Using Crystal Reports with Lucity

The seventh of a seven-part series, this workbook is designed for Crystal Reports® users creating Work reports. This guide goes over particular steps and challenges in creating reports for work orders. Most of the following items can be issues found in creating other reports, however; they are very common in Work reports. Some of the general issues have been discussed previously so are included again for review.

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Adding Tables

Bring in all of the tables that could possibly be filtered on in the report.

The following is a simple Work Order Report with fields from the **WKORDER** table with only the **WKORDER** table in the Database Expert.

- o If this report is run in Lucity with a filter on **Resource Code equal to 1** (employee) then the following error will show up and the report will not run.
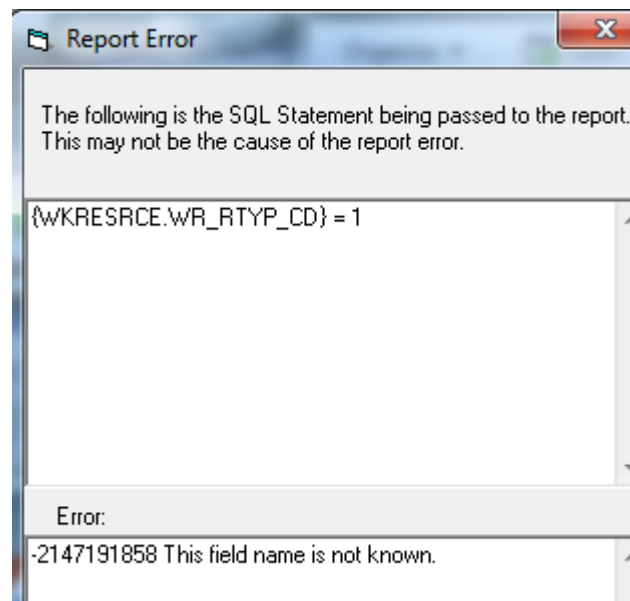
- The error occurs because the **WKRESRCE** table is not a part of this report.
- o Bring in any tables with possible fields to be filtered on into the *Database Expert* and *Link*.
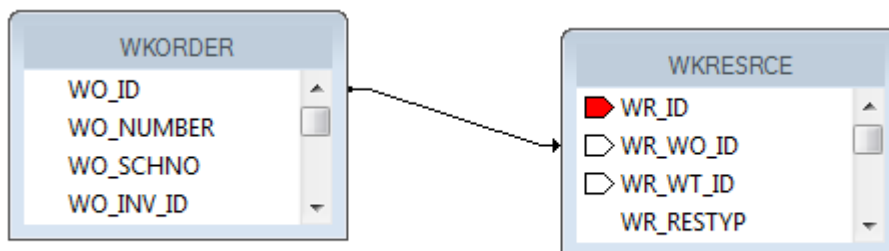
The standard Work Order Summary report has the following tables yet only shows fields from the **WKORDER** and **WKORDERLOC** tables:

> ➢ In general, the tables are linked with "Left Outer Join" connections. If the table on the left is true then move to the right for the next information. This shows with an arrow pointing to the "Connecting" tables.

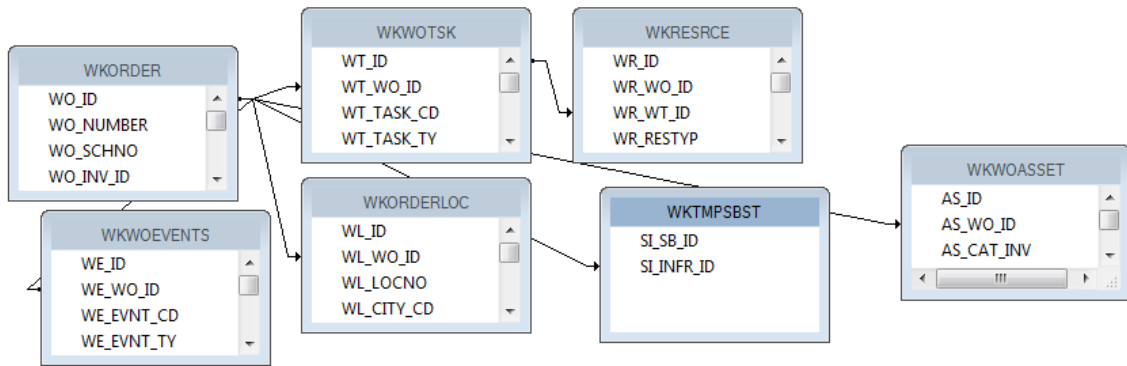> ➢ Inner joins can be used – information in both tables has to exist – but sometimes Crystal has some issues with this linking. This shows with a line with no arrows.

> ➢ Some older reports show all of the connections without arrows even though they are "Left Outer Joins". If looking at an old standard report and all of the connections look like inner joins, check each connection by double clicking each line and finding the Join Type description.

Many items in the Work Order module are found in grids. Each grid uses a different table.

> ➢ The normal user wants to start grabbing tables, linking and pulling in fields. As long as you can find the correct linking fields this should work, right? Wrong. There may be issues with multiple lines showing and possible problems with running the report with a filter.

A typical field an end user might like to see is the Address. It will be necessary to bring in the **WKORDERLOC** table to be among the tables in the main body of the report so the report can be run with an address filter. If the address is brought directly in from this table, the following occurs:

Work Order Summary

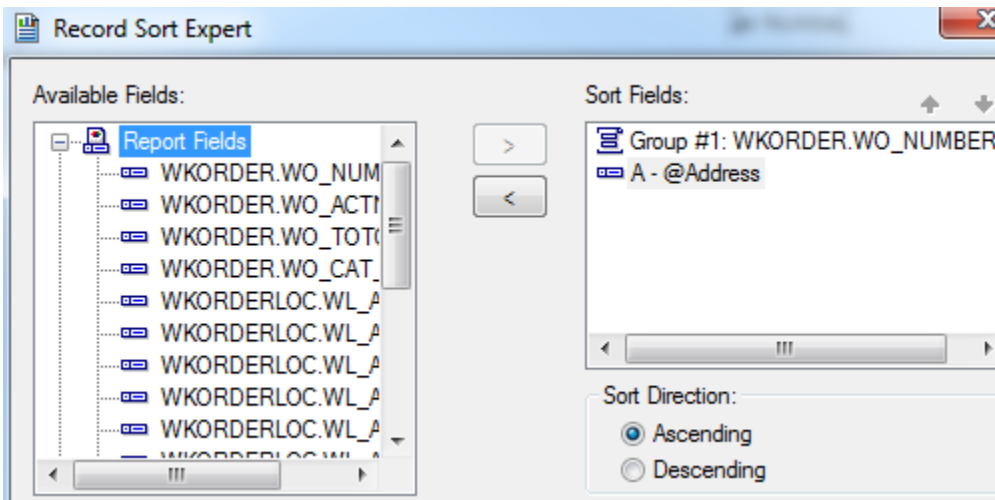| Work Order #:	Category:	Task:	Address:	Total Cost:
2006-01128	Sewer Service	Waste Water Quality Commercial	926 S BANNING ST	270.45
2006-01128	Sewer Service	Waste Water Quality Commercial	821 S ROANOKE ST	270.45
2006-01129	Residential Collection	Residential Collections		0.00
2006-01129	Solid Waste	Unrestrained Collections		0.00

> • The Work Order # 2006-01128 shows up twice because in this record there are two addresses in the Address grid. This might not be a problem to see the work order for each location but the Total Cost is going to show up each time as well, which is normally undesirable.

Possible ways to handle this:

1. If you want just one of the addresses, you could group on **WO_NUMBER** and then place all of the fields in the *Group Header* or *Footer* section.

o Depending on whether you wish to see the top address or bottom address in the Work Order Location grid, you could go into the *Record Sort Expert* and select the address field to sort on in either ascending or descending order.

2. Another possibility is grouping on **WO_NUMBER** and then putting the address formula in the *Detail* section. This would allow all of the addresses in the Location grid to show.

Work Order Summary

Work Order #:	Category:	Task:	Address:	Total Cost:
2006-01128	Sewer Service	Waste Water Quality Commercial		270.45
			821 S ROANOKE ST	
			926 S BANNING ST	

- There can still be problems if another field from another grid is brought in. In this next example the subtask from the **WKWOTSK** table is used.

Work Order Summary

Work Order #:	Category:	Task:	SubTask:	Address:	Total Cost:
2006-01128	Sewer Service	Waste Water Quality Comme			270.45
			Work Zone	821 S ROANOKE ST	
			Regulatory Research	821 S ROANOKE ST	
			Emergency Response	821 S ROANOKE ST	
			Regulatory Research	821 S ROANOKE ST	
			Regulatory Research	926 S BANNING ST	
			Emergency Response	926 S BANNING ST	
			Regulatory Research	926 S BANNING ST	
			Work Zone	926 S BANNING ST	

- There are three subtasks for this work order and one of the Tasks has two resources. So, for each address each task/resource combination is brought in. You definitely don't want this to happen. The problem is the way Lucity passes the information over to Crystal Reports.

The best way to handle grid information is with subreports. Both the SubTask and Address fields can be put in subreports.

		Work Order Summary				
PH		Work Order #:	Category:	Task:	SubTask:	Address:	Total Cost:
D		WO_NUMBER	WO_CAT_TY	WO_ACTN_TY	Subtasks	Addresses	O_TOTCOST

Work Order Summary

Work Order #:	Category:	Task:	SubTask:	Address:	Total Cost:
2006-01128	Sewer Service	Waste Water Quality Comme	Work Zone	821 S ROANOKE ST	270.45
			Regulatory Research	926 S BANNING ST	
			Emergency Response		

Note:_____

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Adding a Comments Section

The data from the *Comment* tab within **Work Orders** and **Requests** is brought into the report differently than the *Comment* sections in other modules. For this example, we'll add a Comment subreport to the **Work Order Summary Report**.

1. First, we'll find the field definition for the Work Order Comment section.

   a. Open the **Work Orders Standard** module. Click on the *Comments* tab.

Recorded By △	Recorded Date	Recorded Time	Comment
GBA	04/09/2007	08:53 PM	This is also a special type of memo

    b. Right click in the grid.

    c. Select *Add Comment* or *View Details* for an existing comment.

    d. Ctrl + right click in the large comments box to view the field definition. Note that the table name is **WKGDMEMO** and the field name is **GM_MEMO**.

    e. Close the comment dialog.

    *Note: This Comment section does not hit the **WKMEMO** table. Instead, it uses the **WKGDMEMO** table.*

2. Open the Work Orders module's Report Dialog.

3. Export the **WOSum.rpt** report and rename it **LC_WOSumComment.rpt**. Open the renamed report.

4. Right click in the left margin of the *Group Footer 1a* section and select *Insert Section Below*.

5. Click *Insert Subreport* ⊞ .

    a. In the *New report name* section, type a name for the subreport (**Comment**).

    b. Click *Report Wizard*.

6. Open **Create New Connection>>ODBC>>GBAWork001 (Finish)>>Tables**.

    a. Move the **WKGDMEMO** table to *Selected Tables*.

    b. Then, choose *Finish* and *OK*.

7. Insert the **Comment** "box" into the *Group Footer 1b* section.

8. Choose subreport formatting options and resize the box.

9. Right click within the **Comment** box and select *Change Subreport Links*.

a. Select fields so it looks like the following:
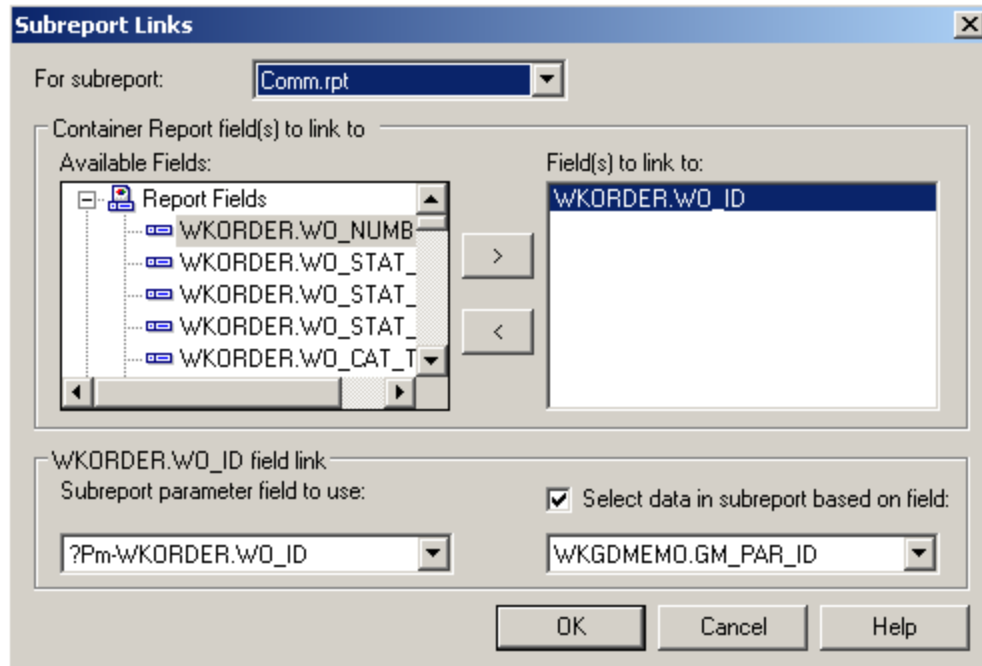
b. Click *OK*.

10. Double click on the **Comment** box. You are now in the **Comment** subreport.

11. Click *Select Expert* and add the following to the formula:

and {WKGDMEMO.GM_PARENT} = "WKORDER"

o This can be done with the *New* tab.

OR

a. In the **Formula Editor > Formula Workshop** you can type "and"

b. Double click the field, **WKGDMEMO.GM_PARENT**

c. Type in "="

d. Right click on **WKGDMEMO.GM_PARENT** within the list of fields and click *Browse Data* and select **WKORDER**, *Paste Data*.

e. Select *Save and Close* and then click *OK*.

Note: The formula in Requests would look like this:

{WKGDMEMO.GM_PAR_ID} = {?Pm-WKREQ.RQ_ID} and

{WKGDMEMO.GM_PARENT} = "WKREQ"

12. Add column titles. You'll want to make the titles **bold** and underlined in order to make them distinct.

13. Drag in the appropriate fields.

   o You'll need to create formulas for the **Date** and **Time** fields before adding them.

14. Increase the size of the **GM_MEMO** field and format it so it *Can Grow*.

15. Place a box around the **Comment** subreport to separate it from the rest of the data. Make sure the bottom of the box is in the Report Footer section so the box will grow to accommodate the Memo field if necessary.

   a. Add a title for the box (**Comments**).

   b. Format the **Comments** text box with a white background.

Report Header a	
Report Header b	Comments
	Recorded By:	Date:	Time:	Comment:
Details	GM_REC_BY	@Date	@Time	GM_MEMO
Report Footer b	

16. Click the *Design* tab.

17. Click the *Section Expert* button.

   a. Select **Group Footer1b** and the *Suppress Blank Section* option.

   b. Select **Group Footer 1** and the *Keep Together* option.

   c. Then, click OK.

Preview

Work Order Summary Report

WO #	Status	Status Date	Category	Main Task
98-000027	Complete		Administrative	General Office

Comments

Recorded By:	Date:	Time:	Comment:
GBA	4/16/2007	2:33:00PM	This is a comment for 98-000027

WO #	Status	Status Date	Category	Main Task
98-000028	Complete		Administrative	General Office

Comments

Recorded By:	Date:	Time:	Comment:
GBA	4/16/2007	2:34:00PM	This is a comment for 98-000028

98-000029	Complete		Pavements	Asphalt Preparation
98-000005S	Completed		Pavements	Mudjacking
98-000030	Complete		Pavements	Repair Potholes

Notes:_____

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Linking

When a subreport is added to a report, the linking procedure is usually straight forward; however, there are exceptions throughout the Lucity modules. We previously discussed one such exception: the **XXMEMO** table to the Main table for Comments. Here, the linking field was not obvious.

There are other situations where information in a grid requires a go-between table to work with the parent module. When creating a report, this go-between table is required to connect the subreport to the main report. For example, when Work Orders or Requests are linked to Work Orders or Requests, a go-between table called **WKWOMWO** is needed.

This is a special linking table and is NOT a simple many to many relate table. It is a many to self, many to many table.

You **CANNOT** do the following linking:

WKORDER.WO_ID to WKWOMWO.MW_WO_ID
*WKWOMWO.MW_RQ_ID to WKREQ.RQ_ID*

Linking Work Orders to Requests

In our first step-by-step example, we will link a Work Order subreport to a Request report.

1. We will modify the Summary of Requests (**ReqSum.rpt**) report from the Request module. From the Work report folder open **LC_ReqSumLinks.rpt**.

2. Open the *Database Expert*.

3. Add the **WKWOMWO** table and link it to **WKREQ**.

   The connected fields usually have an **ID** field with a common part; in this case, it is **RQ**.

   a. To link the tables, click on the joining field in the "parent" table and drag it onto the joining field in the connecting table.

   b. Double click on the joining arrow and select the *Left Outer Join* Link Option.

   c. Click *OK* and then click *OK* again.
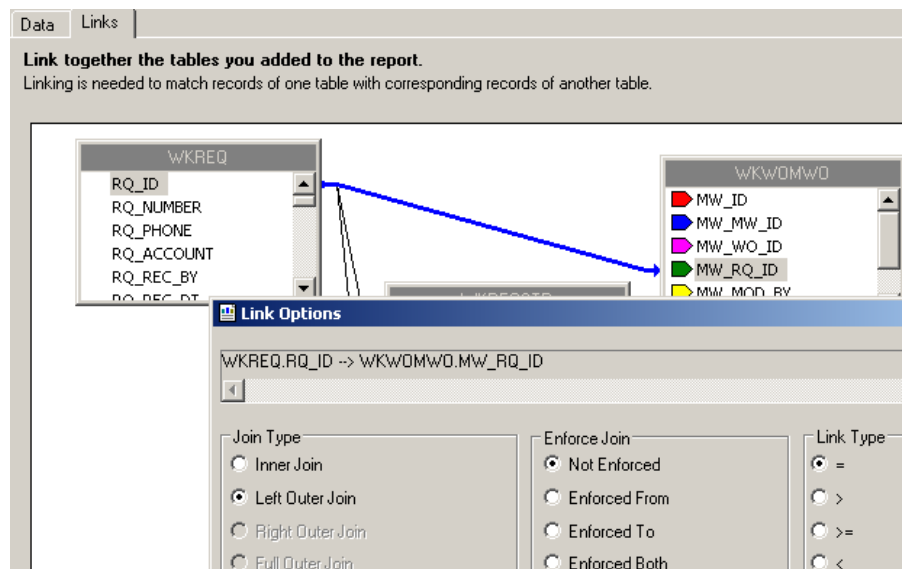
4. Add a *Detail* section for the Work Orders subreport.

5. Create a subreport (**Linked Work Orders**).

    a. For the *Selected Tables,* bring in **WKORDER** and **WKWOMWO**.

    b. Select *Next* and link the tables. *Left Outer Join.*

        - The "parent" table will be the table that is linked to the main report. (Usually placed far left, top)

    c. Click *Finish* and then click *OK*.
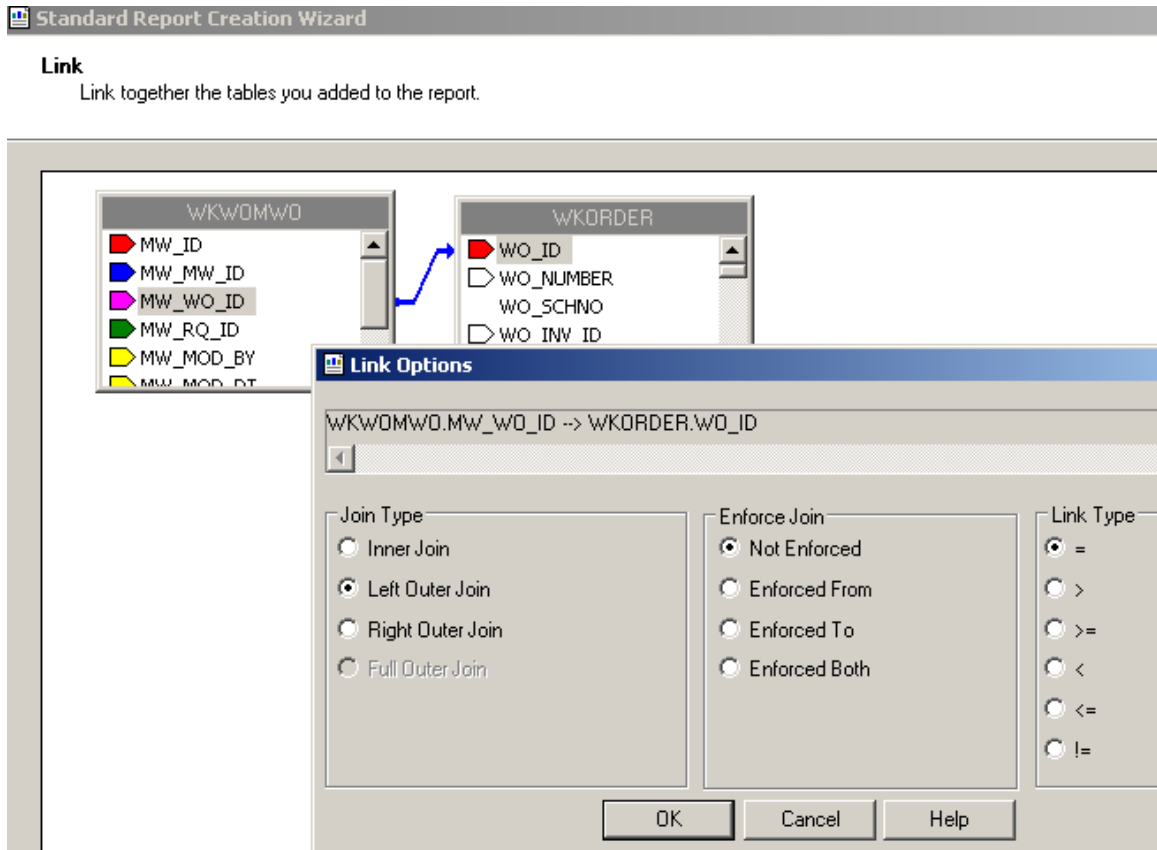
6. Place the subreport in the new *Details* section.

7. Select the formatting options and resize the subreport.

8. Right click in the **Linked Work Orders** subreport box and select *Change Subreport Links*. Set up as shown below:

9. Open the **Linked Work Orders** subreport.

   a. Set up the subreport with the desired information.

   b. Open the *Section Expert* in the main report and select *Suppress Blank Section* for the subreport *Detail* section.

10. Preview the report.

11. In our example, there is an extra space above the first Work Order record. One way to remove this space is to go back into the **Linked Work Orders** subreport *Select Expert* and add a statement for Work Order IDs greater than zero.

> {WKWOMWO.MW_MW_ID} = {?Pm-WKWOMWO.MW_MW_ID}
>
> and {WKORDER.WO_ID} > 0

    o   As you can see in the Preview screen below, this additional statement has removed the blank space from above the first Work Order record.

Summary of Requests

Request #	ReqDate	Status	StatDate	Priority	Problem
98-000052	10/5/1998	Completed	2/15/1999	Medium	Potholes
98-000053	10/5/1998	WO Completed	11/12/1998	Medium	Sewer Odor

Linked Work Orders

WO #	Category	Problem
98-000019	Sewer Department	Sewer Odor

    o   Another way to handle the blank line is to use the *Section Expert* in the subreport. Select *Suppress blank section* for the *Detail* section.
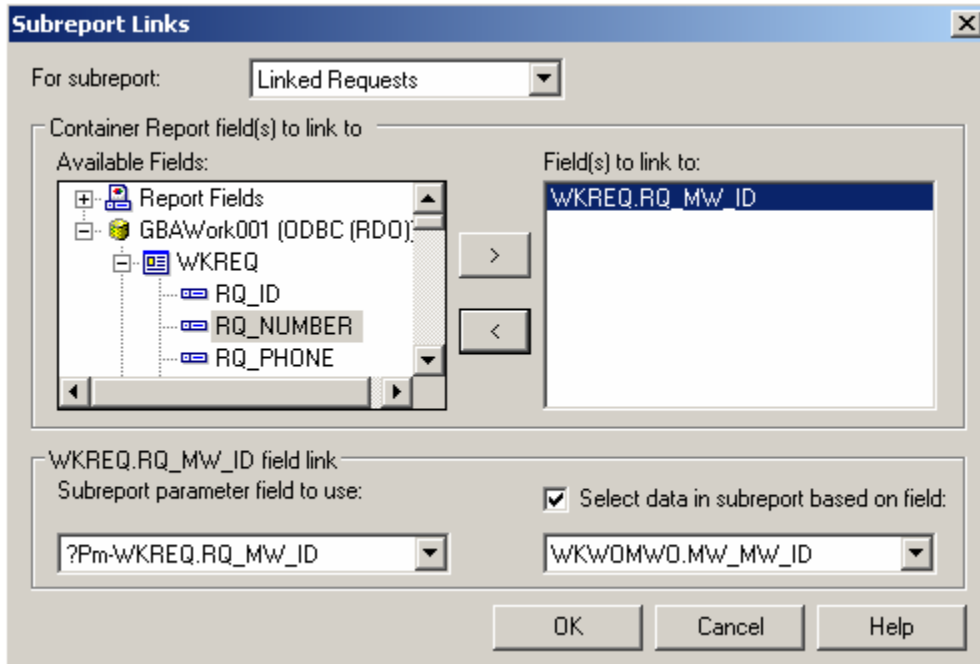
Linking Requests to Requests

For our next example, we'll continue with **LC_ReqSumLinks.rpt** from above. Here, we'll add the linked Requests.

1. Add a *Detail* section beneath the **Linked Work Orders** subreport.

2. Insert a subreport named **Linked Requests**.

    a.   For the Selected Tables bring in **WKWOMWO** and **WKREQ**.

    b.   Link as follows:
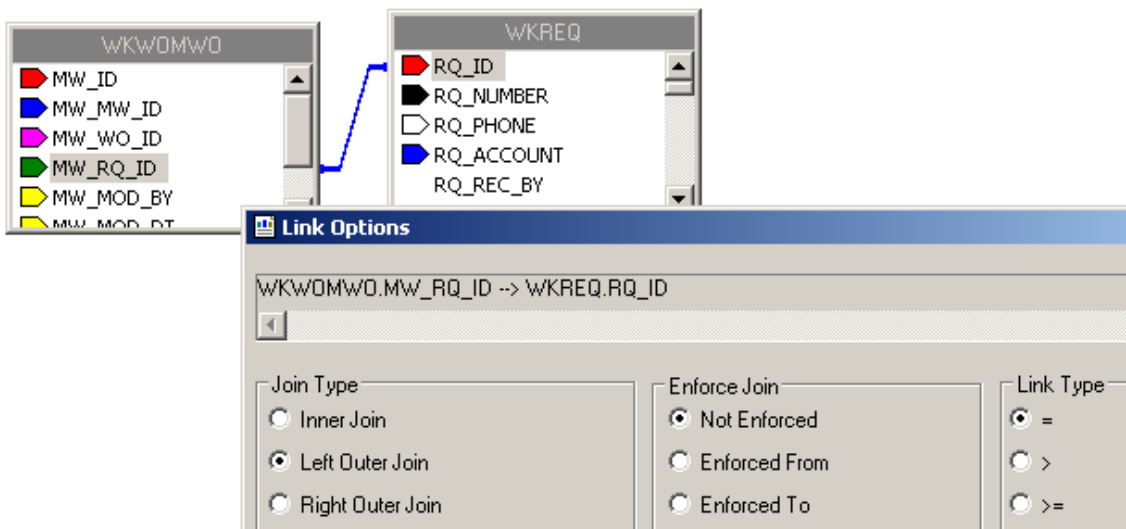
c. Place the subreport in the newly created *Detail* section.

d. Select formatting options, and resize.

3. Right click on the **Linked Requests** subreport and select *Change Subreport Links*. Set up as shown below:

o You do not want to show the request you are in when listing linked requests, so an additional linking statement needs to be added.
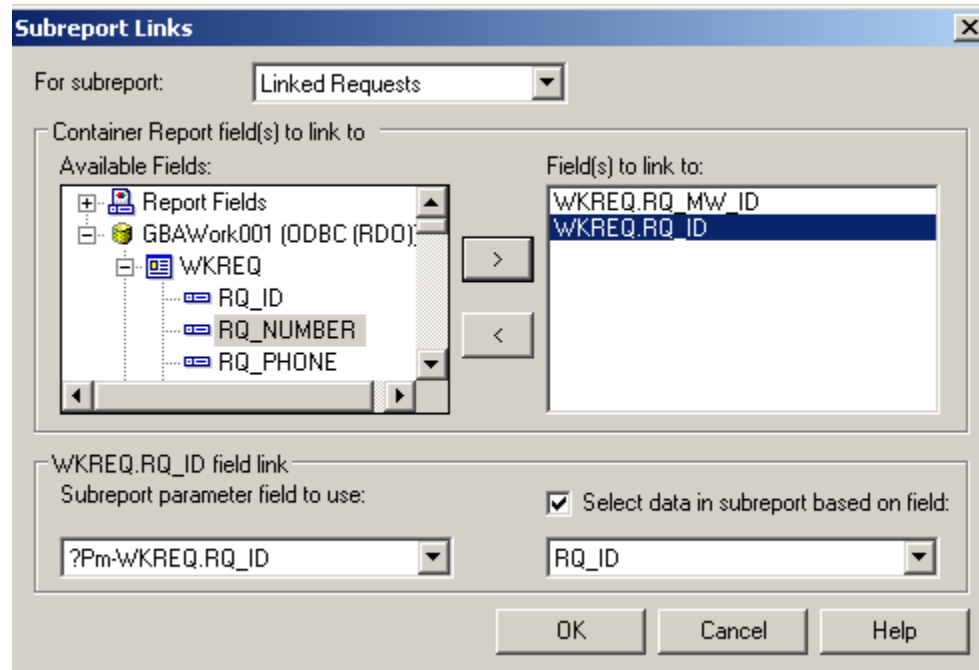
4. Open the **Linked Requests** subreport and click *Select Expert*.

5. You'll need to modify one of the linking formulas created in *Subreport Links*.

{WKWOMWO.MW_MW_ID} = {?Pm-WKREQ.RQ_MW_ID} and
{WKREQ.RQ_ID} = {?Pm-WKREQ.RQ_ID}

- o Change the second formula to "not equal".
- o You can do this in the *Formula Workshop* by highlighting the "=" and then opening *Operators>>Comparisons* and double clicking Not Equal (x<>y). OR You can just type in "<>". The "=" will be replaced with "<>".
- o Remember to *Save and Close* the *Formula Workshop* and select *OK* to close the *Select Expert*. The new formula will appear as follows:

{WKWOMWO.MW_MW_ID} = {?Pm-WKREQ.RQ_MW_ID} and
{WKREQ.RQ_ID} <> {?Pm-WKREQ.RQ_ID}

6. Set up the subreport with the desired information.

7. Go back to the main report and open *Section Expert*. Select *Suppress Blank Section* for this new **Detail** section.

Preview

Summary of Requests

Request #	ReqDate	Status	StatDate	Priority	Problem
98-000052	10/5/1998	Completed	2/15/1999	Medium	Potholes

Linked Work Orders

WO #	Category	Problem
98-000019	Sewer Department	Sewer Odor

Linked Requests

Req #	Category	Problem
98-000053	Sewer Department	Sewer Odor

Linking Requests to Work Orders

The procedure for adding the linked subreports is very similar to the above examples.

In this case, we'll add a **Linked Requests** subreport to the **Work Order Summary Report**.

1. We will modify the Work Order Summary (**WOSum.rpt**) report from the Work Order module. From the Work report folder open **LC_WOSumLinks.rpt**.

2. Open *Database Expert* and add the **WKWOMWO** table, linking it to **WKORDER**.
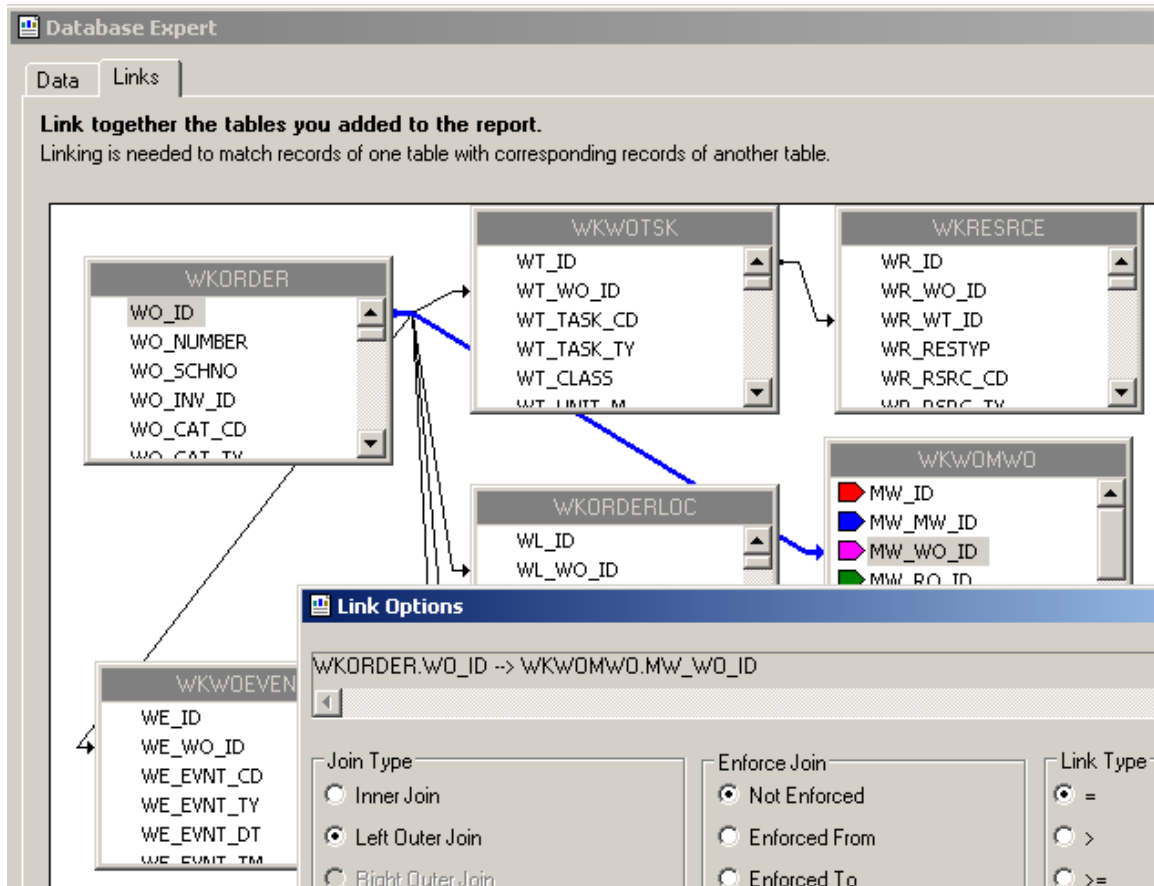
3. Add an additional *Group footer* section beneath *GF1a*. This will be the new *GF1b*.

4. Create a subreport named **Linked Requests** with the **WKWOMWO** and **WKREQ** tables.
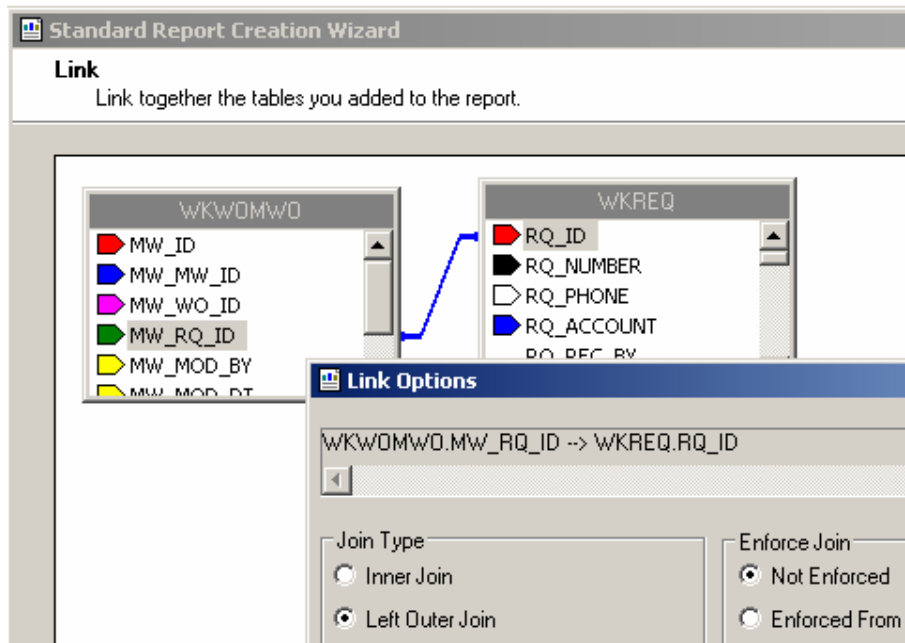
5. Insert the **Linked Requests** subreport into the new *GF1b* section.

6. Right click on the subreport and select *Change Subreport Links*.
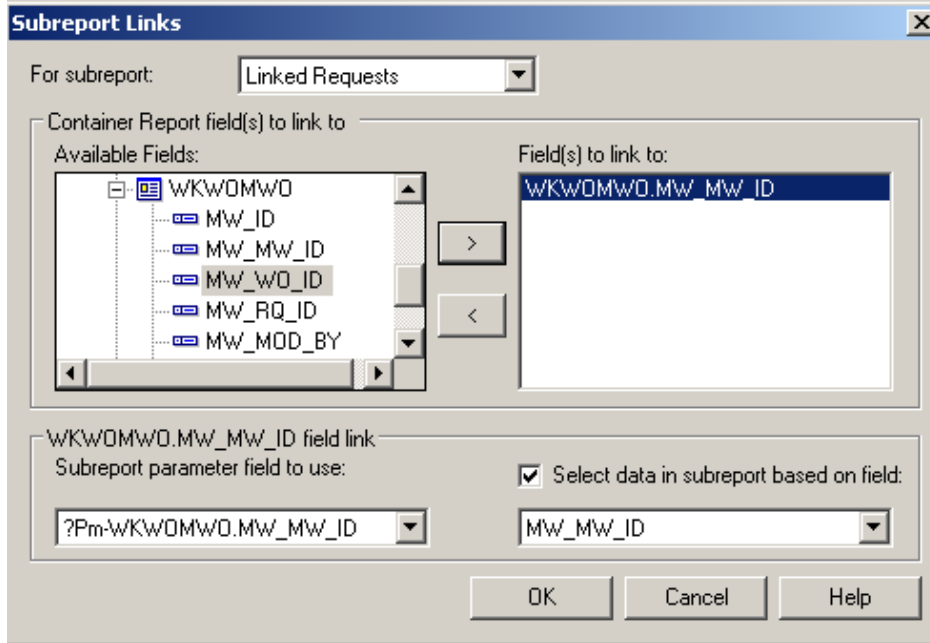
7. Proceed with the subreport details as previously demonstrated.

Linking Work Orders to Work Orders

We will continue with the open **LC_WOSumLinks.rpt** report and add a second subreport, **Linked Work Orders**.

1. Add a new *Group Footer* section.

2. Create a new subreport named **Linked Work Orders** and bring in the **WKWOMWO** and **WKORDER** tables.
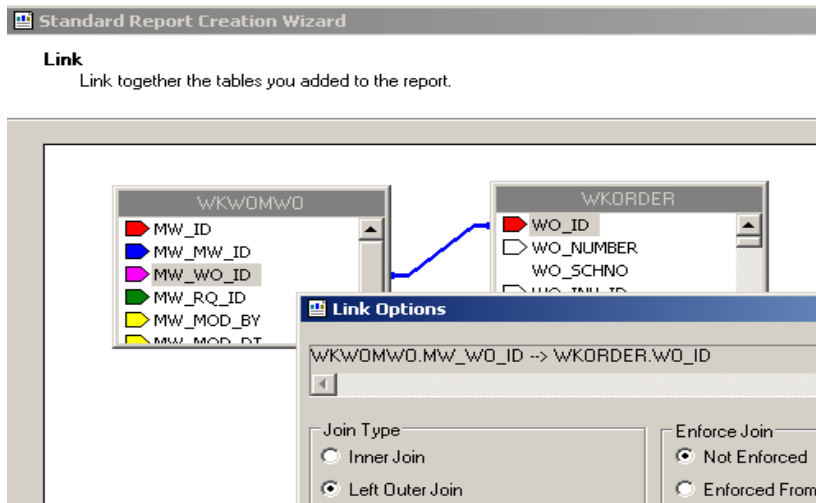
3. Place the **Linked Work Orders** subreport in the new *Group Footer* section.

4. Right click on the subreport and select *Change Subreport Links*.

AND
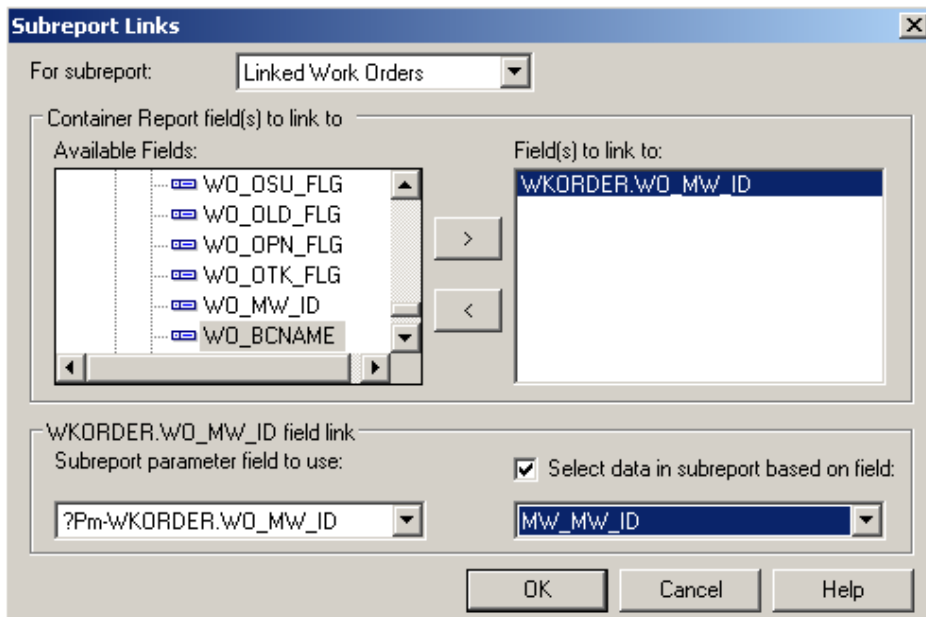
5. Open the **Linked Work Orders** subreport and click *Select Expert*.

6. Change the formula as discussed previously.

{WKWOMWO.MW_MW_ID} = {?Pm-WKORDER.WO_MW_ID} and

{WKORDER.WO_ID} <> {?Pm-WKORDER.WO_ID}

7. Proceed with the subreport details.

Example 30A

Work Order Reports with Assets

Asset Inventory Numbers

You can use the Asset number for record selection. By adding a formula in the *Select Expert* section, you can limit records to the desired assets.

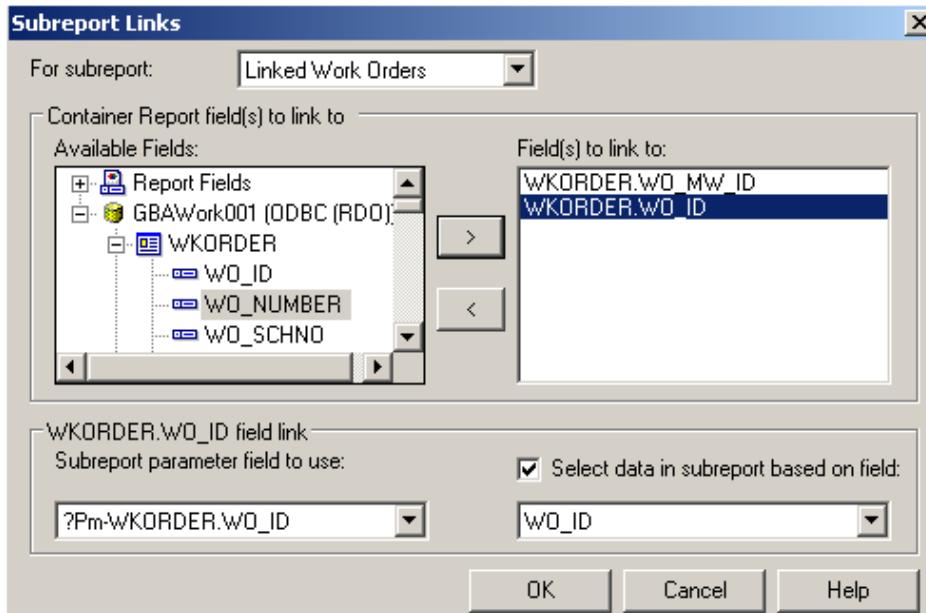The following Asset values are required to create any formulas that would select specific Assets. This is not a complete list.

CI_ID	CI_NAME
1	No Inventory Item
2	Sewer Structure
3	Sewer Pump Station
4	Sewer Pump
5	Sewer Service
6	Sewer Pipe
7	Street Segment
8	Street Intersection
10	Water Pipe
11	Water Valve
12	Water Hydrant
13	Water Pump Station
14	Water Storage Facility
15	Water Meter Location
16	Water Node
17	Water Vault
18	Water Supply Source
19	Street Structure
20	Street Subsegment
22	Water Pumps
23	Water Backflow Preventers
24	Water Service Taps
25	Storm Structure
26	Storm Conduit
27	Storm Pump Station
28	Storm Pump
29	Storm Detention Basin
30	Street Post/Pole
31	Street Sign
32	Fleet
33	Equipment
34	Street Supersegment
38	Water Main Breaks
39	Park
40	Park Parking Lot
41	Park Path
42	Park Structure
43	Park Field
44	Park Court
45	Park Landscape
46	Park Lighting
47	Park Playground Equipment
48	Park Furniture
49	Park Irrigation Control
50	Park Irrigation Valve
51	Tree
52	Street Main Line
53	Street Conduit
54	Street Conductor
55	Street Traffic Detector
56	Street Fiber Optic Line

CI_ID	CI_NAME
57	Street Preemptive Signal
58	Street Junction Box
59	Street Meter Box
60	Street Snow Shoe
61	Street Cabinet
62	Street Auxilary Equipment
63	Street Signal Head
64	Signal Controller
65	Street Sidewalk
66	Street Curb
67	Street Pavement Marking
68	Street Median
69	Street Guard Rail
70	Street Bus Stop
71	Street Railroad Xing
72	Street Wall
73	Street Fence
74	Street Steps
75	General Custom
76	Facility Building
77	Facility Roof
78	Facility Floor
79	Facility Room
80	Facility Furnishing
81	Park Meter
82	Park Pool
83	Park Refuse
84	Light Controller
85	Street Light
86	Bridge
88	Water Control Valve
89	Water Meter Device
90	Water AMR
91	Raw Water Meter Location
92	Raw Water Meter Device
93	Raw Water Node
94	Raw Water Pipe
95	Raw Water Pump
96	Raw Water Pump Station
97	Raw Water Storage Facil
98	Raw Water Supply Source
99	Raw Water System Valves
100	Raw Water Control Valve
101	Recycled Meter Location
102	Recycled Meter Device
103	Recycled Node
104	Recycled Pipe
105	Recycled Pump
106	Recycled Pump Station
107	Recycled Storage Facility
108	Recycled System Valve

CI_ID	CI_NAME
109	Recycled Control Valve
110	Street Ramp
111	Recycled Hydrant
112	Recycled Service Tap
113	Recycled AMR
114	Raw Water AMR
115	Recycled Supply Source
116	Recycled Vault
117	Raw Water Vault
118	Street Parking
119	Water Loss
120	Water Flushing
121	Facility Site
122	Facility Site Asset
123	Facility Door
124	Water Site
125	Water Sampling Station
126	Street Road Attribute
127	Street Road Segment
128	Street Road Ramp
129	Street Road Asset
130	Street Road
132	Solid Waste
133	Solid Waste Container
134	Solid Waste Route
135	Elec Underground Struc
136	Elec Surface Struc
137	Elec Elec Station
138	Elec Switching Station
139	Elec Support Struc
140	Elec Warning Sign
141	Elec Aerial Marker
142	Elec Riser
143	Elec Anchor Guy
144	Elec Span Guy
145	Elec Pushbrace
146	Elec Assembly
147	Elec Joint Use Attachment
148	Elec Conduit Inventory
149	Elec Prim Under Line Seg
150	Elec Sec Under Line Seg
151	Elec Prim Over Line Seg
152	Elec Sec Over Line Seg
153	Elec Circuit Source
154	Elec Bus Bar
155	Elec Communication Cable
156	Elec Transformer Bank
157	Elec Transformer Location
158	Elec Transformer Unit
159	Elec Volt Regulator Loc
160	Elec Volt Regulator Unit

CI_ID	CI_NAME
161	Elec Open Point
162	Elec Circuit Breaker
163	Elec Recloser Location
164	Elec Recloser Unit
165	Elec Sectionalizer Loc
166	Elec Sectionalizer Unit
167	Elec Fault Interrupter
168	Elec Fuse Location
169	Elec Fuse Unit
170	Elec Switch Location
171	Elec Switch Unit
172	Elec Capacitor Bank
173	Elec Series Cap Location
174	Elec Capacitor Unit
175	Elec Shunt Reactor
176	Elec Fault Indicator
177	Elec Fault Limiter
178	Elec Ground
179	Elec Surge Arrestor
180	Elec Street Light
181	Elec Recloser Elect Ctrl
182	Elec Recloser Hydr Ctrl
183	Elec Section Elect Ctrl
184	Elec Section Hydr Ctrl
185	Elec Relay Control
186	Elec Regulator Control
187	Elec Capacitor Control
188	Elec Load Tap Control
189	Elec Network Protector
190	Elec Generator
191	Elec Meter
192	Elec Induction Motor
193	Elec Synchr Motor
218	Park Pool Site
219	Park Pool Appurtenances
220	Park Playground
221	Park Fence
222	Park Modular Equipment
223	Raw Water Main Breaks
224	Sewer FOG Facilities
225	Sewer IPT Facilities
226	Sewer FOG Extractor
227	Customer Address
228	Facility Building Asset
229	Facility Floor Asset
230	Facility Roof Asset
231	Facility Room Asset

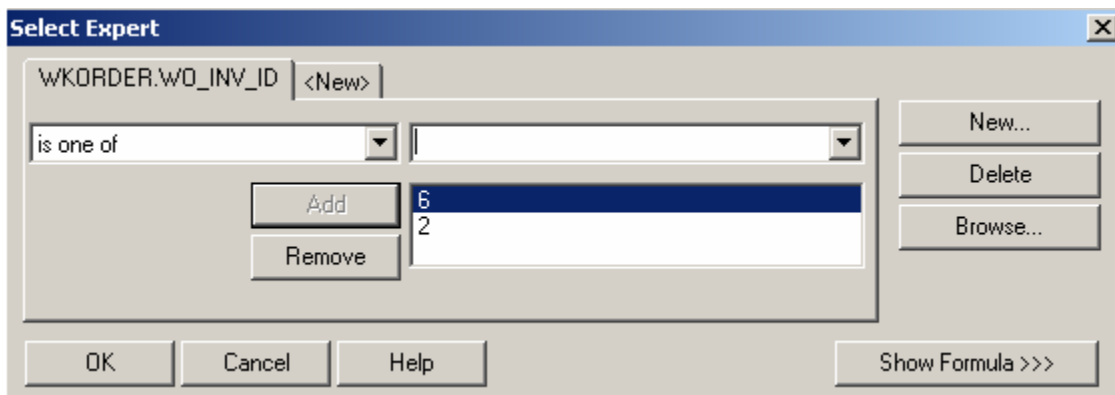*Note: These Assets come from the **WKCATINV** table.*

Limiting Record Selection to Specific Assets

We will create a **Work Order Summary Report** that will show only **Sewer Pipe** and **Manhole** work orders with their assets.

1. From the Work report folder open **LC_WOSumPipeMan.rpt**.

2. You can view just Sewer Pipe and Manhole records by adding the following formula to the Select Expert:

   a. Open Select Expert.

   b. Click on **WO_INV_ID**.
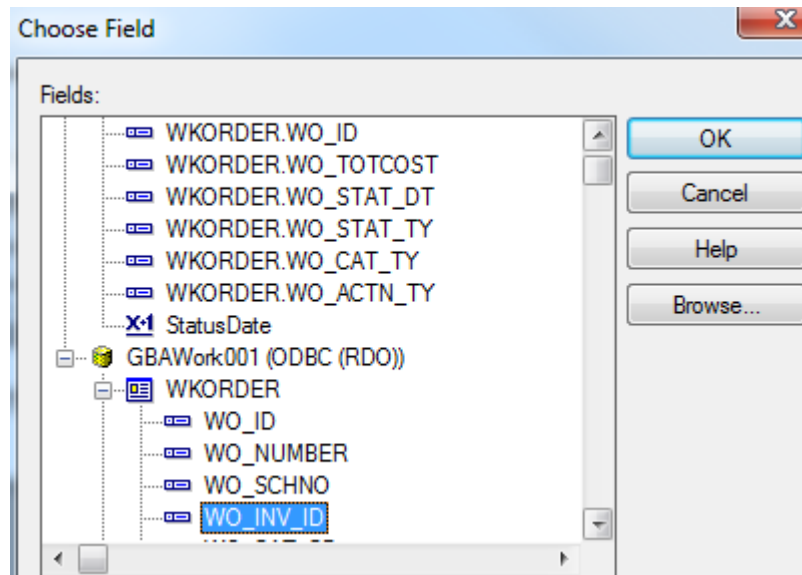
   c. Click *OK*.

   d. Set up as follows.

   e. Click *OK*.

   *Note: The **6** (Sewer Pipe) and **2** (Sewer Structure) values come from the **WKCATINV** table on the previous page.*

OR

   a. You can click Report>>Selection formulas>>Record.

   b. Type in the following formula:

   {WKORDER.WO_INV_ID} in [2, 6]

Preview

Work Order Summary Report

WO #	Status	Status Date	Category
98-000037	Complete		Pipe Maintenance
98-000038	Completed		Pipe Maintenance
98-000040	Complete		Manhole Maintenance

As you can see in the above example, the new **Work Order Summary Report** displays only the Sewer Pipe and Manhole records.
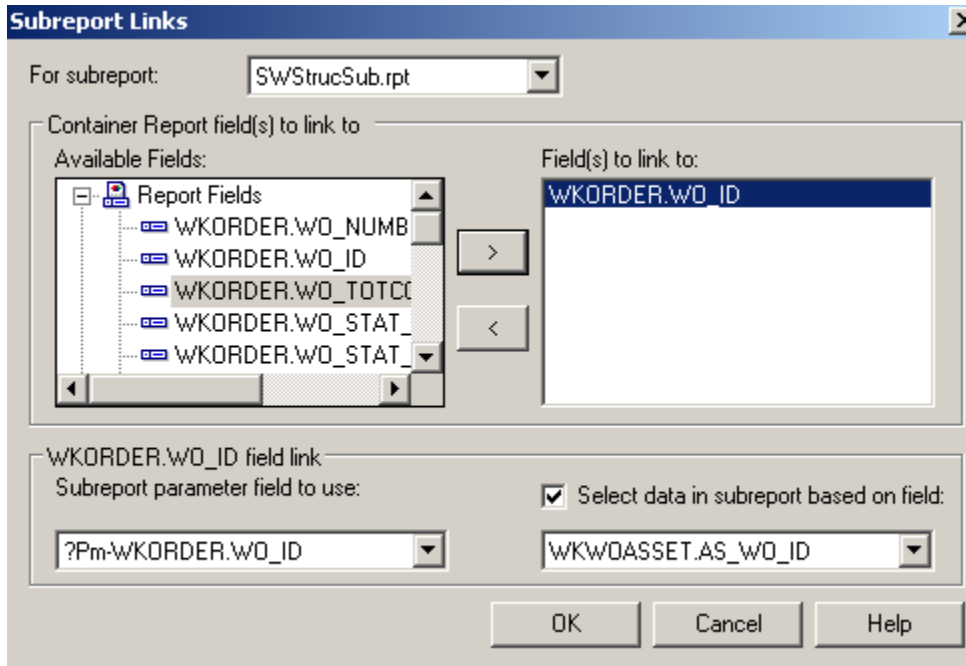
Asset Subreports

We will now add Asset subreports to the limited **Work Order Summary Report** we created above.

1. We are going to "borrow" subreports from **WOFormSewerAsset.rpt**.

   a. Click *File* in the top tool bar, then *Open*, and then double click **WOFormSewerAsset.rpt**.

   b. Right click on the **SWPipe.rpt** subreport.

   c. Select *Save Subreport As*.

   d. Enter a name for your subreport (**SWPipeSub.rpt**) and then *Save* the subreport. Make sure it is saved in the Work report folder.

   e. Repeat these steps for the **SWStruc.rpt** subreport, giving it a new name as well.

      ▪ For example, we've named this subreport, **SWStrucSub.rpt**.

Note: When you are finished with these subreports, you may want to delete them from your "family" of Work reports. This will help avoid confusion in the future.

2. Close **WOFormSewerAsset.rpt**.

3. You are back in **LC_WOSumPipeMan.rpt**. Insert two new *Group Footer* sections.

4. In your new *Group Footer* sections, insert the two subreports using the *Choose an existing report* option.

5. Choose the subreport formatting options. Remember to suppress the blank subreports within formatting and in the *Section Expert*.

6. Link the subreports.

7. Within the subreports, remove the blank sections.

8. Remove the "old" linking formula in each subreport's *Select Expert*.


Preview

Example 31A

Bringing in Asset Work Orders

In a Work Order report with Assets, it is sometimes desirable to see all of the Work Orders associated with the Assets. This is helpful in determining if the asset is being plagued with problems.

1. From the Work report folder open **LC_WOSumPipeManWOs.rpt.** We will set up the Pipe asset subreport (**SWPipeSub.rpt**) to bring in any associated work orders.

    The original tables for this subreport are linked as follows:
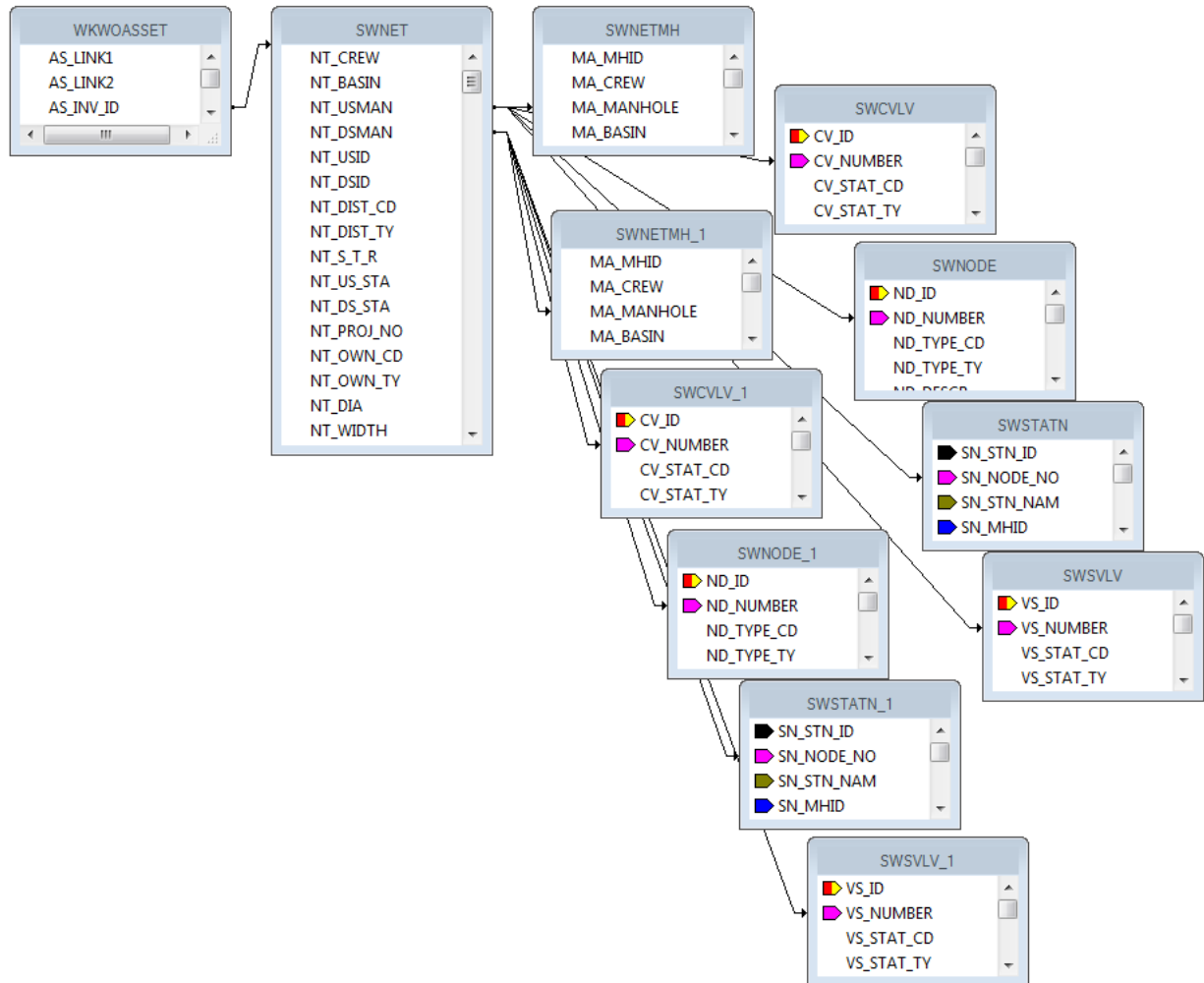
2. Additional tables are needed. Bring in **WKORDER** and an additional **WKWOASSET** which will show as **WKWOASSET_1**. Left outer joins.
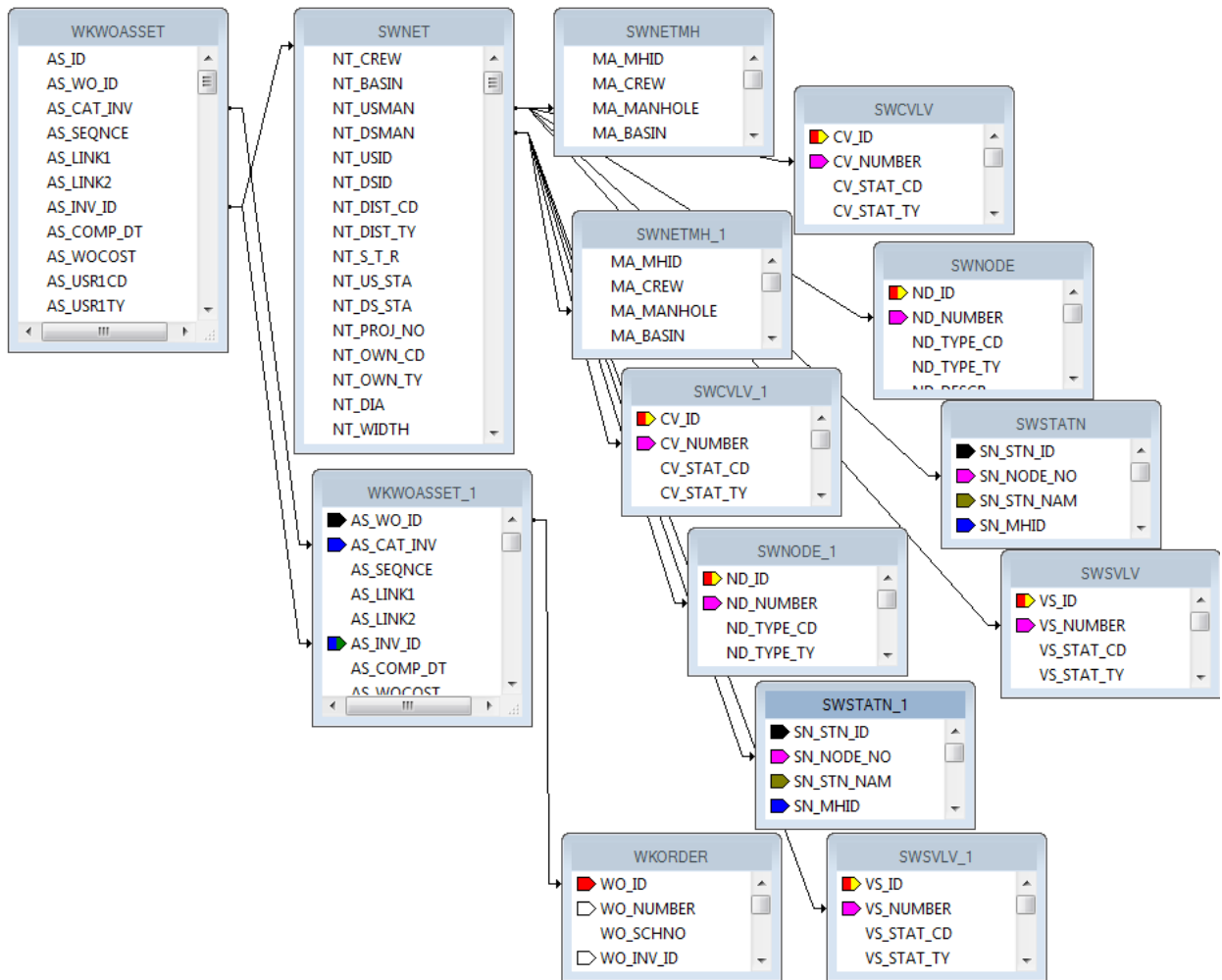
3. Grouping should be added for the **AS_LINK1** field. The fields in the *Detail* section will be moved into the *Group Header* section.

4. Bring in the **WO_NUMBER** field and the **WO_ACTN_TY** field into the *Detail* section.

5. Create a formula (**WOTitle**) that will show when there are any other work orders associated with this asset:

> If {?Pm-WKORDER.WO_ID} <> {WKORDER.WO_ID} then "Additional Work Orders"

6. Group on this formula so that it will show only once for a list of work orders.

7. In the subreport *Section Expert* click on the *Group Header #2* section and select *Suppress Blank Section*.

8. In the subreport *Section Expert* add a conditional suppression formula for the *Details* section.

> {?Pm-WKORDER.WO_ID} = {WKORDER.WO_ID}

This will suppress the work order number the asset is associated with in the main report.

The Pipe subreport now looks like this:

RHb	.	Asset List (Sewer Pipes)						
	.	US Structure	US Address		Length	US Map Page	DS Map Page	
	.	DS Structure	DS Address		Diameter	Material		Completion Date
GH1	.	NT_USMAN	@USAddy		LENGTH	MA_MAPPAGE	MA_MAPPAGE	
	.	NT_DSMAN	@DSAddy		NT_DIA	NT_MAT_TY		@CompDt
GH2	.	Group #2 Name						
D	.	WO_NUMBER	WO_ACTN_TY					
GF2	.	//						
GF1	.	//						
RFa	.	Count Pipes			#Leng	Total Length		
--								

Preview

2013-00005	New Work Order	11/12/2013	Sewer Pipe	Engineering Quality Control

Asset List (Sewer Pipes)

US Structure	US Address		Length	US Map Page	DS Map Page	
DS Structure	DS Address		Diameter	Material		Completion Date
113495	1424 S PROJECT DR		170.8	1-720	1-720	
113497	0 E LESLIE CT		8	VCP		

Additional Work Orders

2014-00009	GIS Map Update
2014-00008	Emergency Response

1 Pipes		512.4 Total Length

Bringing in Comments for the Asset Work Orders

To view the comments that are associated with each Asset work order we will continue with **LC_WOSumPipeManWOs.rpt.**

1. The Work Order Comment is shown by bringing in the **WKGDMEMO** table then linking to the **WKORDER** table. Left outer join.
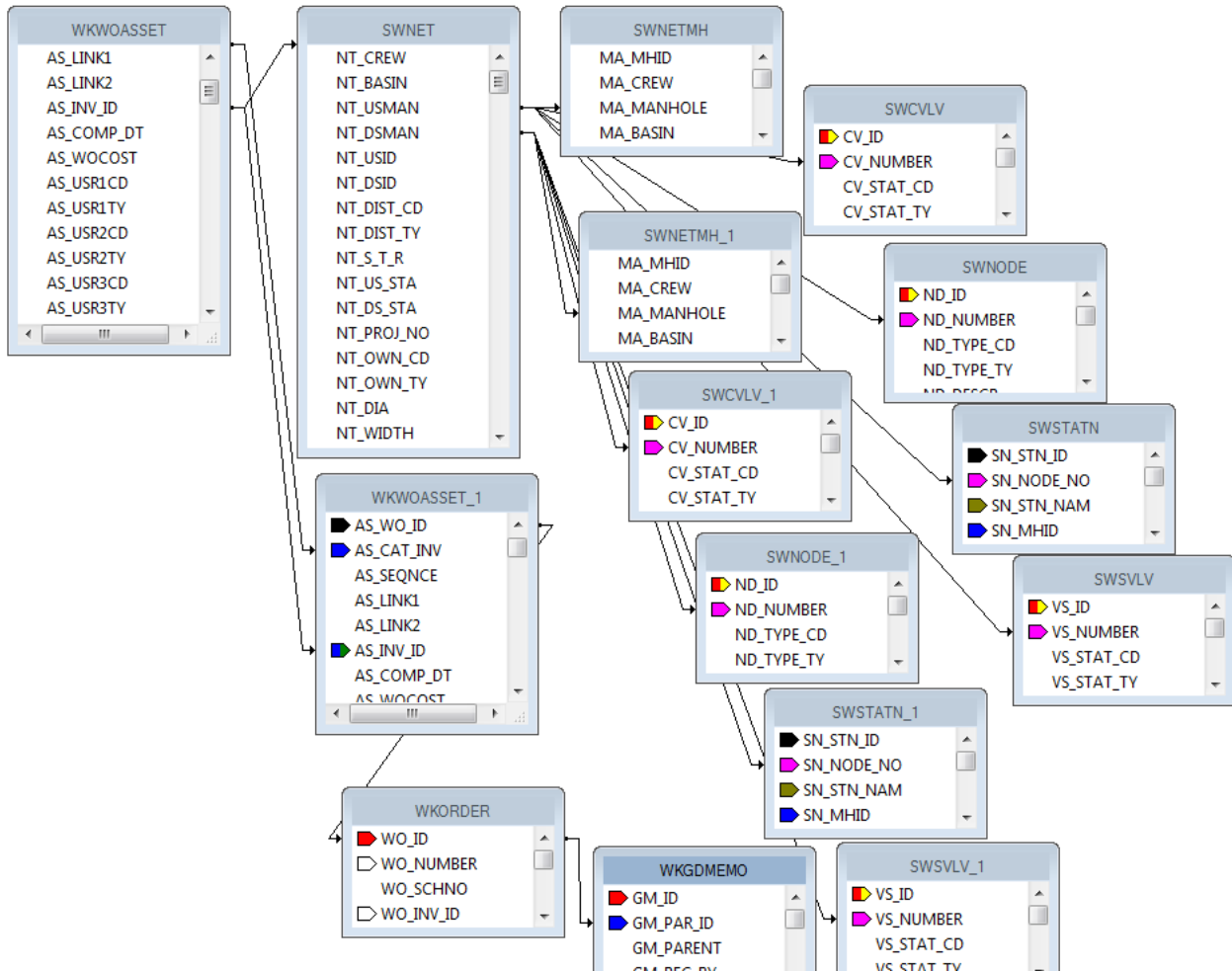
2. Create a new group on the **WO_NUMBER** field.

3. Move the data in the *Detail* section into the new *Group Header* section (*GH3*).

4. Add the **GM_MEMO** field to the *Detail* section.

5. In the subreport *Section Expert* for *Group Header #3,* add the following formula to *Suppress.*

   {?Pm-WKORDER.WO_ID} = {WKORDER.WO_ID}

   Also select *Suppress Blank Section.*

6. In the subreport *Section Expert* for *Details*:

   a. Add the following formula to *Suppress*.

      ({?Pm-WKORDER.WO_ID} = {WKORDER.WO_ID})

      Or ({WKGDMEMO.GM_PARENT} <> "WKORDER")

   b. Also select *Suppress Blank Section*.

RHb	Asset List (Sewer Pipes)						
	US Structure	US Address	Length	US Map Page		DS Map Page	
	DS Structure	DS Address	Diameter	Material			Completion Date
GH1	NT_USMAN	@USAddy	LENGTH	MA_MAPPAGE		MA_MAPPAGE	
	NT_DSMAN	@DSAddy	NT_DIA	NT_MAT_TY			@CompDt
GH2	Group #2 Name						
GH3	WO_NUMBER	WO_ACTN_TY					
D	GM_MEMO						
GF3							
GF2							
GF1							
RFa	Count Pipes		#Leng Total Length				

Preview

2013-00005	New Work Order	11/12/2013	Sewer Pipe		Engineering Quality Control

Asset List (Sewer Pipes)

US Structure	US Address	Length	US Map Page	DS Map Page	
DS Structure	DS Address	Diameter	Material		Completion Date
113495	1424 S PROJECT DR	170.8	1-720	1-720	
113497	0 E LESLIE CT	8	VCP		

Additional Work Orders

2014-00008   Emergency Response

    memo for 2014-00008

2014-00009   GIS Map Update

    Second comment for 2014-00009

    another WO for this pipe.

   1 Pipes   683.2   Total Length

Filter on Grid Fields and the Impact on Reports

If you have a module that allows you to filter on a field that is in a grid with multiple records and you plan on running a report (without groupings) with this field as a filter, then the report may have some issues. If you have a field you wish to summarize, you need to set it up with groupings and variables or running totals.

For example, in a Work Order report where the fields have been placed in the *Detail* section without Grouping - the following could occur:

Filter on a grid field that has multiple values and run the report against this filter and see what the numbers do. Resource = 1 (employee) is a good one.

The filter can be found when you click *Advanced*.
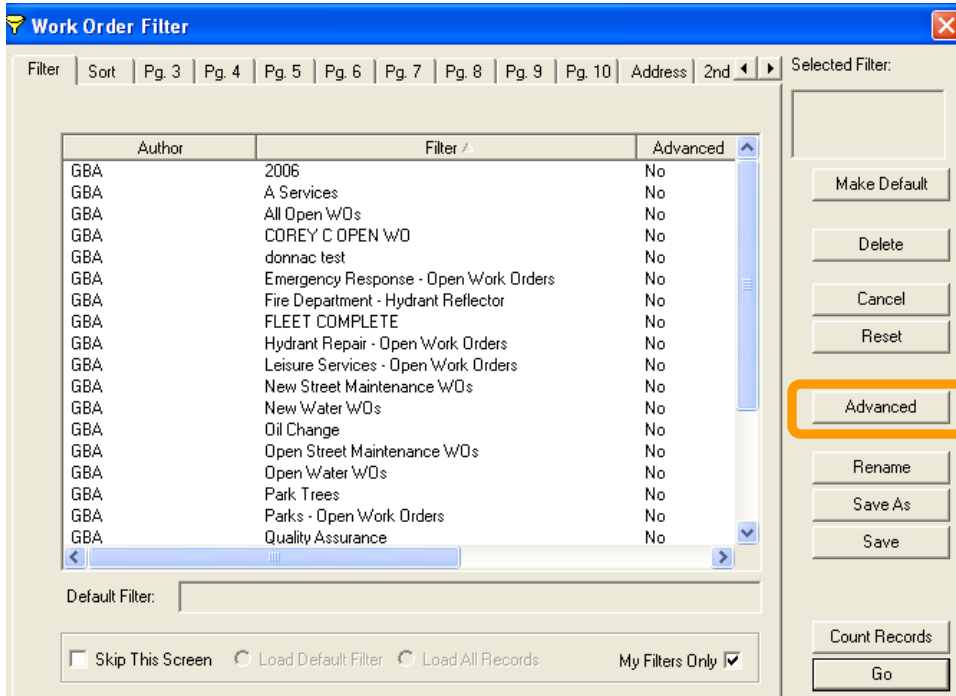
Then click on the "Report SQL" tab.

Lucity passes to Crystal the following statement.

> **{WKRESRCE.WR_RTYP_CD} = 1**

When the report runs, it looks at the record every time the statement is true. If a report had three employees then it would hit the record three times.

In WO# 2006-01128 there are two employees so when the report is run with a resource filter the work order line shows up twice.

2006-01128	Sewer Service	Waste Water Quality Commercial	821 S ROANOKE ST	230.40
2006-01128	Sewer Service	Waste Water Quality Commercial	821 S ROANOKE ST	230.40

If the information being summarized is in the **WKORDER** table, then grouping on the **WO_NUMBER** and setting up variables should be sufficient. If you are summarizing a field within Task or Resources you will need to further group. In most cases using a Running Total is equally effective as the variables.

Using Variables in a Report

The original Work Order Category Summary (**WOCatSum.rpt**) report looked like this:

It was a very simple report which grouped on Category and used the Crystal Summary tool to calculate the Group Total and Grand Total. This worked when the report was run without filters.

3010	Tree	2	$714.51
40000	Water Department	26	$464.08
41000	Potable	44	$2,596.80
41110	Potable Mains	124	$20,068.40

There were certain filters that caused duplicate Work Order costs. The problem filters are the fields that come from grid data. In the Work Order module these would include Location, Assets, Tasks and Resources. This occurs because of the filter statement being passed from Lucity to Crystal. If there are two Tasks on a Work Order that are true for a Task filter being run then the report will run the record twice.

When the report was run with a resource filter on Work Orders that have employees these same categories looked like this:

3010	Tree	2	$2,143.54
40000	Water Department	25	$464.08
41000	Potable	40	$10,403.04
41110	Potable Mains	122	$59,106.27

There is an obvious difference in the cost fields. Instead of possibly going down due to records being filtered out that had no employees, the cost actually went up. Some work orders had multiple employees so the cost was summed each time the filter was true. The count was calculated using the Distinct Count option as opposed to the Count option for calculating so there was no duplication of records.

To correct this issue we used grouping and variables.

3010	Tree	2	$714.51
40000	Water Department	25	$464.08
41000	Potable	40	$2,596.80
41110	Potable Mains	122	$20,068.40

Open **WOCatSum.rpt** and follow the steps used to correct the report.

1. Add a second grouping on the Work Order Number, **WO_NUMBER**.

2. Create a formula for the Work Order Cost (**WOCost**) and place it in the WO Number *Group Footer 2*.

   WhilePrintingRecords;

   Shared numberVar WOCost ;

   WOCost:={WKORDER.WO_TOTCOST}

3. Create a formula to summarize the cost for the Category (**CatWOSum**). Add a new section below the WO Number *Group Footer* 2. This is a second *Group Footer* (*GF2b*) for this section. Place this new formula in this section.

   WhilePrintingRecords;

   Shared numberVar CatTot ;

   Shared numberVar WOCost ;

   CatTot:= CatTot + WOCost

4. Create a formula to summarize the total cost for all Work Orders (**TotSum**). Place this in *GF2b*.

   WhilePrintingRecords;

   Shared numberVar TotWOCost ;

   Shared numberVar WOCost ;

   TotWOCost:= TotWOCost + WOCost

5. Create a formula to reset or zero the Work Order cost variable (**ZeroWO**). Place this in the WO Number *Group Header #2* section.

   WhilePrintingRecords;

   Shared numberVar WOCost:=0;

6. Create a formula to reset the Category Cost variables (**ZeroCat**). Place this in the Category *Group Header #1*.

   WhilePrintingRecords;

   Shared numberVar CatTot:=0;

7. Create a formula to show the Category total cost (**CategoryTot**). Place this in the Category *Group Footer #1*.

   WhilePrintingRecords;

   Shared numberVar CatTot ;

   CatTot

8. Create a formula to show the Grand Total Cost (**Total**). Place this in the *Report Footer*.

   WhilePrintingRecords;

   Shared numberVar TotWOCost ;

   TotWOCost

9. Suppress the new *Group Header* and *Footer* sections.

It depends on the report as to whether you use variables or running totals to solve filter issues. At the time the report was revised the use of variables was the choice method to correct the issue.

Variables are also very useful to pass information from a subreport to the main report.

Sometimes with complex reports variables are necessary to calculate the data correctly.

Using Running Totals in a Report

The same report could have been modified using Running Totals to correct the filtering issue.

1. The additional grouping on the Work Order number is still necessary.

2. Two Running Totals are created.

   o One for the Category cost (**CatCost**).

      • The *Evaluate* is set up as "*On change of group*" and the group is "Group #2", the Work Order Number.

      • The *Reset* is set up as "*On change of group*" and the group is "Group #1", Category.

o The second running total is to calculate the cost grand total (**TotCost**).

- It *Evaluates* on the same group as the Category cost running total but the *Reset* is **Never**.

Secured Fields

Secured Fields in the Main Body of Report

Sometimes, fields should be hidden in reports if the person viewing the report does not have the proper level of security. This can be done by using parameters and formatting options.

> *Note: This will only work for fields in the main body of the report. Fields that need to be hidden in subreports will be addressed next.*

Many cost fields in Work Order reports are set to use the "Hidden" option. Sometimes you may wish to suppress the fields completely.

The following steps are provided to set up the field security.

1. Right click *Parameter Fields* and select *New*.

2. Type in the *Name* - **ViewSecuredFields**.

    - This is a special parameter field that must have this name "ViewSecuredFields". When the report is run within Lucity, the security is passed to the report and will not query the user. If the report is run outside of a Lucity module, in Crystal, then the security will be queried.

    - If the report is refreshed, it will ask for the parameters again, including the permission to view the secure fields. At this point you can change the security value the report will run with.

3. Select the *Type* > **Number** and under *Options* > *Discreet* **Value -True**.

4. Click *OK*.

Field Viewing Options

Field to Show Blank

For a blank field to show up when the user does not have rights to view the secured fields, do the following:

1. Right click the field that requires suppression and select *Format Field*.

2. Click the *Common* tab.

3. Click the formula box next to *Suppress*.

4. Double click the **ViewSecuredFields** parameter from the **Report Fields**.

5. Type "= 0".

    {?ViewSecuredFields} = 0

6. Click Save and close.

7. Click *OK*

Field to show "Hidden"

For the word "Hidden" to show up when the user does not have rights to view the secured fields, do the following:

1. Right click in the field that requires suppression and select *Format Field*.

2. Click the *Common* tab

3. Click the formula box next to *Display String*.

4. Type in:

    if {?ViewSecuredFields}=0 then "Hidden" else "$"& totext(*the field that is to show***)**

Note: The inclusion of the dollar sign is because once the formula brings in the word "Hidden", the formula requires the outcome to be text. The field will not allow number formatting. That is also the reason for the conversion of the field to text.

5. Click *Save* and *Close*.

6. Click *OK*

It would be helpful to make a notation at the bottom of the report to explain why some of the fields are "Hidden", such as:

"A Hidden field indicates permission to view the secured field is turned off."

Secured Fields in Subreports

The **ViewSecuredFields** parameter is sent to the report from the Lucity software security setup. This parameter value only reaches the main body of the report. In order for a subreport to use this value it needs to be passed into the subreport as a variable.

We will look at the **Work Order Detail Report** (**WODetail.rpt**) and see how security was added to the cost fields in the **Task/Resource** subreport.

1. First, we used a shared variable called **Security**. It was declared in both the report and subreport.

    o Open **WODetail.rpt**. The **ViewSecuredFields** parameter was created.

    o A new formula was created called **Security** to declare the variable.

    Shared NumberVar Security:= {?ViewSecuredFields};

2. The new Security formula was placed into the *Report Header* section. The field size was reduced and the field text formatted to have white font. This ensured that the formula was not visible in the report.

3. In the **TaskRes.rpt** subreport a new formula called **SecuritySub** was created.

    Once again, the Security variable was declared.

    Shared NumberVar Security;

    o The formula was dragged into the suppressed *Report Header*.

4. There are four fields set up to show "Hidden" if the user does not have proper security. These are designated with asterisks (Cal'c UC, Task Costs, Unit Cost and Total Cost).

Variables – Passing information from a subreport to the main report

Let's create a report that shows the number of Requests and Work Orders for each Request Problem type. The number of Requests is straightforward enough with the use of a Running Total field. The number of Work Orders gets a little trickier because Work Orders are attached to Requests through a grid and thus need to be brought into the report as a subreport. Information from a subreport to a parent report can be done by using variables.

1. Create a new Work Report from the Crystal Report Blank Report option and name it **LC_ReqSumRQWO**.

2. Bring in the **WKREQ** table. Bring in the **Problem** field (**RQ_PROB_TY**) and the **Request Number (RQ_NUMBER**):

3. Group by **Problem** Type.

4. Move the Problem field to the *Group Footer*.

5. Add a **Number of Requests** column title.

6. Add a **Problem** column title.

7. Create a *Distinct Count* of the Request Numbers for each Problem Type and place it under the column header in the *Group Footer* section.

8. Add a "**Total**" text in the *Report Footer* section. Then put in a *Distinct Count* of the Request Numbers into the *Report Footer*.

9. Add a Report Title "**Summary of Requests and Work Orders**".

10. Add the **WKWOMWO** table in the *Database Expert* and link as shown earlier in this document.

11. Add a Group on **Request Number**. (*GH2*)

12. Add another *Group Header 2* section (*GH2b*).

13. Create a **Work Order** subreport with the **WKORDER** and the **WKWOMWO** tables and place it in the *Group Header 2b* section (*GH2b*). Link tables and subreport as shown earlier in this document (Work Order to Request).

14. In the subreport, drag the **WO_Number** field into the *Detail* section. Create one formula **WOCount**

> **WhilePrintingRecords;**
>
> **Shared numberVar WOCount;**
>
> **WOCount :=DistinctCount({WKORDER.WO_NUMBER})**

15. Place the formula and the **WO_NUMBER** field as follows and suppress the subreport sections. This subreport is counting the Work Orders for each Request. **WOCount** is a shared variable that is available to the main report.

RHa	.
RHb	.
D	.	WO_NUMBER
RFa	.	@WOCount
RFb	.

16. In the main report create a column header, **Number of Work Orders.**

17. Create the next five variable formulas and place in the report as shown in the example.

RH	.			
PH	.	**Summary of Requests and Work Orders**		
		Problem	Number of Requests	Number of Work Orders
GH1	.	Group #1 Name		@ZeroProb
GH2a	.	Group #2 Name		@ZeroWO
GH2b	.			Work Orders
D	.		RQ_NUMBER	
GF2	.			@WOSum
GF1	.	RQ_PROB_TY	DistinctCount of WKREQ	@ProbTot
RF	.		Total: DistinctCount of WKR	@TotalWO
PF	.			

> **WOSum** (**WOCount** is being summed to calculate the Problem Total for Work Orders and the Grand Total for Work Orders.)
>
> **WhilePrintingRecords;**
>
> **Shared numberVar WOCount ;**
>
> **Shared numberVar ProbWOCount ;**
>
> **Shared NumberVar GrTotWOCount;**
>
> **ProbWOCount:=ProbWOCount + WOCount;**
>
> **GrTotWOCount:=GrTotWOCount + WOCount;**

ProbTot

WhilePrintingRecords;

Shared numberVar ProbWOCount;

ProbWOCount

TotalWO

WhilePrintingRecords;

Shared numberVar GrTotWOCount;

GrTotWOCount

ZeroWO

WhilePrintingRecords;

Shared numberVar WOCount :=0;

ZeroProb

WhilePrintingRecords;

Shared numberVar ProbWOCount :=0;

18. In *Section Expert*, make sure you select *Suppress Blank Section* for the **GH2b** section with the **Work Order** subreport.

   o   Suppress sections as follows:

*Note: The **GH2b** section must not be suppressed in order to pass the subreport information to the main body of the report. Within the subreport all sections may be suppressed.*

Preview

Summary of Requests and Work Orders

Problem	Number of Requests	Number of Work Orders
Concrete Sidewalk Repair	2	0
TS - Flashing	3	2
TS - Misalignment	3	0
TS - Red Out	3	2
TS - Timing	4	3
Total:	15	7

Example 32A

Notes:_____

_____

_____

_____

_____

Work Order Subtask Information to Assets

The Work module now allows Subtasks to be assigned to specific Assets. In order to show these relationships in a report, some fairly odd table links are required.
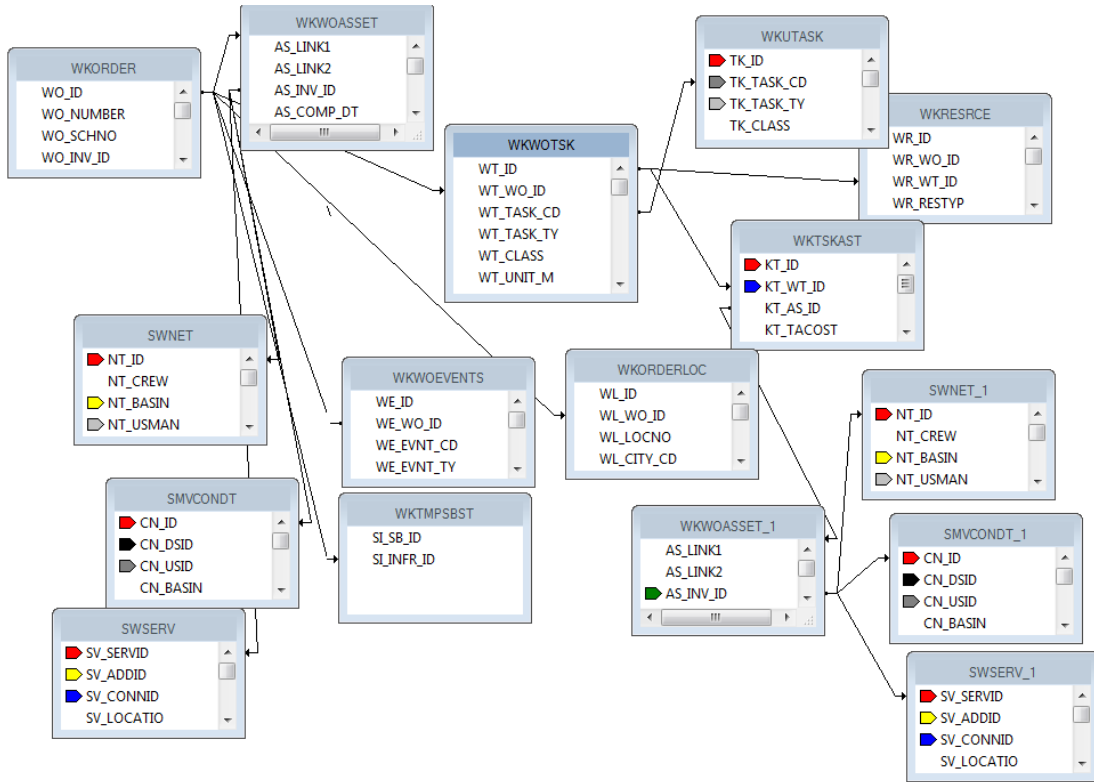
This seemingly simple one line report took nine groupings and two subreports to get to the information.

Notes:_____

_____

_____

_____

Inventory Reports with Work Order Subtask Information

In Lucity version 7.4 or newer, the availability of the **WKTSKAST** and **WKWOTSK** tables in the list of synonym tables allow the addition of subtasks when creating reports for the various inventory items.
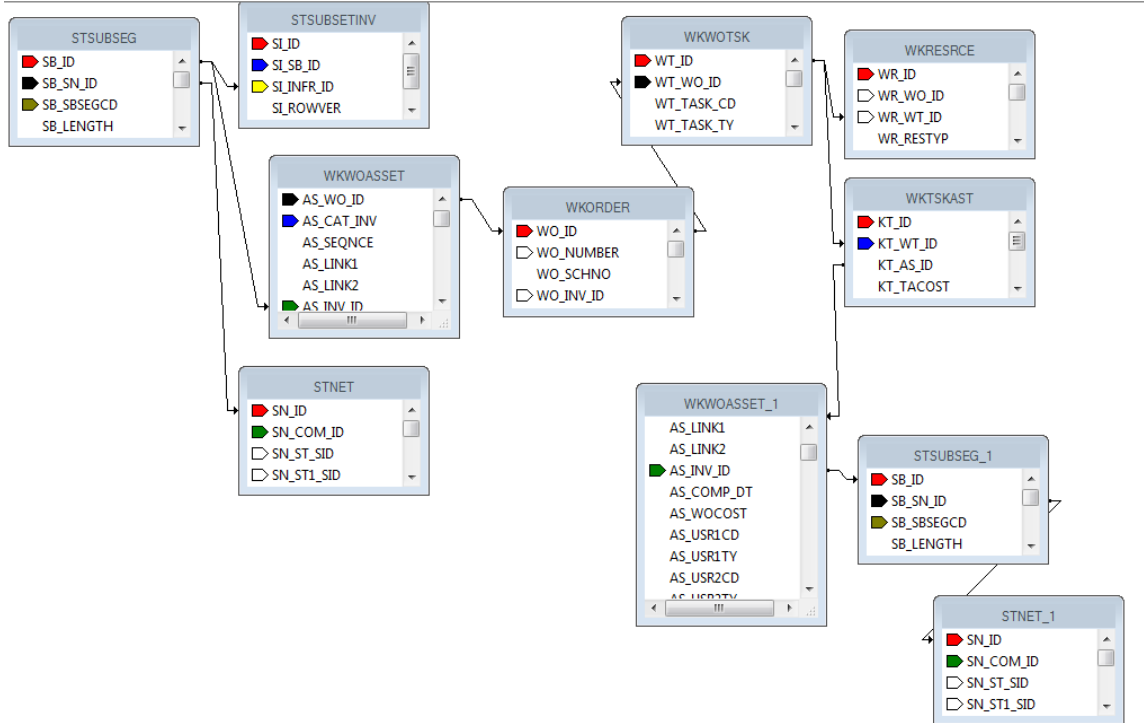

This too had some interesting table links:

This report had five groupings and three subreports to assist the information out of the tables and into the report.

If you are interested in creating a report with this subtask information, contact Lucity Support and we can help step you through the process.