function.</p>	
<p>Paste, ctrl+v, text string into rows entry.</p> <p>Close cell H4.</p>	
<p>Open cell H5 for editing with F2.</p> <p>Expand formula by encapsulating with ISNUMBER function, <code>"=ISNUMBER(MATCH(\$G4&" "&H\$3,\$A\$4:\$A\$529,0))"</code></p> <p>Close cell H5.</p>	

<p>Open cell H4 for editing with F2.</p> <p>Expand formula by encapsulating with IF function,</p> <p>"=IF(0, OFFSET(\$D\$3,MATCH(\$G4&" "&H\$3,\$A\$4:\$A\$529,0),0) ,SH\$1)"</p> <p>Close cell H4.</p>	
<p>Open cell H5 for editing with F2.</p> <p>Highlight equation without = sign, "ISNUMBER(MATCH(\$G4&" "&H\$3,\$A\$4:\$A\$529,0))"</p> <p>Copy, ctrl+c, text string into memory.</p> <p>Close cell H5.</p>	
<p>Open cell H4 for editing with F2.</p> <p>Highlight logical_test entry in IF function.</p>	
<p>Paste, ctrl+v, text string into logical_test entry.</p> <p>Resulting formula is, "=IF(ISNUMBER(MATCH(\$G4&" "&H\$3,\$A\$4:\$A\$529,0)),OFF SET(\$D\$3,MATCH(\$G4&" "&H\$3,\$A\$4:\$A\$529,0),0),SH\$1)"</p> <p>Close cell H4.</p>	
<p>Copy cell H4.</p> <p>Paste to range H4:Z39.</p> <p>Table is populated with null entries if a constituent is absent at a site.</p>	