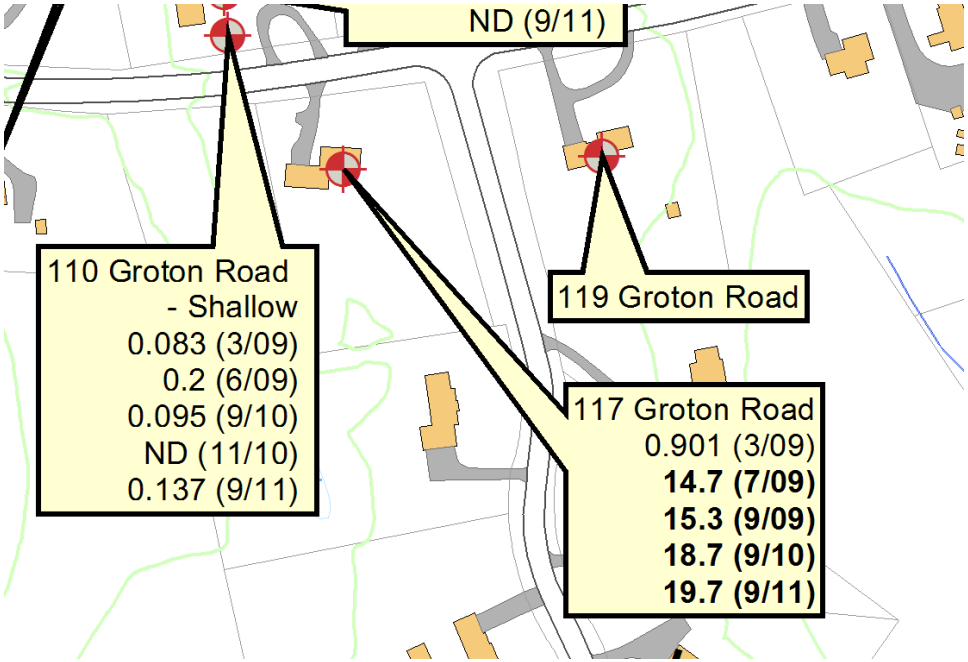
Labeling “Chemboxes” in ArcGIS

Automating Sampling Data Labels



Problem

- We needed constantly updated maps of groundwater well sampling results.
- The need for maps showing one year of data or three years of data.
- Not too many examples of this on the Internet.

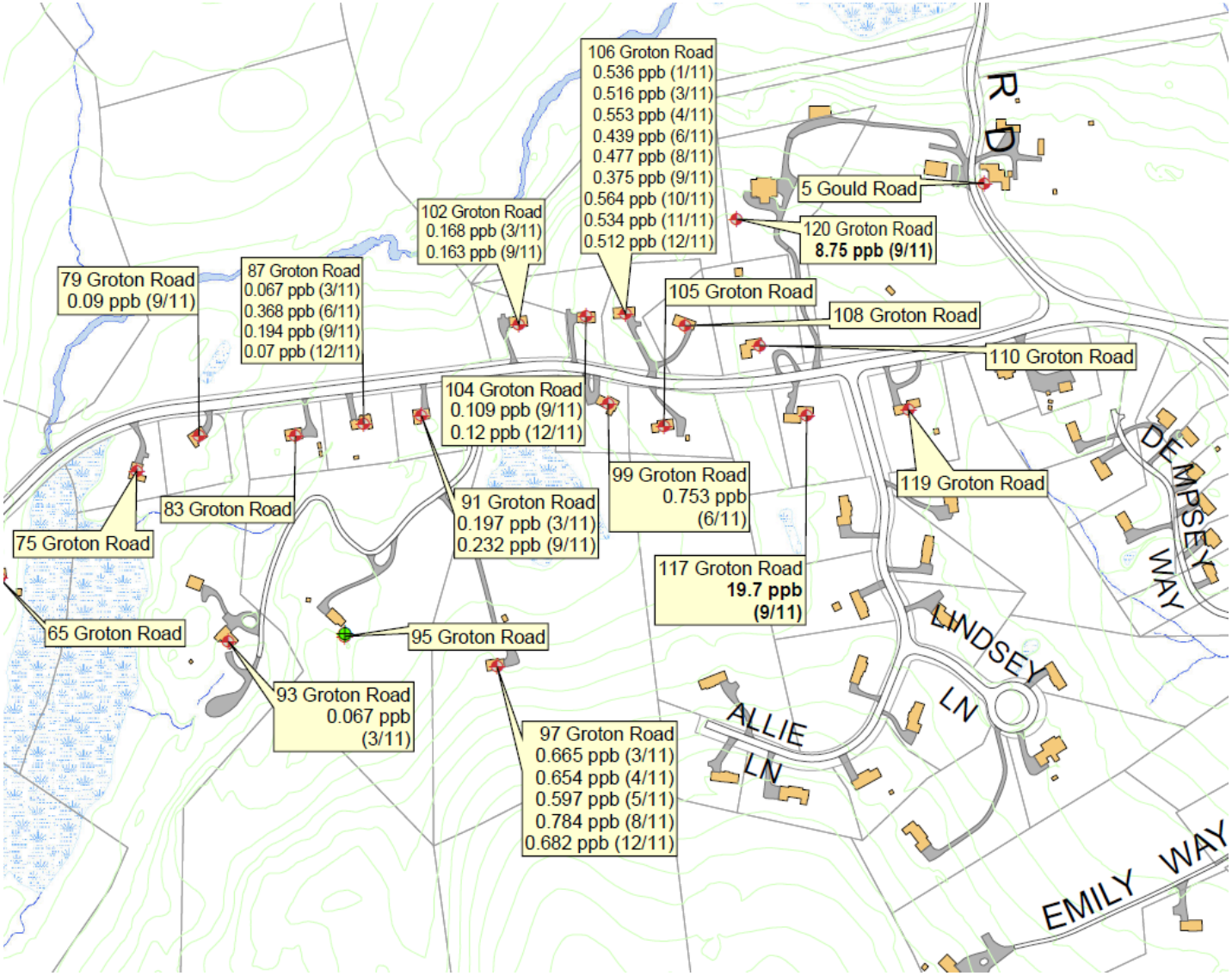
Solution

- Automate labeling using VBScript Expression

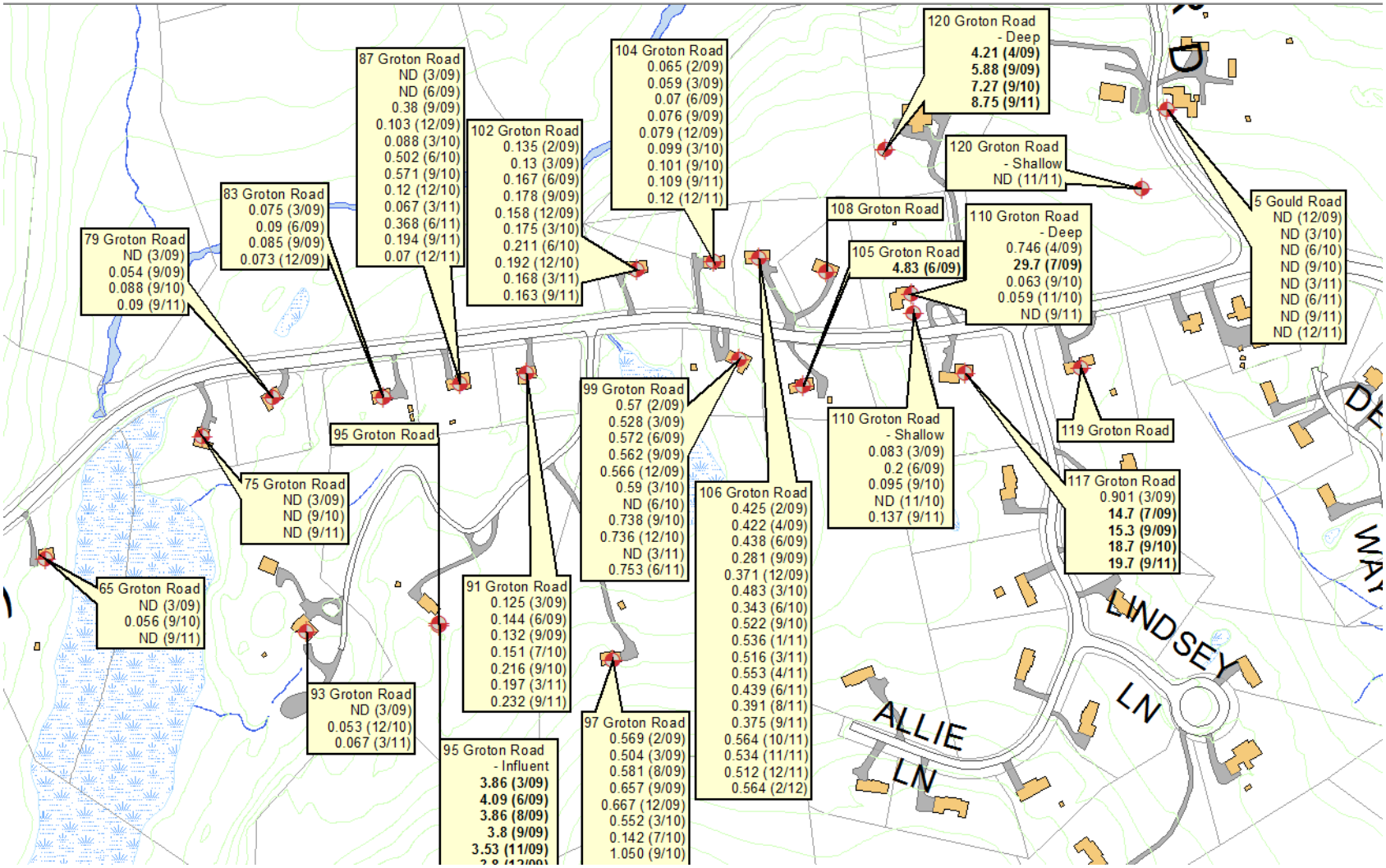
Benefits of Scripting

- Easy to update data on the map
- Time frame of data shown can easily be changed
- Results above an action level can be shown in **bold** to stand out.
- Avoid typos and incorrect data. Data errors can be blamed on the lab.
- Data is presented uniformly.

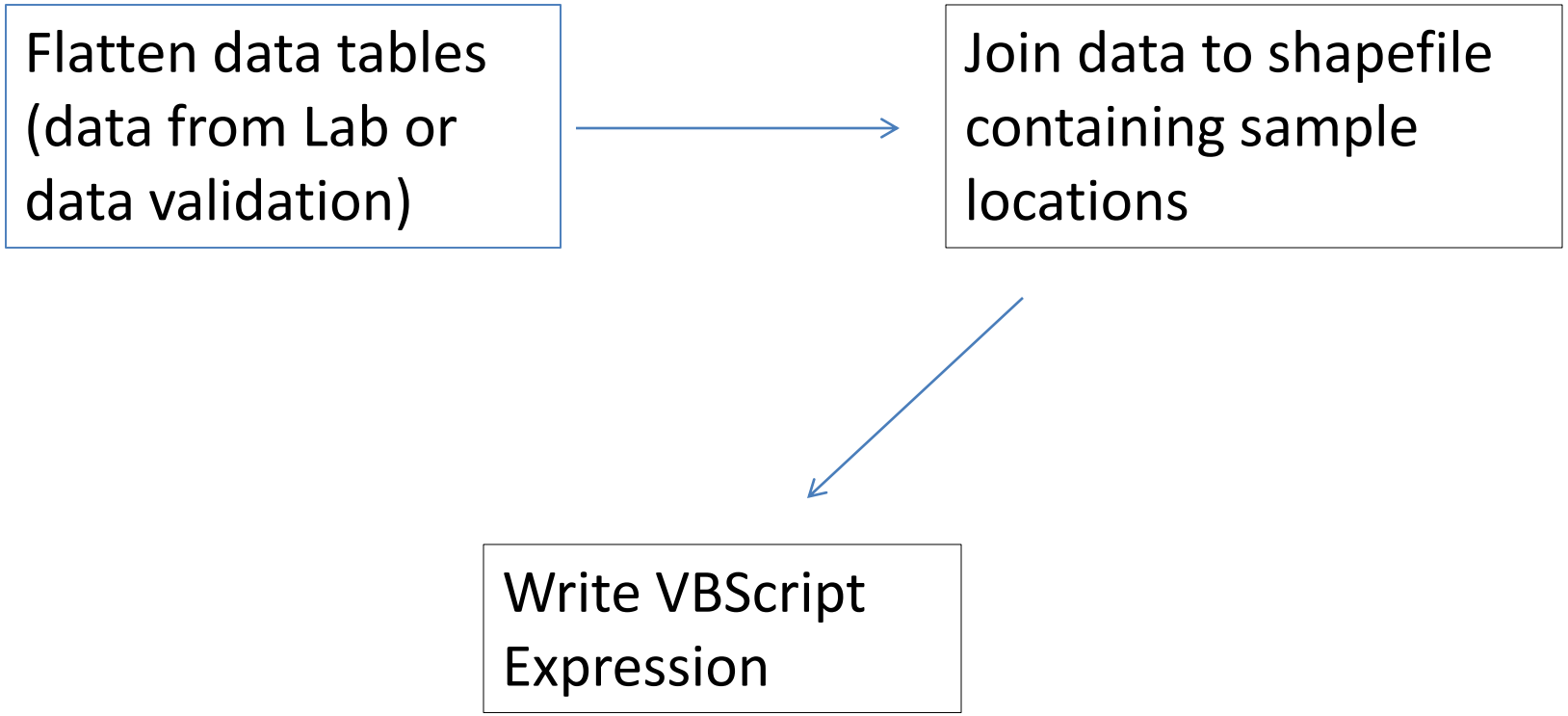
One Year sample of Data



Three years of sample data



Process


Flatten data tables (data from Lab or data validation)
Join data to shapefile containing sample locations
Write VBScript Expression

Flatten data tables

- Pivot Table in Excel
- Or build a query to output a flattened table in Microsoft Access
- Also know as denormalizing a database

This makes it easier to join your Sample/Well Locations to your sample data.

Allows for simple access to data for scripting labels in ArcGIS.

No need for data arrays or FOR NEXT programming Loops.

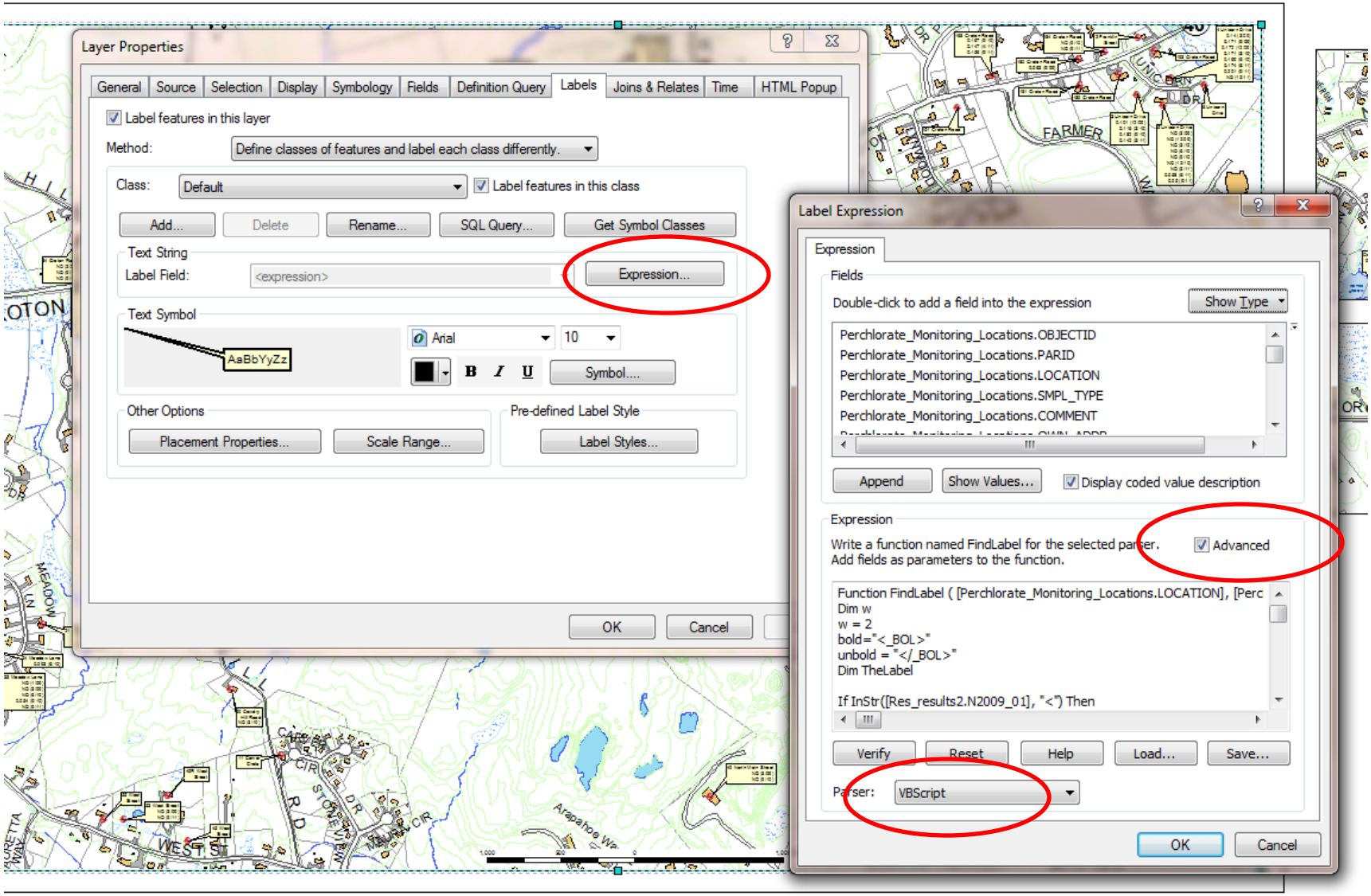
Create One to Many Relationship

Sample_ID	Sample_Date	Result
35 Lowell Rd	11/1/11	0.035
39 Lowell Rd	11/1/11	< 0.05
100 Lowell Rd	11/1/11	< 0.05
35 Lowell Rd	10/1/11	0.055
100 Lowell Rd	10/1/11	0.025

One Location to many results.

Sample_ID	10/1/2011	11/1/2011
35 Lowell Rd	0.055	0.035
39 Lowell Rd	null	<0.05
100 Lowell Rd	0.025	0.055

Building a VBScript Expression



The Script

Sample_Monitoring_Locations shapefile joined with Res_Results2 (lab results) Table.

Function FindLabel ([Sample_Monitoring_Locations.LOCATION], [Sample_Monitoring_Locations.WC_Location],
[Sample_Monitoring_Locations.PARID],

Define and populate your variables with data from the table.

Sample Location Shapefile

Parcel ID Column in Shapefile

[Res_results2.N2012_02] , [Res_results2.N2011_12] , [Res_results2.N2011_11] , [Res_results2.N2011_10] ,
[Res_results2.N2011_09] , [Res_results2.N2011_08]

…

Lab Results Table

Column in Table (August 2009)

One routine per month

```
If InStr([Res_results.N2009_01], "<") Then
  [Res_results2.N2009_01] = Replace([Res_results2.N2009_01], "<", "&lt;")
Else
  [Res_results2.N2009_01] = [Res_results2.N2009_01]
End If
```

If the string contains < “less than” swap it out with an equivalent character code.

```
If IsNumeric(trim([Res_results2.N2009_01])) Then
      If cint(trim([Res_results2.N2009_01])) > w Then
      bold = "<BOL>"
      End if
End if
```

Parse number from String. If greater than MCL then Bold.

```
 If trim([Res_results2.N2009_01]) <> "" Then
```

If results are not null then include label. Trim removes blank spaces.

```
 TheLabel = TheLabel & vbnewline & bold & [Res_results2.N2009_01]   & " (1/09)" & unbold
End if
```

This routine is repeated for every month of data
Changing the date/Column name of course

End the function and replace ‘&’

```
TheLabel =
Replace([sample_Monitoring_Locations.WC_Location], "&", "&amp;") & TheLabel

FindLabel = TheLabel
End Function
```

Displaying < > and & Symbols Using Equivalent Character Codes

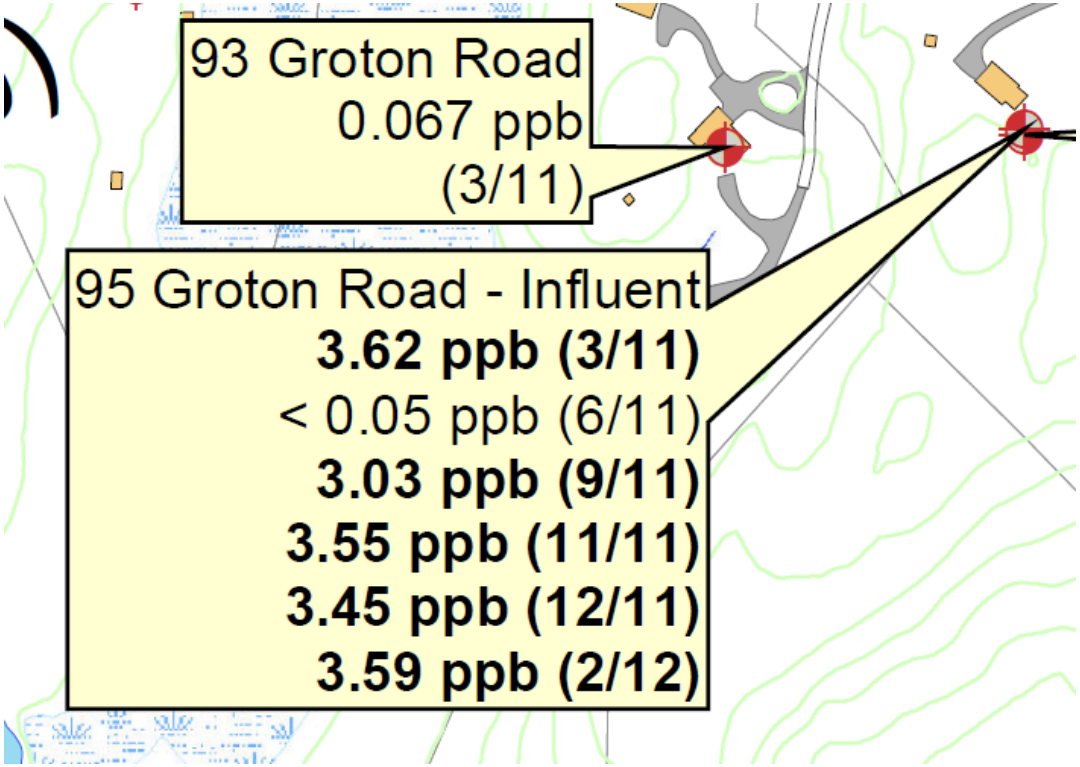
ESRI Desktop Help mentions this work around:

```
Function FindLabel ([LABELFIELD])
NewString = Replace([LABELFIELD],"&","&amp;")
FindLabel = "<ITA>" & NewString & "</ITA>" End Function
```

I used this work around:

```
If InStr([Res_results.N2009_01], "<") Then
  [Res_results2.N2009_01] = Replace([Res_results2.N2009_01], "<", "&lt;")
TheLabel =
Replace([sample_Monitoring_Locations.WC_Location], "&", "&amp;") &
TheLabel
```

Balance text size to avoid overlap



Resources

- "Using VBSript to Build Complex Labels in ArcGIS" *Arcuser Magazine, Oct-Dec 2004*
  (deals mostly with text formatting)
- ESRI Help on building Label expressions
- "Advanced Labeling in ArcMap with VBScript Findlabel Functions" by Chad Cooper
- Note: Maplex was used mainly to stack label location name.

Table

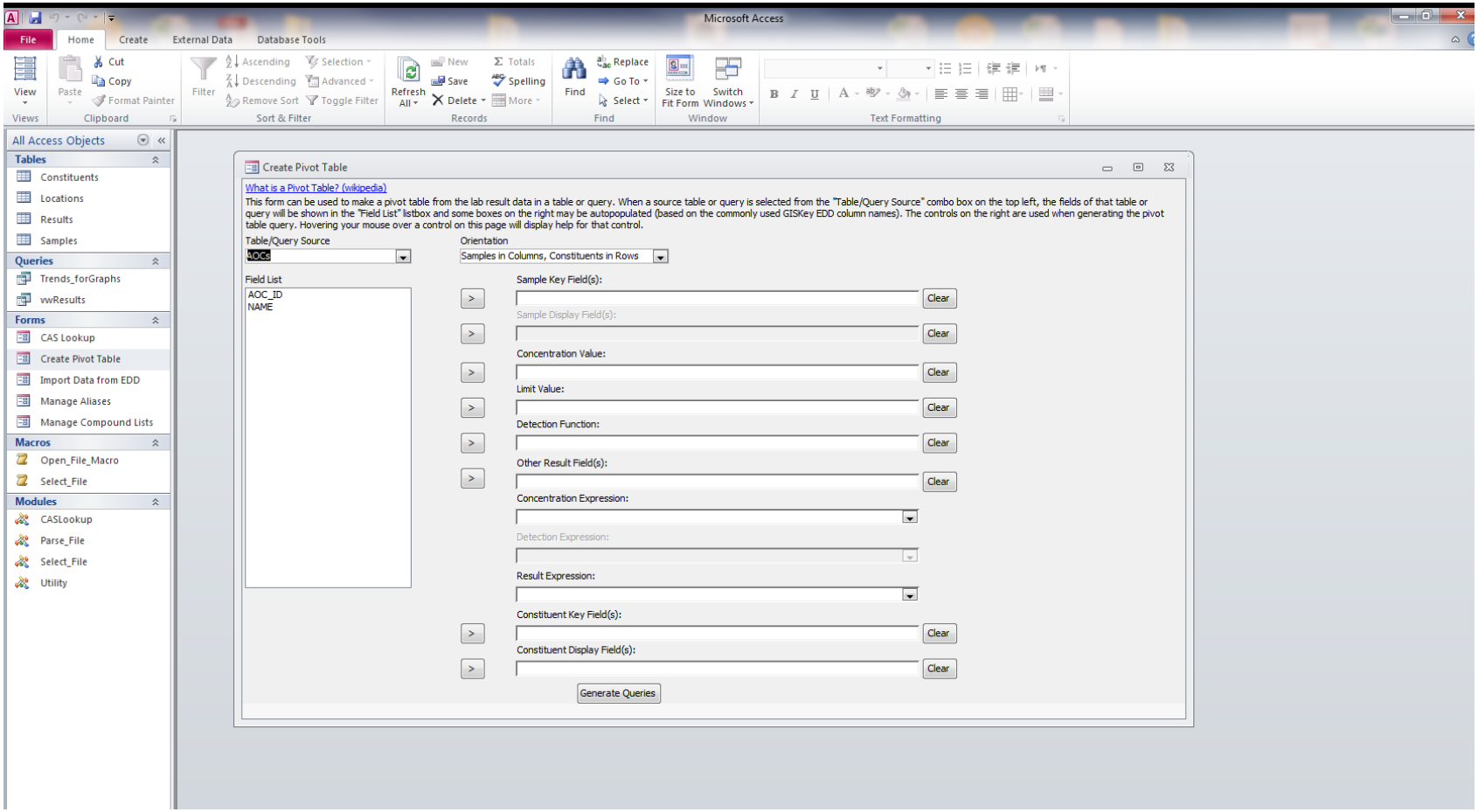
Perchlorate Monitoring Locations

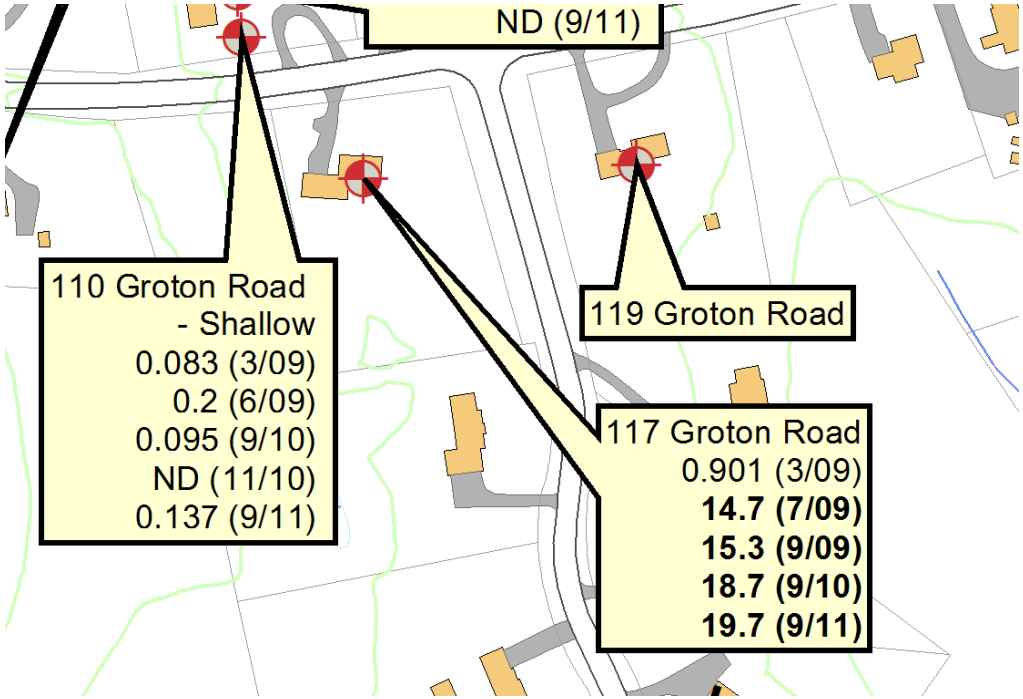
Label_	WC_Location	Current_Sampling_Freq	Propos	Locatio	Locatio	OID	DISP_SAMP *	N2009_01	N2009_02	N2009_03	N2009_04	A2009_04	N2009_06	N2009_07	N2009_08	N2009_09	A2009_09	N2009_11
n	49 North Main Street	<Null>	Q	<Null>	PO BOX	26	49 North Main Street			ND	0					0		
n	<Null>	<Null>	<Null>	<Null>	PO BOX	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	Ball Field IRR Well	<Null>	<Null>	<Null>	55 MAIN	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	Stony Brook	<Null>	A	<Null>	55 MAIN	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	MW 1-04	<Null>	Q	<Null>	55 MAIN	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	MW 2-04	<Null>	Q	<Null>	55 MAIN	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	P-2 Wetland Vernal Pool	<Null>	<Null>	<Null>	30 HUNT	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	P-1 Pond	<Null>	<Null>	<Null>	30 HUNT	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	MW 1-88 - Shallow	<Null>	Q	<Null>	55 MAIN	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	Tresca Standing Pool	<Null>	<Null>	<Null>	55 MAIN	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	Tresca Wetland	<Null>	<Null>	<Null>	55 MAIN	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	P-5 Quarry	<Null>	<Null>	<Null>	55 MAIN	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	<Null>	<Null>	<Null>	<Null>	55 MAIN	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	P-3 Quarry	<Null>	<Null>	<Null>	30 HUNT	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	<Null>	<Null>	<Null>	<Null>	30 HUNT	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	<Null>	<Null>	<Null>	<Null>	30 HUNT	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
y	37 Groton Road	<Null>	Q	<Null>	37 GROT	22	37 Groton Road			0.105	0					0.126	0.126	
n	3 Cowdry Hill Road	<Null>	Q	<Null>	3 COWD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	5 Cowdry Hill Road	<Null>	Q	<Null>	5 COWD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	46 Groton Road	<Null>	Q	<Null>	46 GROT	25	46 Groton Road			ND	0					0		
n	17 Cowdry Hill Road	<Null>	Q	<Null>	17 COW	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	20 Cowdry Hill Road	<Null>	<Null>	<Null>	20 COW	14	20 Cowdry Hill Road				0					0		
n	11 Carver Circle	<Null>	<Null>	<Null>	11 CARV	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
y	75 Groton Road	<Null>	M	<Null>	75 GROT	31	75 Groton Road			ND	0					0		
y	79 Groton Road	<Null>	M	<Null>	79 GROT	32	79 Groton Road			ND	0					0.054	0.054	
y	83 Groton Road	<Null>	M	<Null>	83 GROT	33	83 Groton Road			0.075	0		0.09			0.085	0.085	0
y	87 Groton Road	<Null>	M	<Null>	87 GROT	34	87 Groton Road			ND	0		ND			0.38	0.38	0
y	91 Groton Road	<Null>	M	<Null>	91 GROT	35	91 Groton Road			0.125	0		0.144			0.132	0.132	
y	99 Groton Road	<Null>	M	<Null>	99 GROT	39	99 Groton Road		0.57	0.528	0		0.572			0.562	0.562	0
n	105 Groton Road	<Null>	Q	<Null>	105 GRO	3	105 Groton Road				0		4.83			0		
y	Stepinski Well	<Null>	<Null>	<Null>	55 MAIN	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	<Null>	<Null>	<Null>	<Null>		<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	<Null>	<Null>	<Null>	<Null>	55 MAIN	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	P-11 Cowdry Hill Road	<Null>	<Null>	<Null>	17 COW	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
n	P-14 Quarry	<Null>	<Null>	<Null>	55 MAIN	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>

1 (0 out of 157 Selected)

Perchlorate Monitoring Locations

Query in Access to




ND (9/11)
110 Groton Road
- Shallow
0.083 (3/09)
0.2 (6/09)
0.095 (9/10)
ND (11/10)
0.137 (9/11)
119 Groton Road
117 Groton Road
0.901 (3/09)
14.7 (7/09)
15.3 (9/09)
18.7 (9/10)
19.7 (9/11)