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

One Location to many results.

<table>
<thead>
<tr>
<th>Sample_ID</th>
<th>Sample_Date</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 Lowell Rd</td>
<td>11/1/11</td>
<td>0.035</td>
</tr>
<tr>
<td>39 Lowell Rd</td>
<td>11/1/11</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>100 Lowell Rd</td>
<td>11/1/11</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>35 Lowell Rd</td>
<td>10/1/11</td>
<td>0.055</td>
</tr>
<tr>
<td>100 Lowell Rd</td>
<td>10/1/11</td>
<td>0.025</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sample_ID</th>
<th>10/1/2011</th>
<th>11/1/2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 Lowell Rd</td>
<td>0.055</td>
<td>0.035</td>
</tr>
<tr>
<td>39 Lowell Rd</td>
<td>null</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>100 Lowell Rd</td>
<td>0.025</td>
<td>0.055</td>
</tr>
</tbody>
</table>
Building a VBScript Expression

In the Label Expression dialog box, select the expression:

- For the Field: Write a function named FindLabel for the selected parser.
  Add fields as parameters to the function.
- For the Function: Dim TheLabel
- For the Conditional: IF FindLabel(Perchlorate_Monitoring_Locations.LOCATION, 2) = "<BOL>", "" Then
- For the Parser: VBScript
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],

...
One routine per month

If InStr([Res_results.N2009_01], "<") Then
Else
End If

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

If trim([Res_results2.N2009_01]) <> "" Then
    TheLabel = TheLabel & vbCrLf & bold & [Res_results2.N2009_01] & " (1/09)" & unbold
End if

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

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

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],"&","&")
FindLabel = "<ITA>" & NewString & "</ITA>" End Function

I used this work around:

If InStr([Res_results.N2009_01], "<") Then
TheLabel =
Replace([sample_Monitoring_Locations.WC_Location], ",&","&amp;") &
TheLabel
Balance text size to avoid overlap.
Resources

• “Using VBScript 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.
Query in Access to
110 Groton Road
- Shallow
  0.083 (3/09)
  0.2 (6/09)
  0.095 (9/10)
  ND (11/10)
  0.137 (9/11)

117 Groton Road
  0.901 (3/09)
  14.7 (7/09)
  15.3 (9/09)
  18.7 (9/10)
  19.7 (9/11)

119 Groton Road

ND (9/11)