



Discoverer Web for AQS

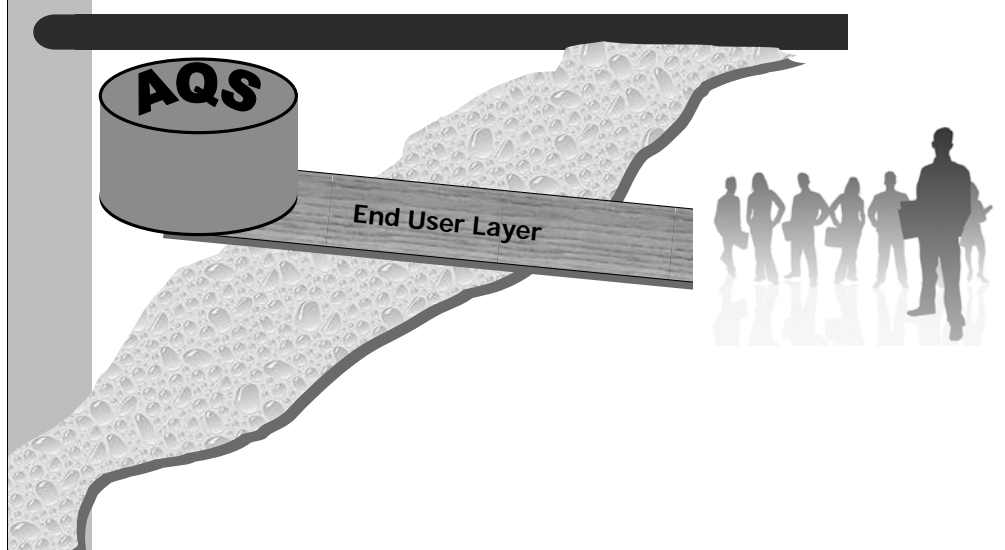
Goals for this class

- Introduce Discoverer Plus
- Learn About the Data in AQS
- Practice Finding Data Using Discoverer
- Have Fun!

What is Discoverer?

- A business intelligence tool for customizable queries, reporting, analysis, and Web publishing from Oracle Corporation
- A retrieval only tool that works on a relational database

How does this work?

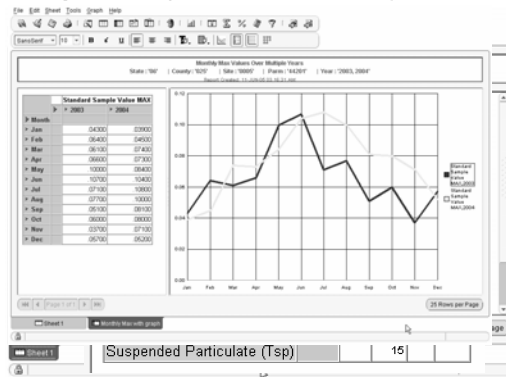


The End User Layer is the interface to AQS data. It

- contains metadata (i.e., the data about the data in the database).
- consists of a collection of about 50 tables in the database.
- provides a more intuitive view of the data so end users don't have to be so familiar with the physical structure of the database
- protects the data in the database – neither you nor the Discoverer manager can affect the integrity of the database with Discoverer.

What Can Discoverer Produce?

- Data Listing Reports
- Cross-Tabulation Reports (Pivot Tables)
- Graphs & Charts



Key Terminology

Interface to database = End User Layer
Grouping of Tables = Business Area
Group of worksheets = Workbook

Tables	➡	Folders
Columns	➡	Items
Rows	➡	Records
Queries	➡	Worksheets

6

Business Areas are subsets of tables that contain related information. Business Areas are organized by the Discoverer Manager.

If you're familiar with database terminology, you'll have no trouble with this. Many times the terms "tables and folders", "columns and items", "rows and records", and "queries and worksheets" are used interchangeably.

Workbooks are Discoverer files that contain worksheets displaying related data retrieved from the database. Worksheets contain the data that you want to analyze, together with a number of Discoverer components to help you analyze the data. If you are familiar with spreadsheet applications (e.g. Microsoft Excel), think of a workbooks as spreadsheet files and worksheets as different sheets in a spreadsheet file.

What you need

- **AQS userid and password**
- **Java-enabled Web browser (Sun Java 1.5 update 11 recommended)**
- **url:**
<https://iasint.rtpnc.epa.gov/discoverer/plus>

All AQS users have access to Discoverer for AQS.

How To Build a Query in Discoverer

- Connect
- Choose a Layout
- Select Items
 - To Display
 - To Filter By
- Specify Totals and other Calculations (Optional)
- Specify Sorting (Optional)
- Specify Run-Time Parameters (Optional)
- Run Report

8

The REAL Way to Build a Query...

- FORM A GOOD QUESTION!!
- Understand the Data You Need to Answer the Question

9

Your Business Areas

AQS basic

AQSProd

- **Business areas are composed primarily of views (i.e., combinations of tables) in the aqsprod database as described in the Data Dictionary**
- **Reference tables (e.g., States, Parameters, Units)**
- **Raw data and other additional folders in AQSProd**

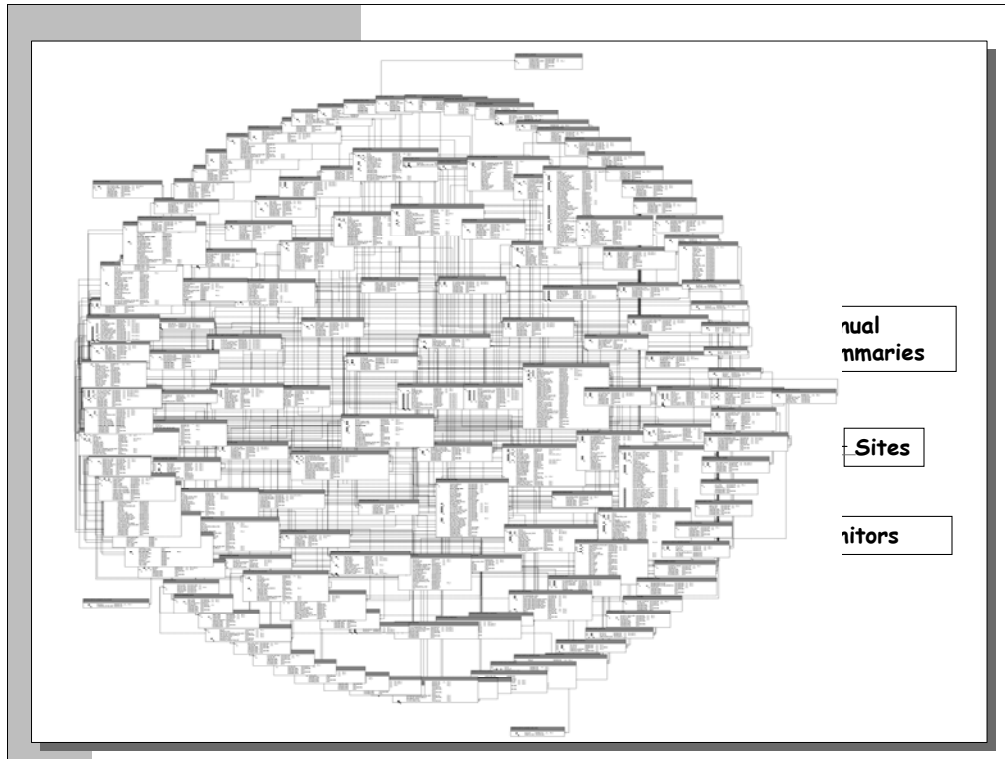
10

There are two business areas available – AQS basic and AQSProd.

AQS basic contains reference tables, site and monitor data, and summary data, including raw data daily, quarterly, and annual summaries. AQSProd includes the raw data.

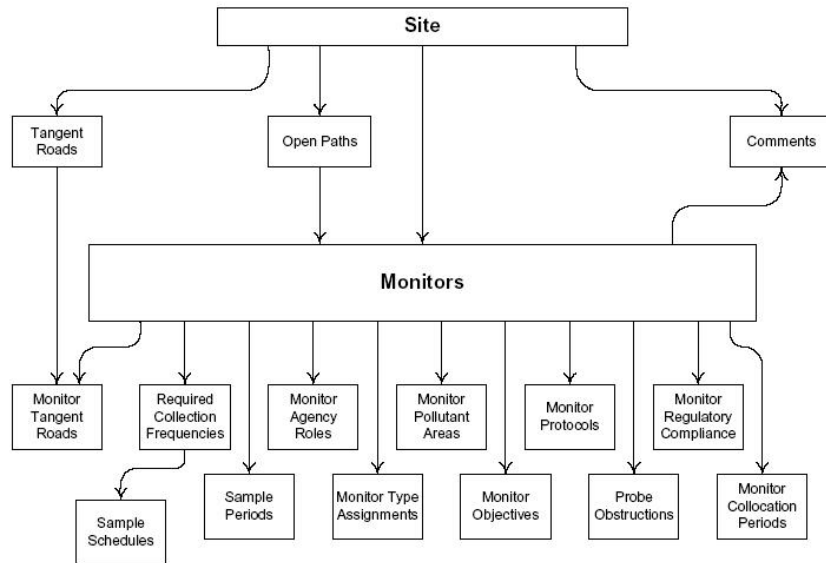
There are links to tables of items in each of the business areas on the AQS Discoverer web page

<http://www.epa.gov/ttn/airs/airsaqs/aqsdiscover>



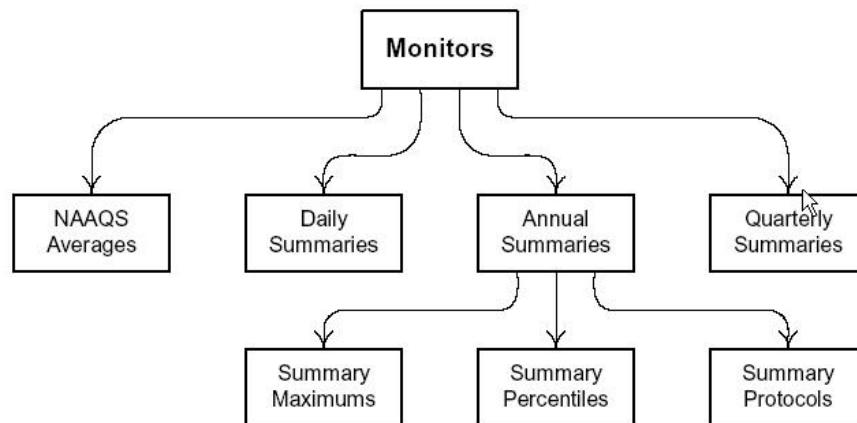
This is the Entity Reference Diagram (ERD) for AQSPROD, shown only to illustrate the complexity of the database.

Data Model for AQS



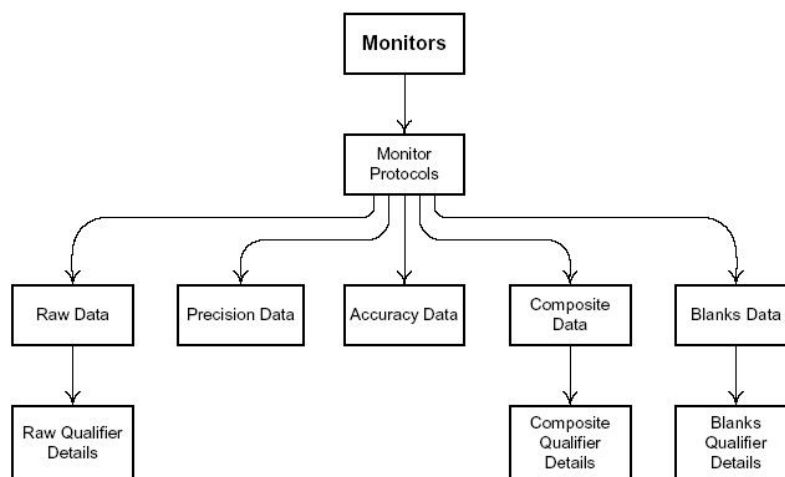
Briefly stated, the structure of the data in AQS is: **Sites contain Monitors that contain Raw Data, Summary Data, Precision Data, and Accuracy Data.** This and the following diagrams illustrate that structure. Many of the folders in the two available Business Areas in Discoverer will correspond to a box in these diagrams.

Data Model for AQS, cont'd



13

Data Model for AQS. cont'd



14

Starting Discoverer Plus

<https://iasint.rtpnc.epa.gov/discoverer/plus>

15

You can get to Discoverer via the direct URL:

<https://iasint.rtpnc.epa.gov/discoverer/plus>

or you can follow the links on the AQS Web site. Start with the AQS Discoverer link on the left side bar.

If you can logon to AQS, then you most likely have a sufficient version of Java to run Discoverer. Java Version 5 update 11 is the recommended version. The most recent update levels of Java 6 from java.com do not work well with Discoverer.

To connect just enter your User Name (three character userid, same as for AQS), your AQS password, and aqspod for the Database. Click on Go.

A Discoverer connection stores Discoverer login details that can be used in subsequent logins. If you want to create a connection, click on Create Connection.

Create a Connection

Create Connection - Microsoft Internet Explorer provided by EPA - version 6

Address: <https://adwint.nrc.apa.gov/discoverer/jsp/oc/ocvent=createConnection?clartype=plus>

ORACLE Discoverer Plus
Business Intelligence

Create Connection

Use this page to enter the details of the connection that you wish to create. Choose a name that is easy to remember, followed by an optional description and locale. Enter the account details for this connection before proceeding.

Cancel Apply Apply and Connect

Connection Details

* Indicates required field

Connect To: OracleBI Discoverer

* Name: My connection

Description: Sample connection for Discoverer to aqprod

Locale: Locale retrieved from browser

Account Details

* User Name: tn

* Password: *****

* Database: aqprod

☒ TIP: You will be prompted to select an End User Layer and/or an Applications Responsibility if more than one exists.

Cancel Apply Apply and Connect

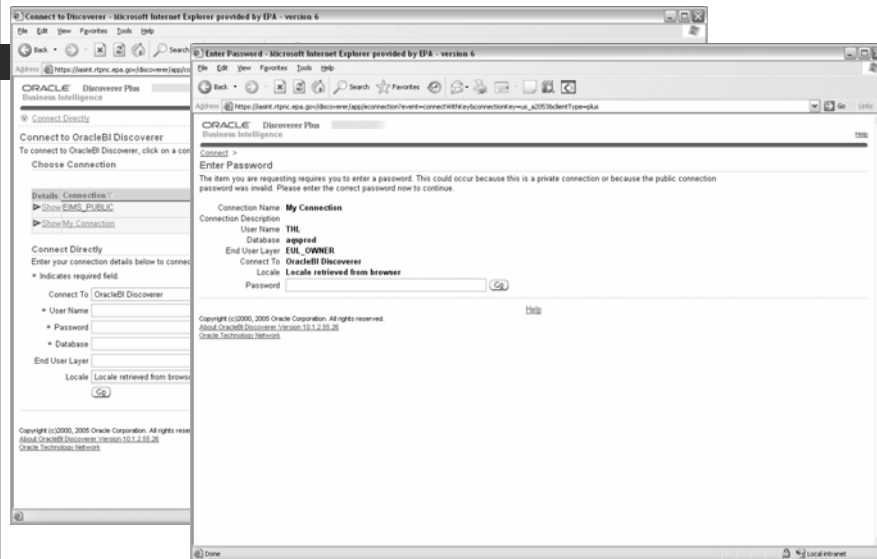
Help

Copyright (c)2000, 2005 Oracle Corporation. All rights reserved.
About OracleBI Discoverer: Version 10.1.2.55.26
Oracle Technology Networks

16

To create a connection, enter the fields and click either “Apply” or the “Apply and Connect” buttons.

Create a Connection, cont'd

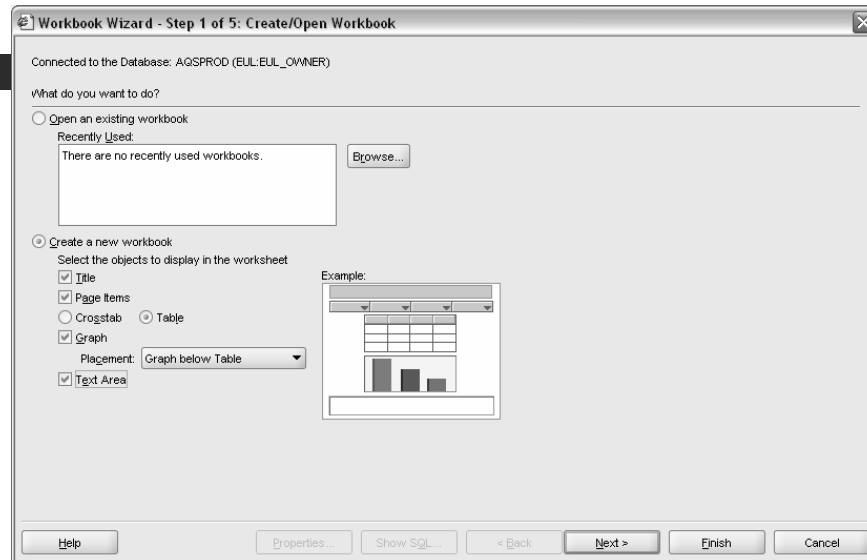


17

If you use a Connection, you'll still need to enter your Password. When you define a connection, it will show up in your Connection list (shown in background screen). If you have to delete your browser cookies or cache, you will lose your saved Connection.



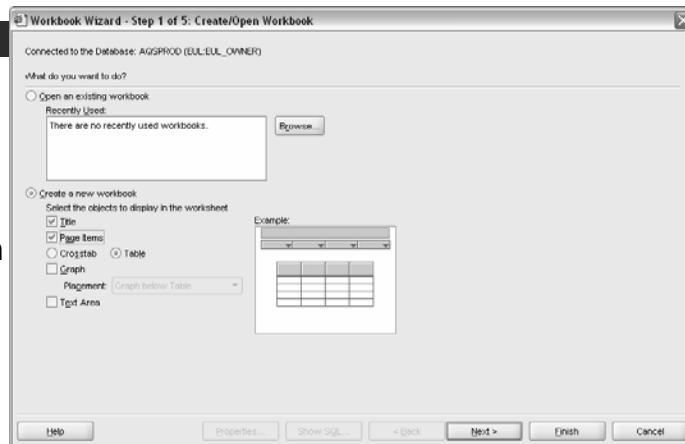
Create/Open a Workbook



To open an existing workbook, select that option and click on Browse. You'll be presented a list of your saved workbooks and workbooks that others have shared with you.

Creating a New Workbook

- Use the Workbook Wizard
- Start with a simple goal in mind – e.g., **Find the states in your region**



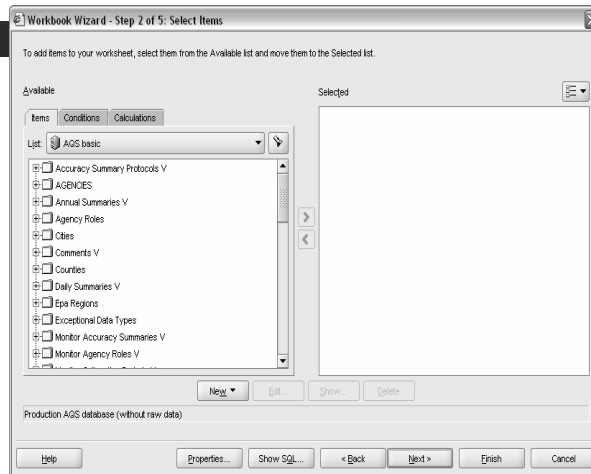
20

To create a new workbook, select that option and choose the page layout by selecting/deselecting objects. As you deselect/select objects, they will disappear/appear in the Example. Initially, keep it simple, e.g., deselect the graph, text area, and page items. (If an item is made a page item, there will be a separate worksheet page for each value of the item.)

Once you've selected your page layout, click on Next to proceed to Step 2 of the Workbook Wizard.

Selecting Items

- AQS basic is the simplest Business Area
- Scroll through list of folders
- Expand a folder to see its items



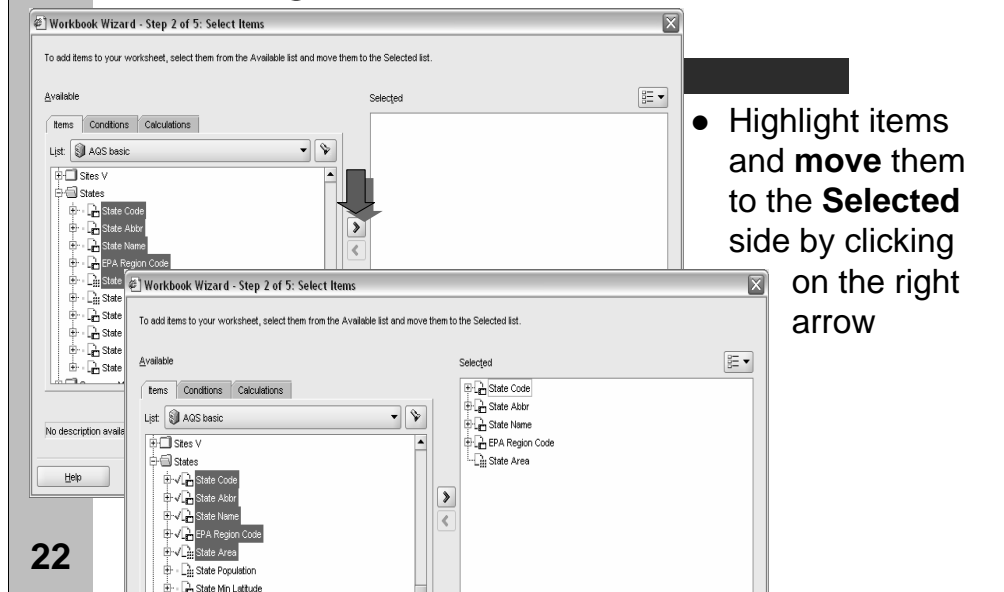
21

There's a lot to do in Step 2. From the Items tab, select what you want to appear in the table; from the Conditions tab you specify conditions so you only get data that meets certain criteria.

Select the business area from List, in this case, AQS basic. To find the items you want, scan through the list of folders. The type of data is usually fairly self-evident from the folder name. The V appended to the folder name indicates it's a view, i.e., a combination of tables. Expand the folders to see the items they contain.

To search for folders and items that contain a string, use the Find icon (flashlight).

Selecting Items, cont'd



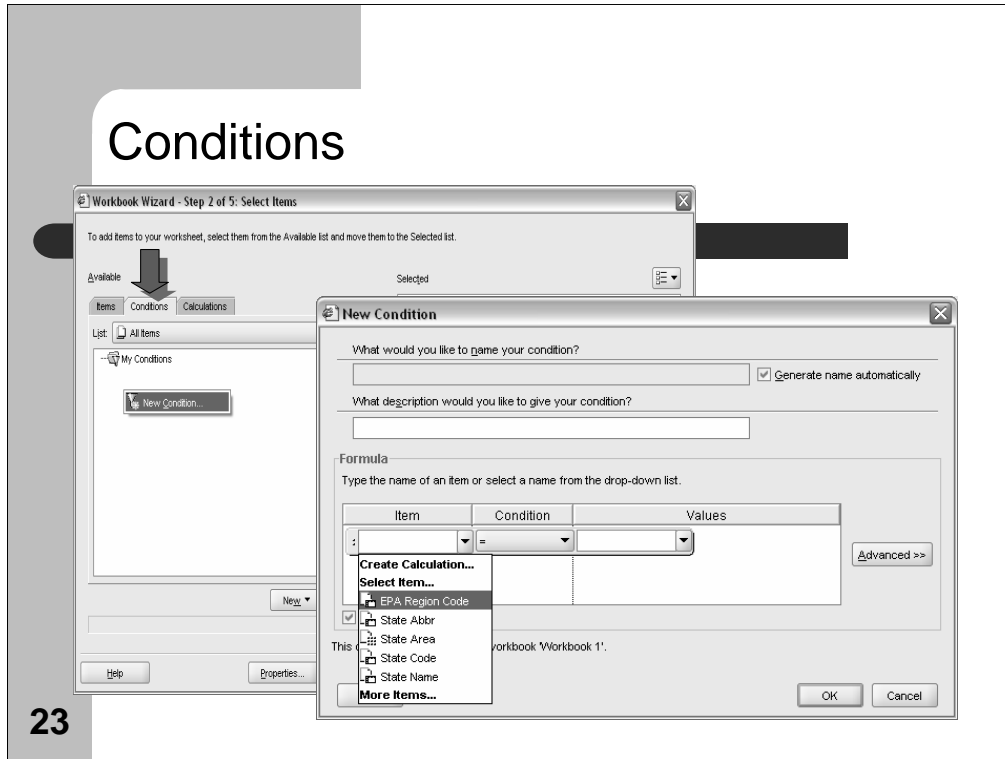
To select items, highlight them and move to the Selected area with the right arrow. You can also remove an item from Selected with the left arrow. You can drag and drop items back and forth as well.

To select all items in a Folder, select the Folder itself and move it over.

Here, items from the States table have been highlighted and selected. Selected items will be checked in the Items list.

Once items are selected, some folders will become grayed out, indicating that their items cannot be joined with what has been selected. For example, with these items from the States folder selected, the Sampling Methodologies table is no longer available.

Conditions



Conditions are probably the most important part of creating a worksheet. When creating a new worksheet it's a good idea to use conditions to limit the amount of data that will be selected until you have a good feel for how much data will be returned.

To create a condition, go to the Conditions tab. Right click in the Conditions pane and select New Condition, or click on the New button and select New Condition. This will bring up the New Condition dialog. Select the item to test against, here EPA Region Code.

Conditions, cont'd

What would you like to name your condition?

(EPA Region Code = '04')

☒ Generate name automatically

What description would you like to give your condition?

Formula

Type text in single quotes or select a value from the drop-down list. Multiple values must be separated by commas.

Item	Condition	Values
States EPA Region Code	=	'04'

☒ Case-sensitive

This condition is located in the workbook 'Workbook 2'.

Help OK Cancel

Specify the conditional operator and value(s). Some items with a discrete number of possible values will give you that list of values (LOV) to pick from.

The Advanced button will allow you to specify compound conditions separated by logical operators AND or OR. There is an implied AND between individual conditions.

Three conditional operators of note:

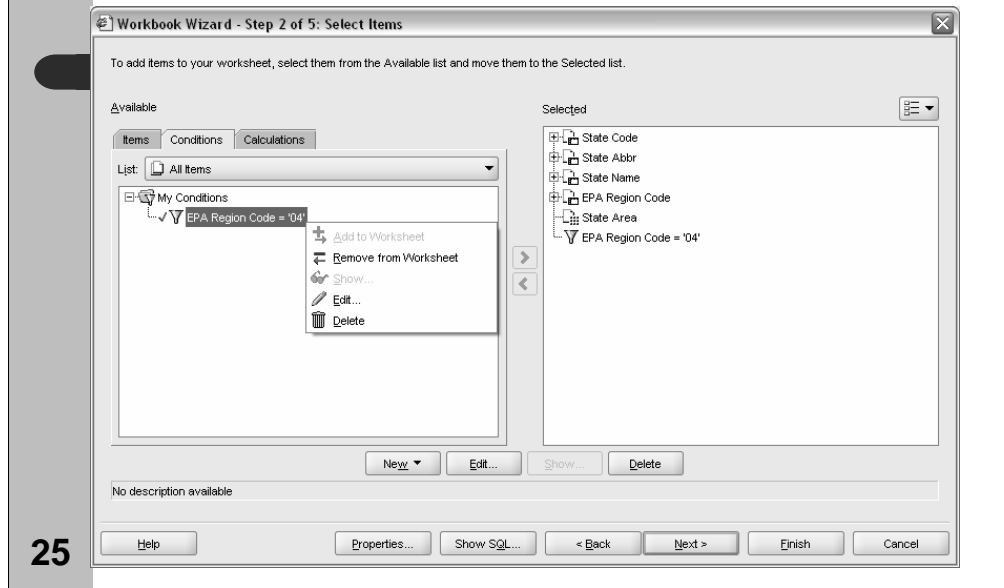
LIKE – allows wild card specifications in matching the value of the item. The _ (underscore) matches a single character, and the % matches any number of characters. For example, if testing against a monitor ID, both '37%-88101-%' and '37-____-____-88101-_' would select all PM 2.5 monitors in North Carolina.

BETWEEN – two values are specified that the selected item's value must fall between, particularly useful for date ranges.

IN – a list of possible values of the selected item is specified, separated by commas.

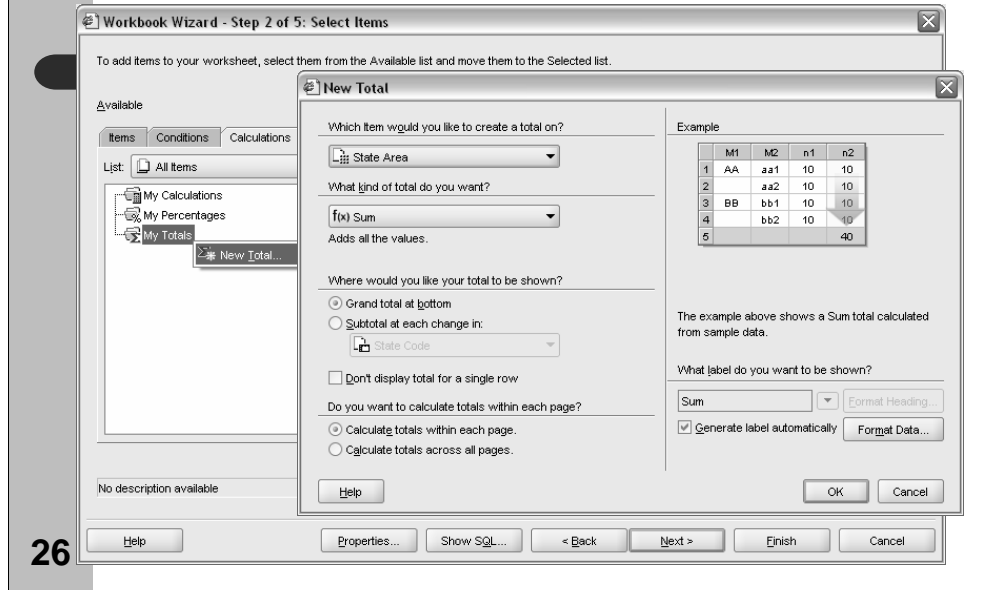
If quotation marks are required in the value specification, Discoverer will supply them. In other words, "Type text in single quotes ..." in the instructions for specifying values can be ignored.

Conditions, cont'd



Once a condition has been created, you can remove it by right clicking on it and selecting “Remove from Worksheet”. It will still be available, just not active. It can be added back with “Add to Worksheet”.

Calculations

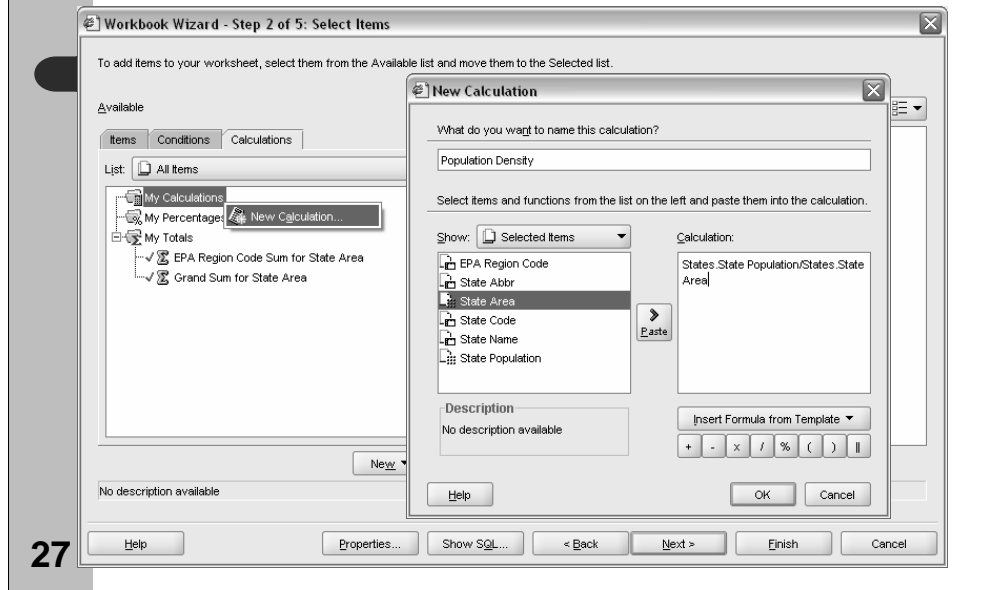


From the Calculations tab, you can add totals or percentages, and you can calculate a new column.

To create a total, right click on My Totals and select New Total, right click anywhere in the Calculations pane and select New Total (New Percentage and New Calculation will also be options), or click on the New button and select New Total.

Here a grand total of State Area is created.

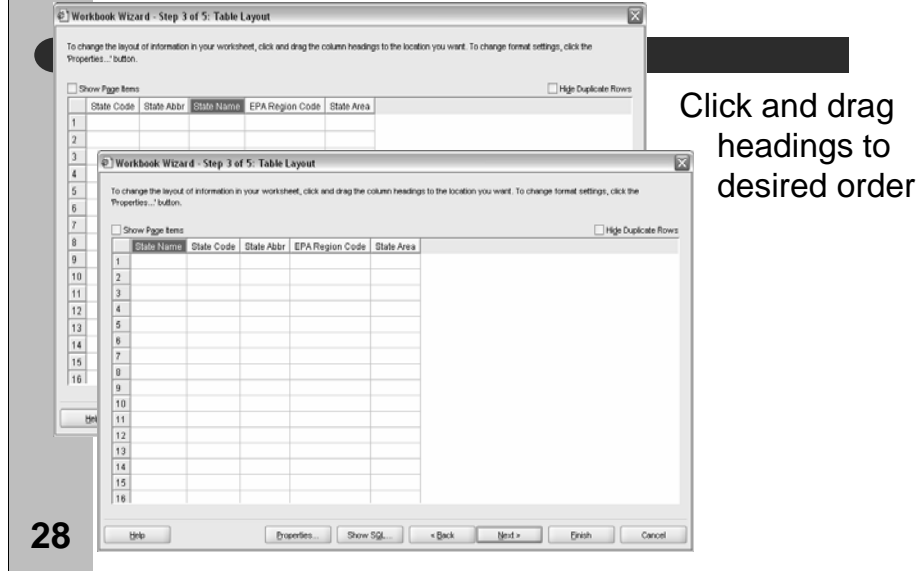
Calculations, cont'd



Start the process of creating a new calculation in similar fashion as for a new total, i.e., right click on My Calculations and select New Calculation, etc.

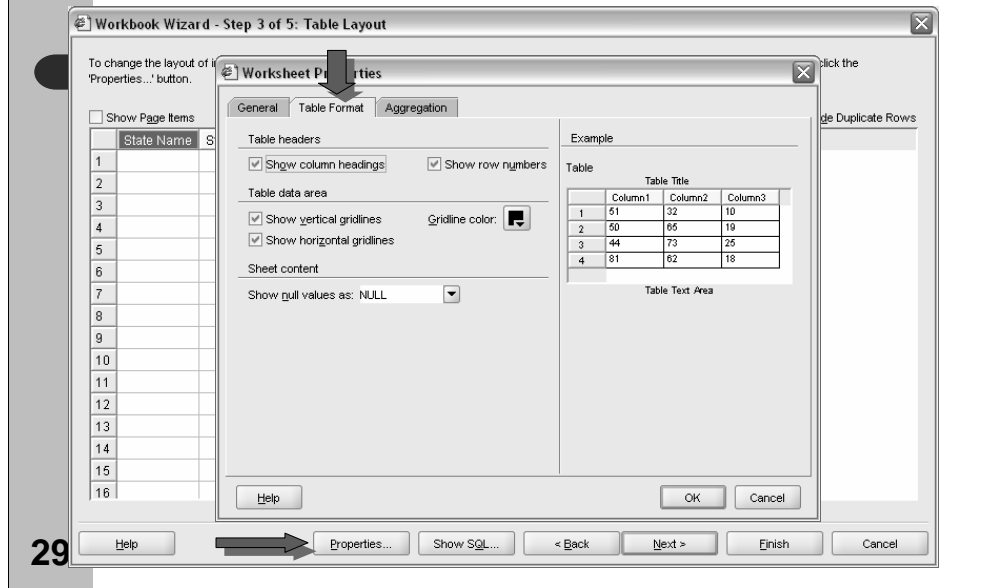
Construct the calculation in the Calculation pane of the New Calculation window. Move items and operators into the pane. Here, a new column, Population Density, is created as the ratio of State Population to State Area. The calculation was built by pasting State Population, followed by clicking on /, and pasting State Area. Under Show, you can select a wide range of functions to paste into the Calculation (Show/f(x) Functions). The “Insert Formula from Template” button will help you construct a formula for a limited set of specific purposes, e.g., calculating a running total.

Table Layout



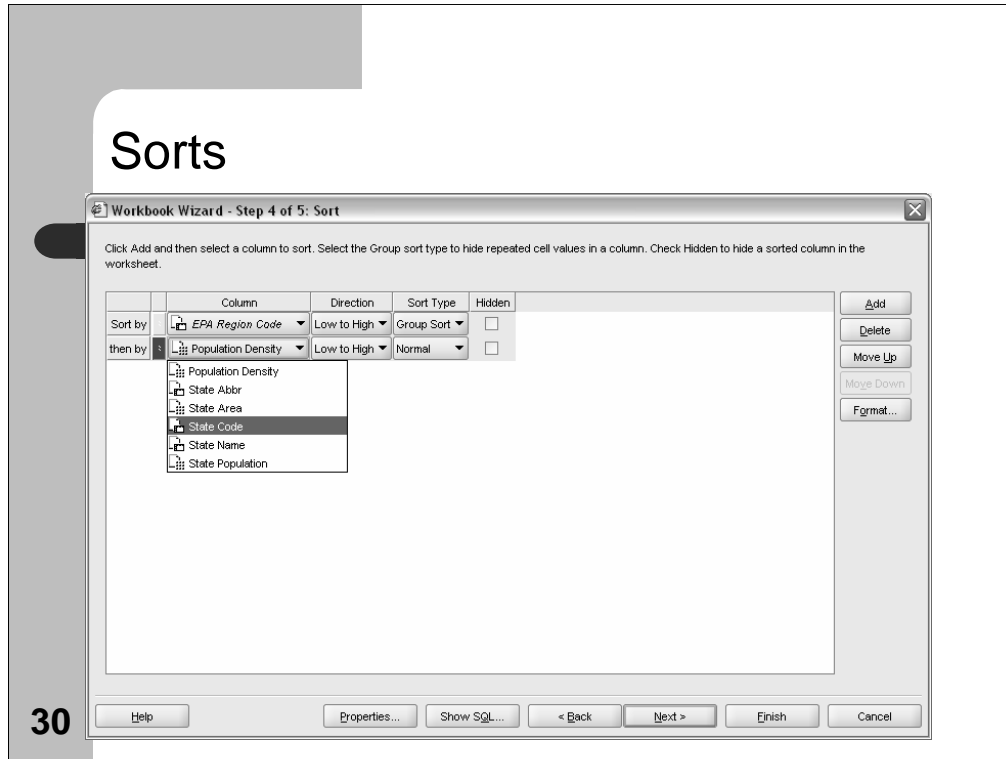
Step 3 of the Workbook Wizard is Table Layout. To change the order of columns click and drag the headings to the desired location. As you drag, lines between the columns will highlight as you pass over them. Drop the heading where you want the column.

Table Layout, cont'd



Some other general characteristics of the layout can be set from the Table Format tab of the Worksheet Properties. Click on the Properties button to bring it up. The settings shown are the defaults except for “Show row numbers”.

Sorts



Sorting is specified in Step 4 of the Workbook Wizard. To Add a Sort, click on Add and you will be given a new sort line to specify the sort column.

For a group sort, a given value of the sort column only appears in its first row.

If you have previously specified a group total by a column, Discoverer will automatically include a group sort for that column, e.g., the group sort for EPA Region Code.

31

Worksheet: 1 - Oracle Discover - Microsoft Internet Explorer provided by EPA - Version 6

File Edit View Format Tools Help

Available Items:

- Area
- County
- Population

List: AGRegion

AGRegion
AG User Info
Accuracy Data V
Accuracy Summary Products V
Agency Files
Annual Summaries V
Areas
Aust Levels
Banks Data V
Banks Qualifier Details V
CDA
CDA CSDAs
Cities
Collection Frequencies
Combined Statistical Areas
Counties V
Composite Data V
Composite Qualifier Details V
Composite Types
Data Based Statistical Areas
Countries
County Cities

Selected Items:

- State Code
- State Abbr
- State Name
- EPA Region Code
- State Area
- State Population
- Population Density

Double-click here to edit the title

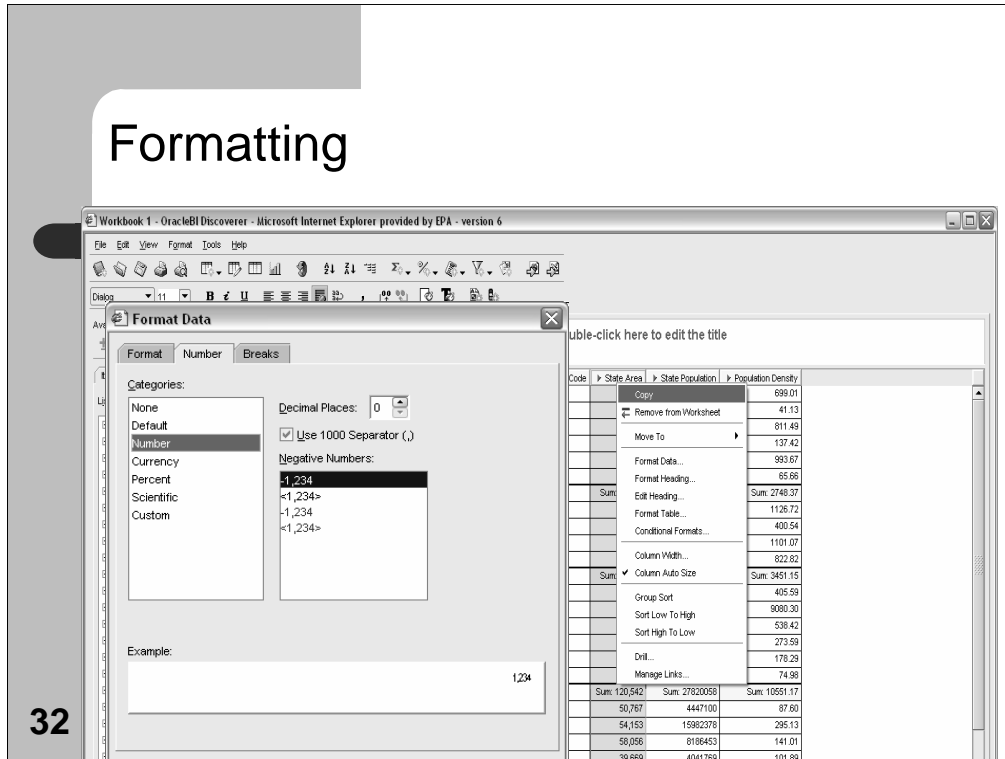
#	EPA Region Code	State Name	State Abbr	State Code	State Area	State Population	Population Density
1	01	Connecticut	CT	09	4672.00	3405595	699.01
2		Maine	ME	23	30695.00	1274923	41.13
3		Massachusetts	MA	25	7524.00	6349497	841.46
4		New Hampshire	NH	33	8903.00	1225786	137.42
5		Rhode Island	RI	44	1055.00	1043919	992.67
6		Vermont	VT	50	9273.00	608627	65.66
7						Sum: 13922517	Sum: 2749.37
8	02	New Jersey	NJ	34	7469.00	8414300	1126.72
9		New York	NY	36	47177.00	18876427	402.64
10		Puerto Rico	PR	72	3493.00	3069610	1101.07
11		Virgin Islands	VI	78	132.00	108612	822.82
12						Sum: 31300029	Sum: 3451.15
13	03	Delaware	DE	10	1932.00	763600	405.59
14		District Of Columbia	DC	11	63.00	672099	9080.30
15		New England	NE	24	9637.00	526649	534.42
16		Pennsylvania	PA	42	44808.00	12281004	273.59
17		Virginia	VA	51	59703.00	7078515	179.29
18		West Virginia	WV	54	24119.00	1800344	74.48
19						Sum: 27020009	Sum: 1059.17
20	04	Alabama	AL	01	120542.00	4447190	37.60
21		Florida	FL	12	54153.00	15822378	295.13
22		Georgia	GA	13	58596.00	8184453	141.01
23		Kentucky	KY	21	39669.00	4041789	101.89
24		Mississippi	MS	26	47273.00	2834468	60.23
25		North Carolina	NC	35	48843.00	8404913	164.80
26		South Carolina	SC	45	32003.00	4012012	123.83
27		Tennessee	TN	47	41155.00	5585283	139.24
28						Sum: 53225996	Sum: 1121.73
29	05	Illinois	IL	17	55945.00	12418203	223.19
30		Indiana	IN	18	36922.00	6004046	163.22
31		Michigan	MI	26	56564.00	9500444	174.50
32		Minnesota	MN	27	79548.00	4914919	61.84
33		Ohio	OH	39	41004.00	11357401	276.88
34		Wisconsin	WI	55	54426.00	5326791	96.52
						Sum: 60874576	Sum: 1004.18

Here are the results of the query, with the EPA Region Code condition disabled, i.e., all rows in the States table were selected.

The Available Items pane and the Selected Items pane appear on the left. They can be turned off from the View menu, if desired. From the Available Items pane, you can duplicate the function of Step 2 of the workbook wizard. You can select and remove items, and add/remove/edit conditions and calculations from the Items, Conditions, and Calculations tabs.

Discoverer-28

Formatting



From the results pane, you can right click on a column or cell and modify various aspects. For example, you can change the formatting of the data. Depending on the type of data (character, numeric, date, etc.) you will have different options for the format. Here, the format for State Area data is changed to include commas.

Note the other things you can do from this drop down menu. If you click in a data cell, only the options that apply to the data will be available.

Parameters

The screenshot shows the 'Edit Worksheet' dialog box with the 'Parameters' tab selected. A 'New Parameter' sub-dialog is open, configuring a parameter named 'EPARegion'. The configuration includes:

- Name:** EPARegion
- Base Item:** EPA Region Code
- Operator:** =
- Condition:** (EPA Region Code = :EPARegion)
- Prompt:** Enter one or more EPA Region Codes separated by commas
- Description:** User specified EPA Region Codes
- Properties:**
 - ☒ Require users to enter a value
 - ☒ Enable users to select multiple values
 - ☐ Enable users to select either indexes or values
- Default Value:** (Empty)
- Filtering:**
 - ☐ Show all available values
 - ☐ Filter the list of values based on the selected conditions:
- Filter List:** A table showing one entry: EPA Region Code = '04'
- Worksheet Options:**
 - ☐ Allow only one set of parameter values for all worksheets.
 - ☐ Allow different parameter values for each worksheet.

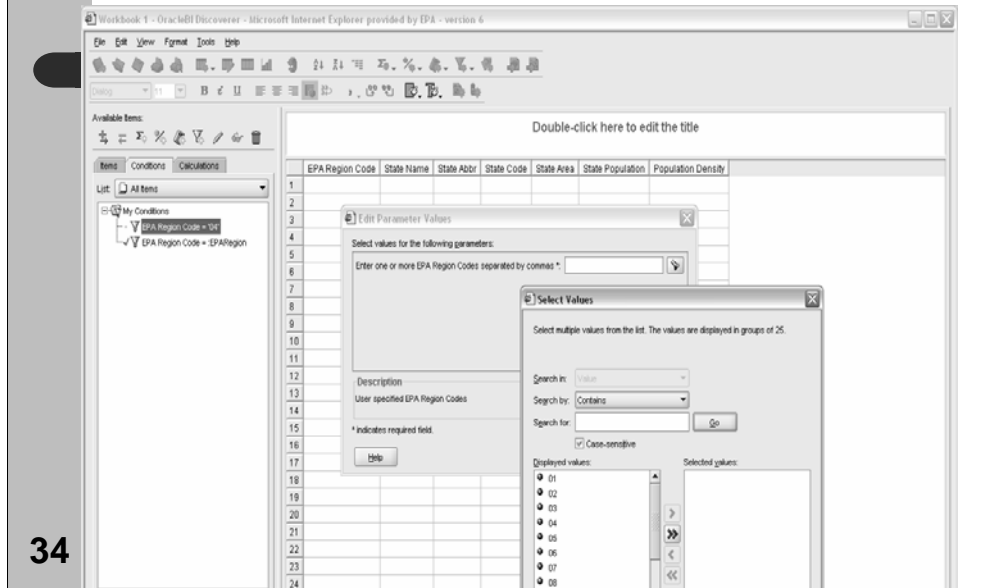
Buttons at the bottom include 'Help', 'OK', 'Cancel', and 'Cancel' (on the right side of the sub-dialog).

33

Parameters can be used to generalize a query by defining conditions that are based on user input. Parameters are Step 5 of the workbook wizard (skipped earlier). To get to them after the fact, select Edit/Worksheet and click on the Parameters tab.

Here, parameter EPARegion is defined. When the query is run, you will be prompted for one or more EPA Region codes (note the “Enable users to select multiple values” option.) Discoverer did most of the work. The condition is created along with the parameter and the default options were used.

Parameters, cont'd



After defining the parameter, running the query prompts for values of Region Code. You can enter the values, or click on the Find icon (flashlight) to select from a list of values, as has been done here. The right double arrows will move all items to Selected Values; the double left arrows will remove all selected values.

The Same Results

Workbook 1 - Oracle Discoverer - Microsoft Internet Explorer provided by EPA - version 6

Available Items

Items: Conditions Calculations

List: AddItem

Selected Items:

- State Code
- State Name
- EPA Region Code
- State Area
- Population Density

Double-click here to edit the title

	EPA Region Code	State Name	State Abbr	State Code	State Area	State Population	Population Density
1	01	Connecticut	CT	09	4872.00	340556	699.01
2		Maine	ME	23	30995.00	1274923	41.13
3		Massachusetts	MA	25	7824.00	6349397	811.49
4		New Hampshire	NH	33	9993.00	1235796	137.42
5		Rhode Island	RI	44	1555.00	1042319	663.67
6		Vermont	VT	50	9273.00	608027	65.68
7					62512.00	Sum: 13922917	Sum: 2749.37
8	02	New Jersey	NJ	34	7400.00	8414350	1136.72
9		New York	NY	36	47377.00	18976457	400.54
10		Pennsylvania	PA	72	34601.00	26704610	1103.07
11		Virgin Islands	VI	79	132.00	108912	822.82
12					Sum: 99436.00	Sum: 31300020	Sum: 3491.15
13	03	Delaware	DE	10	1932.00	703600	405.59
14		District of Columbia	DC	11	63.00	572659	9080.30
15		Maryland	MD	24	9617.00	5296496	536.42
16		Pennsylvania	PA	42	44088.00	12281054	273.59
17		Virginia	VA	51	39703.00	7079515	175.29
18		West Virginia	WV	54	24119.00	1803344	74.99
19					Sum: 120542.00	Sum: 27620059	Sum: 10991.17
20	04	Alabama	AL	01	50767.00	4447130	87.60
21		Florida	FL	12	54143.00	15882279	292.13
22		Georgia	GA	13	58906.00	8184653	141.01
23		Kentucky	KY	21	39669.00	4047769	101.89
24		Mississippi	MS	28	47233.00	2944058	60.23
25		North Carolina	NC	37	49343.00	8563513	169.80
26		South Carolina	SC	45	30203.00	4012012	132.63
27		Tennessee	TN	47	41155.00	5882820	139.24
28					Sum: 370079.00	Sum: 53252986	Sum: 1121.73
29	05	Illinois	IL	17	59545.00	12419290	223.19
30		Indiana	IN	18	25922.00	6205469	169.23
31		Michigan	MI	26	56954.00	9304444	174.50
32		Minnesota	MN	27	79540.00	4979479	61.84
33		Ohio	OH	39	41004.00	11351140	276.69
34		Wisconsin	WI	55	54426.00	5306375	96.55
35					Sum: 50074018	Sum: 100410	

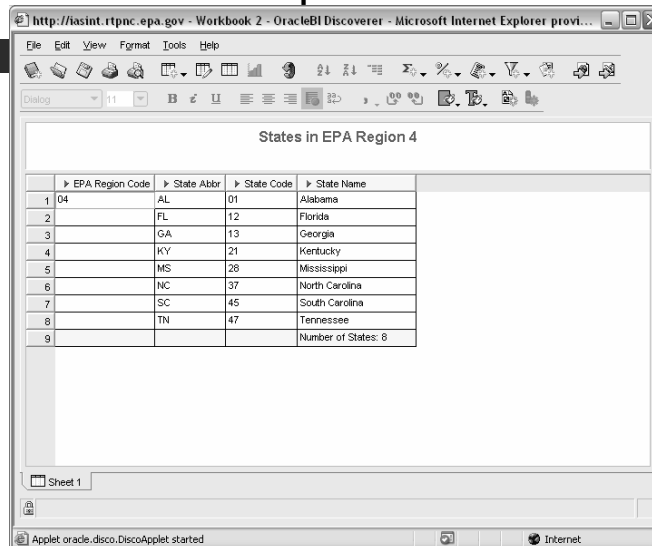
35

Exercise 1

1. Connect to Discoverer.
2. Create a new workbook using the AQS basic business area to show all states within your EPA region.
3. Rearrange the order of columns. Make EPA Region column 1.
4. Sort by EPA Region, then State Abbreviation. Change to a group sort on EPA Region.
5. Center headings for all columns. (Extra credit if you can find where to do this for all headings at once.)
6. Add a title.
7. Add a count of states by Region.

36

Exercise 1: Sample Results



The screenshot shows a web browser window with the address bar displaying "http://asint.rtpnc.epa.gov - Workbook 2 - OracleBI Discoverer - Microsoft Internet Explorer provi...". The browser's menu bar includes File, Edit, View, Format, Tools, and Help. The toolbar contains various icons for file operations and formatting. The main content area displays a table titled "States in EPA Region 4". The table has four columns: EPA Region Code, State Abbr, State Code, and State Name. The data rows list states 01 through 08, corresponding to Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee. A final row indicates the total number of states is 8. The status bar at the bottom shows "Applet oracle.disco.DiscoApplet started" and "Internet".

	EPA Region Code	State Abbr	State Code	State Name
1	04	AL	01	Alabama
2		FL	12	Florida
3		GA	13	Georgia
4		KY	21	Kentucky
5		MS	28	Mississippi
6		NC	37	North Carolina
7		SC	45	South Carolina
8		TN	47	Tennessee
9				Number of States: 8

37

Exercise 2

1. List all the parameters (pollutants) measured at site 06-001-0007
2. Modify #1 to include only parameters being sampled since 2003
3. Modify #1 to show sampling end dates

38

Exercise 2 Results

All parameters at site

All parms since 2003

All parms w/end date

	State Code	County Code	Site ID	Parameter Code
1	06	001	0007	42101
2	06	001	0007	42601
3	06	001	0007	42602
4	06	001	0007	43101
5	06	001	0007	43201
6	06	001	0007	44201
7	06	001	0007	68101
8	06	001	0007	68102
9	06	001	0007	68103
10	06	001	0007	68105
11	06	001	0007	68106
12	06	001	0007	68107
13	06	001	0007	68108
14	06	001	0007	68109
15	06	001	0007	81102
16	06	001	0007	81102
17	06	001	0007	82301
18	06	001	0007	82306
19	06	001	0007	82403
20	06	001	0007	85101
21	06	001	0007	88104
22	06	001	0007	82203
23	06	001	0007	88101

	State Code	County Code	Site ID	Parameter Code
1	06	001	0007	42101
2	06	001	0007	42601
3	06	001	0007	42602
4	06	001	0007	43101
5	06	001	0007	43201
6	06	001	0007	44201
7	06	001	0007	68101
8	06	001	0007	68102
9	06	001	0007	68103
10	06	001	0007	68105
11	06	001	0007	68106
12	06	001	0007	68107
13	06	001	0007	68108
14	06	001	0007	68109
15	06	001	0007	81102
16	06	001	0007	82301
17	06	001	0007	82306
18	06	001	0007	82403
19	06	001	0007	85101
20	06	001	0007	88104
21	06	001	0007	82203
22	06	001	0007	88101

	State Code	County Code	Site ID	Param Code	? Date Sampling Ended
1	06	001	0007	42101	
2	06	001	0007	42601	
3	06	001	0007	42602	
4	06	001	0007	43101	
5	06	001	0007	43201	
6	06	001	0007	44201	
7	06	001	0007	68101	
8	06	001	0007	68102	
9	06	001	0007	68103	
10	06	001	0007	68105	
11	06	001	0007	68106	
12	06	001	0007	68107	
13	06	001	0007	68108	
14	06	001	0007	68109	
15	06	001	0007	81102	31-MAY-2000
16	06	001	0007	81102	
17	06	001	0007	82301	
18	06	001	0007	82306	
19	06	001	0007	82403	
20	06	001	0007	85101	
21	06	001	0007	88104	
22	06	001	0007	82203	
23	06	001	0007	88101	

39

Exercise 3

1. Identify all active sites in your state that do not have the standard coordinate fields populated.
2. Add a title.
3. Include a count of the number of sites by county and a grand total for the state.

40

Exercise 3 sample results

http://hazmat.rtpnc.epa.gov: ConferenceSample3 - Oracle®iDiscoverer - Microsoft Internet Explorer provided by EPA - version 6

Sites With No Standard Coordinates

Page Items: State Code: 37

County Code	Site ID	Supporting Agency Code	Agency Desc
36	0004	0776	North Carolina Western Regional Air Pollution Control Agency
37	County Code 2		
38	0004	004	Eastern Band Of Cherokee Indians of North Carolina
39	0005	004	Eastern Band Of Cherokee Indians of North Carolina
40	County Code 2		
41	0003	0776	North Carolina Dept Of Environment And Natural Resources
42	County Code 1		
43	0004	0009	Mecklenburg County Air Quality
44	County Code 1		
45	123	0001	US EPA National Exposure Research Lab
46	0001	0776	North Carolina Dept Of Environment And Natural Resources
47	County Code 2		
48	127	0002	North Carolina Dept Of Environment And Natural Resources
49	County Code 1		
50	136	0005	North Carolina Dept Of Environment And Natural Resources
51	County Code 1		
52	139	0002	North Carolina Dept Of Environment And Natural Resources
53	County Code 1		
54	147	0004	North Carolina Dept Of Environment And Natural Resources
55	0005	0776	North Carolina Dept Of Environment And Natural Resources
56	County Code 2		
57	151	0004	North Carolina Dept Of Environment And Natural Resources
58	County Code 1		
59	155	0004	North Carolina Dept Of Environment And Natural Resources
60	0005	0776	North Carolina Dept Of Environment And Natural Resources
61	County Code 2		
62	157	0003	North Carolina Dept Of Environment And Natural Resources
63	County Code 1		
64	159	1004	North Carolina Dept Of Environment And Natural Resources
65	168	0776	North Carolina Dept Of Environment And Natural Resources
66	County Code 2		
67	163	0005	North Carolina Dept Of Environment And Natural Resources
68	County Code 1		
69	179	0003	North Carolina Dept Of Environment And Natural Resources
70	County Code 1		

Sheet 1

Loading Java Applet...

Other Views -

Crosstab

Sample Crosstab

	Population	Area
01	13822917	63,012
Connecticut	340565	4,872
Maine	1,274,923	30,895
Massachusetts	6,348,887	7,824
New Hampshire	1,225,786	8,980
Rhode Island	1,042,118	1,583
Vermont	608,027	9,273
02	31,308,026	58,436
New Jersey	884,400	7,488
New York	182,764,527	47,277
Puerto Rico	3,808,810	3,459
Virgin Islands	108,612	1,132
03	278,000,688	120,842
Delaware	79,800	1,812
District Of Columbia	572,089	61
Maryland	5,284,698	9,837
Pennsylvania	12,017,154	44,868
Virginia	7,170,118	39,703
West Virginia	1,803,344	24,718
04	62,726,288	270,279
Alabama	4,447,100	50,767
Florida	15,882,378	54,153
Georgia	4,084,643	59,285
Kentucky	4,041,769	39,889
Mississippi	2,844,858	47,233
North Carolina	6,843,313	48,843
South Carolina	4,012,312	30,283
Tennessee	5,692,283	41,116
05	587,471,618	333,329
Bravo	1,241,9293	55,845
Indiana	6,000,488	35,312
Michigan	9,934,441	56,864
Minnesota	4,913,479	79,340
Ohio	11,351,447	47,824
Wisconsin	5,263,775	54,426
06	3,128,3896	548,836
Arkansas	2,677,400	62,278
Louisiana	4,469,076	44,521
New Mexico	1,919,046	121,335
Oklahoma	3,408,854	69,855

Crosstabs typically summarize the relationship of two sets of data in terms of a third set of data. For example, suppose you have several sites, each with an ozone, PM 2.5 FRM, and an FRM like continuous PM 2.5 monitor. The sites are one set of data, the parameters the second, and the third could be some annual statistics for the monitors.

Pictured here is a trivial example of a crosstab – trivial in the sense that it's missing one of the sets of data and is essentially just a table.

The next couple of slides illustrate how it was created from the States/EPA Regions worksheet.

Other Views -

Crosstab, cont'd

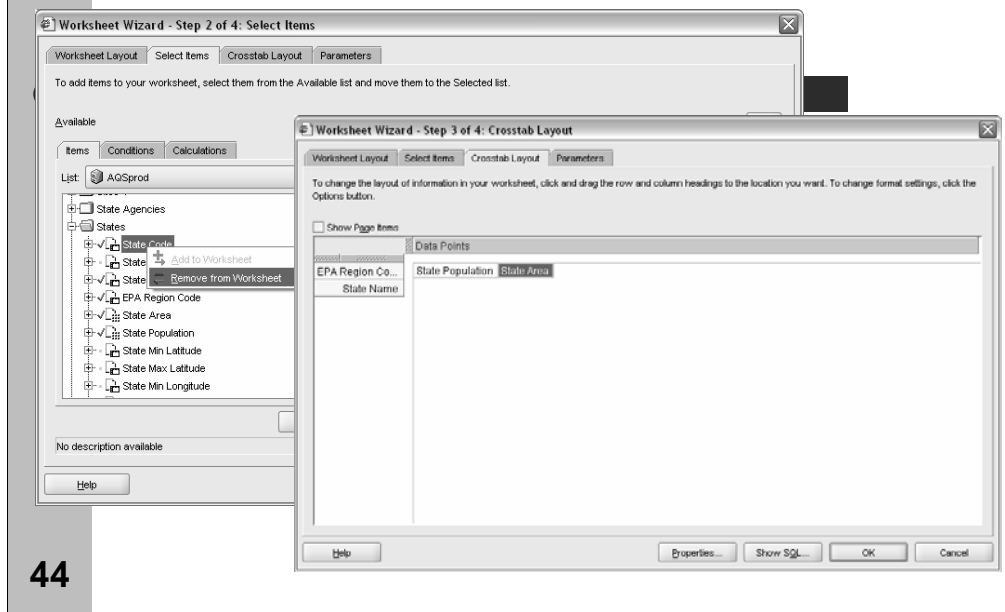
The screenshot shows the Oracle Discoverer interface in Microsoft Internet Explorer. The main window displays a Crosstab view of data from the 'ConferenceSample - Oracle Discoverer - Microsoft Internet Explorer provided by EPA - version 6' database. The data is organized by EPA Region Code, State Name, State Abb, State Code, State Area, State Population, and Population Density. The left-hand menu shows the 'Edit/Duplicate Worksheet/As Crosstab' option selected. A warning dialog box on the right states: 'When you format settings, click the'.

EPA Region Code	State Name	State Abb	State Code	State Area	State Population	Population Density
01	Connecticut	CT	09	4,872	3,405,065	699.01
2	Maine	ME	23	30,399	1,214,622	41.13
3	Massachusetts	MA	25	7,824	6,349,007	811.49
4	New Hampshire	NH	33	9,393	1,235,786	131.42
5	Rhode Island	RI	44	1,595	1,040,719	650.67
6	Vermont	VT	50	9,273	608,627	65.66
7				Sum 63,012	Sum 13,822,017	Sum 214.37
8	New Jersey	NJ	34	7,488	8,414,552	1126.72
9	New York	NY	36	47,377	18,957,627	400.34
10	Puerto Rico	PR	72	3,459	3,000,110	1101.07
11	Virgin Islands	VI	78	132	108,812	822.82
12				Sum 68,436	Sum 31,908,226	Sum 949.15
13				Sum 1,822	Sum 70,000	Sum 38.99
14				Sum 63	Sum 57,059	Sum 906.30
15	Maryland	MD	24	9,837	5,296,458	538.42
16	Pennsylvania	PA	42	34,368	12,281,061	357.39
17	Virginia	VA	51	39,703	7,070,015	178.28
18	West Virginia	WV	54	24,119	1,808,544	74.98
19				Sum 120,542	Sum 21,220,059	Sum 1,059.17
20	Alabama	AL	01	52,767	4,447,120	87.60
21	Florida	FL	12	54,153	15,982,279	295.13
22	Georgia	GA	13	59,596	8,186,452	137.01
23	Indiana	IN	18	39,369	6,047,169	153.89
24	Mississippi	MS	28	47,233	2,944,659	62.23
25	North Carolina	NC	37	48,843	8,040,513	164.80
26	South Carolina	SC	45	32,205	4,017,212	124.83
27	Tennessee	TN	47	41,146	5,680,253	138.24
28				Sum 370,079	Sum 53,220,968	Sum 1121.73
29	Illinois	IL	17	55,845	12,418,323	222.19
30	Indiana	IN	18	39,369	6,047,169	153.89
31	Michigan	MI	26	56,364	9,930,444	174.50
32	Minnesota	MN	27	79,548	4,919,479	61.84
33	Ohio	OH	39	41,004	11,352,140	276.88
34	Wisconsin	WI	55	54,426	5,326,215	97.85
35				Sum 323,509	Sum 50,074,019	Sum 1,004.18
36	Arkansas	AR	05	52,070	2,673,400	51.33
37				Sum 1,822	Sum 70,000	Sum 38.99

From the original worksheet of states by EPA Region, copy it as a crosstab by selecting Edit/Duplicate Worksheet/As Crosstab. You'll get the warning pictured here, because a table converted to a crosstab will initially have no rows.

Other Views -

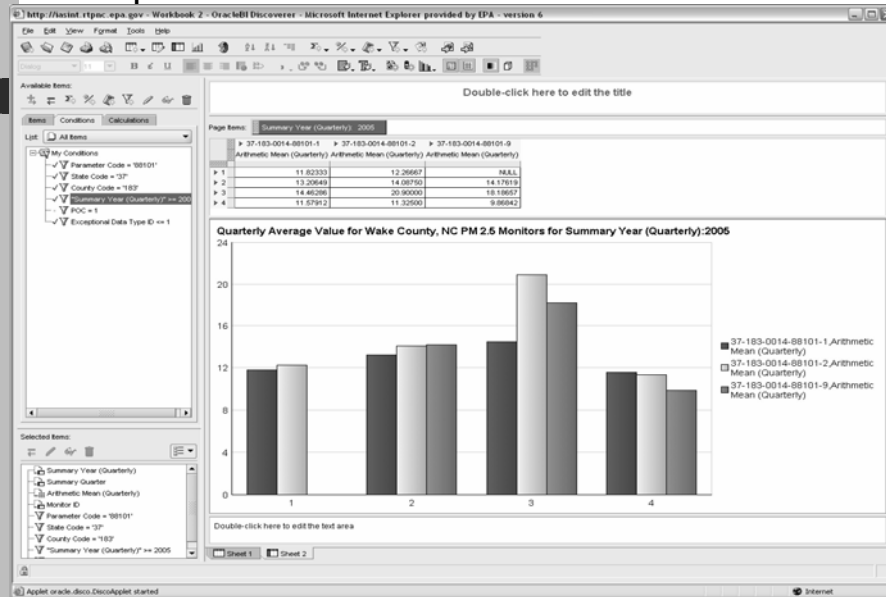
Crosstab, cont'd



All items except EPA Region Code, State Name, State Population, and State Area have been removed. EPA Region Code and State Name have been made row items.

Running the query yields the results previously shown. Population and Area are summed for each EPA Region Code.

Graphs



Here is a sample query with a graph. It also has a more representative example of a crosstab.

Check out all the options for customizing the graph. You can get to them from Edit/Graph or by right clicking on the graph and selecting Edit Graph.

Export Options

46

The screenshot shows the OracleBI Discoverer interface in a Microsoft Internet Explorer browser window. The address bar displays the URL: <http://biatint.rpac.epa.gov/~ConferenceSample>. The browser window title is "OracleBI Discoverer - Microsoft Internet Explorer provided by EPA - version 6".

The main menu bar includes: File, Edit, View, Format, Tools, Help. The "File" menu is open, showing options: New... (Ctrl+N), Open... (Ctrl+O), Close, Save (Ctrl+S), Save As..., Export, Export to HTML, Export to Excel, Schedule..., Open..., Page Setup..., Print Preview, Print..., and Workbook Properties... (Ctrl+P). The "Export" option is highlighted.

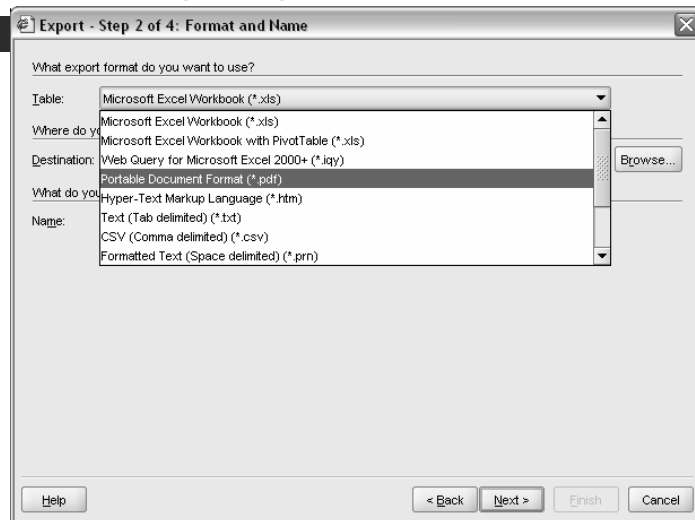
The main content area displays a data table titled "Double-click here to edit the title". The table has the following columns: EPA Region Code, State Name, State Abbr, State Code, State Area, State Population, and Population Density. The table contains data for various states, including Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, New Jersey, New York, Puerto Rico, Virgin Islands, Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia, Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Illinois, Indiana, Michigan, Minnesota, and Ohio. Summary rows are provided for each group of states.

The "Selected Items" pane on the left shows the following items: State Population, State Name, and EPA Region Code.

To start the Export process, select File/Export. You can use the “Export to HTML” and “Export to Excel” selections for those particular formats. They will write a file to your default user directory, Documents and Settings, and you will not have a chance to specify the name. Using Export starts up the Export Wizard, which gives you more output types and allows explicit control of the destination directory and file name.

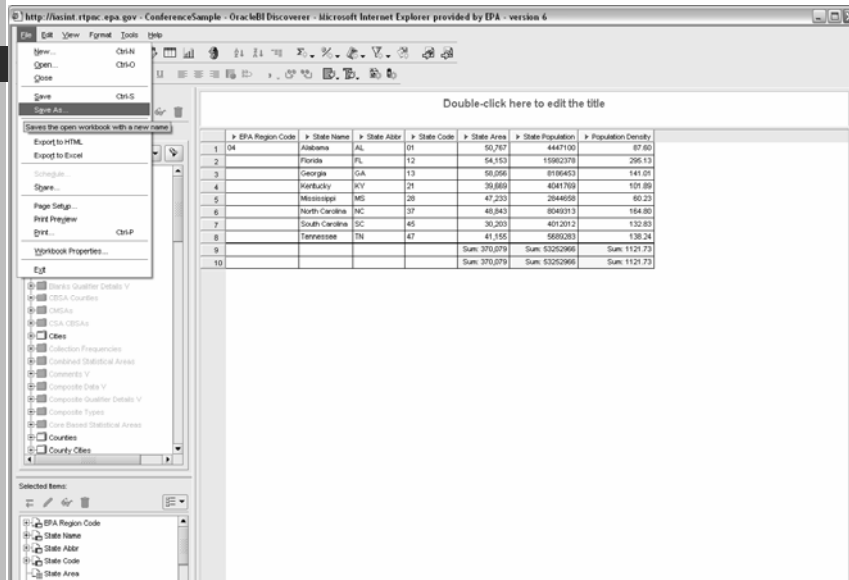
The last two steps of the export wizard complete the process and are not pictured here.

Other Output Options



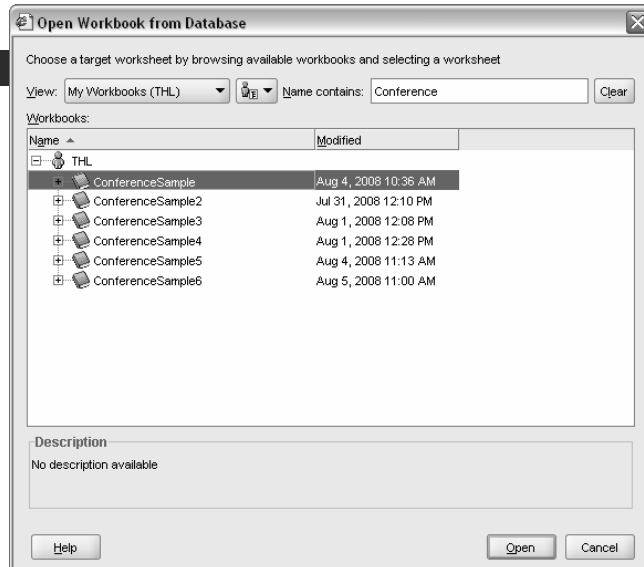
File/Export gives you more options for the output format.

Saving a Workbook



To save your workbook, select File/Save As, specify a name, and Save.

Opening a Workbook

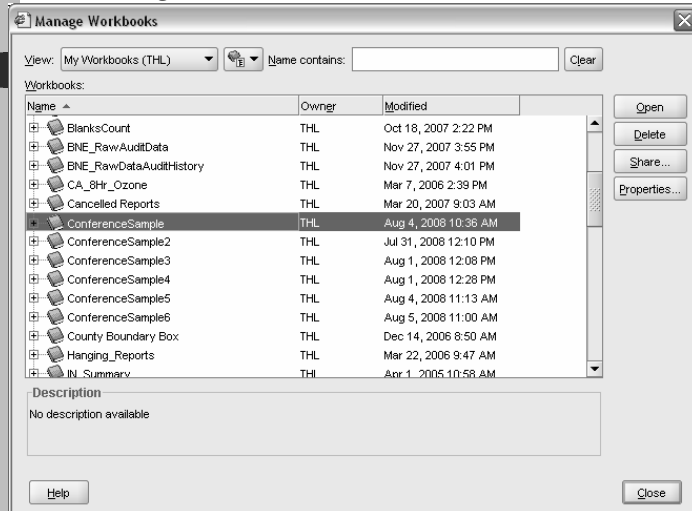


You can open a Workbook by selecting “Open an existing workbook” from the Workbook Wizard or from File/Open.

View allows you to select whether or not to see only your own workbooks “My Workbooks” or all workbooks that you have access to. The button beside View allows you to view workbooks by User (“User tree”) or alphabetical by workbook name (“Workbook Tree” or “Table”). You can also filter by entering a character string that must be contained in the name of the workbook. If you’re in User Tree mode, Discoverer does have the annoying habit of collapsing at the user/role level when you start entering a new “Name contains” string, so you’ll have to expand to see the selected workbooks.

The slide depicts all workbooks for user THL that contain “Conference”. You would just click on Open to open the selected workbook.

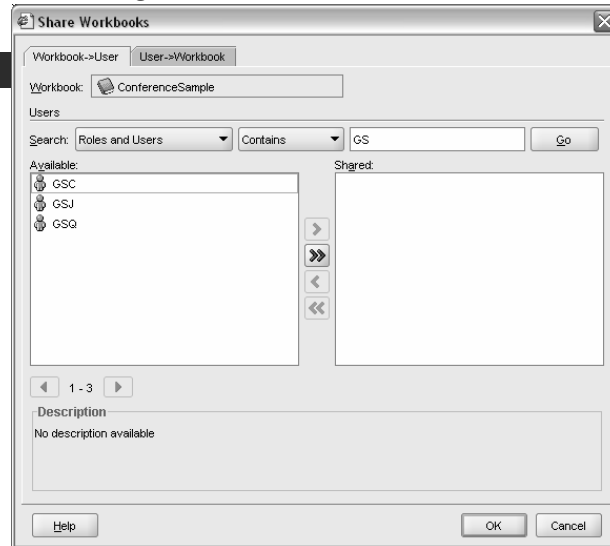
Sharing a Workbook



50

To share a workbook, select Tools/Manage Workbooks to display the dialog shown here. Select the workbook and click on Share.

Sharing a Workbook, cont'd



51

After you've clicked on Share on Manage Workbooks, you need to select who you want to share your workbook with, by userid. Unless you're looking for userid AAA, you'll likely want to use the Search feature. There are a lot of AQS users, and you only get 100 at a time. To filter the userids you see, type in the search string and click on Go. There are several, more specific, options other than Contains. Check them out from the dropdown if you like.

The above shows all users with GS in their userid. To share your workbook with one or more of them, select them and move them to the Shared pane. The double arrow will move them all. You can perform other searches to add additional users. Once you've populated the Shared pane, click on OK and you've shared your workbook.

If you want to share the active workbook, provided it has been saved, you can select File/Share to get to the Share Workbooks dialog.

If you want to share multiple workbooks with a single user, check out the "User=>Workbook" tab.

Using More Features

Goal:

1. Find all PM 2.5 monitors with sampling periods beginning in 2005
2. Sort the results by state abbreviation, county, site, and POC
3. Display start date and end date (if any) for sampling periods
4. Display count of monitors in each state.
5. Add an appropriate title
6. Save the workbook on the database
7. Share your workbook with your neighbor

52

Desired Results

File Edit Sheet Tools Graph Help

PM 2.5 Monitors with Sampling Periods Beginning in 2005
As of 11-JUN-05

	State Abbr	State Code	County Code	Site ID	Parameter Code	POC	Date Sampling Began	Date Sampling Ended
1	AL	01	069	0003	88101	1	07-JAN-2005	
2			073	0023	88101	4	01-MAR-2005	
3							Count: 2	
4	AR	05	036	0005	88101	1	01-JAN-2005	
5			035	0005	88101	3	01-JAN-2005	
6			119	1005	88101	3	01-JAN-2005	
7			139	0006	88101	3	01-JAN-2005	
8			143	0004	88101	3	01-JAN-2005	
9							Count: 5	
10	AZ	04	013	4003	88101	1	01-JAN-2005	
11			013	7003	88101	5	03-FEB-2005	
12			013	7020	88101	5	03-FEB-2005	
13							Count: 3	
14	CA	06	093	2001	88101	1	28-MAY-2005	
15							Count: 1	
16	FL	12	021	0004	88101	3	03-MAR-2005	
17							Count: 1	
18	GA	13	059	0002	88101	1	12-FEB-2005	
19			297	0001	88101	3	01-MAR-2005	
20							Count: 2	
21	IA	19	045	0021	88101	3	12-JAN-2005	

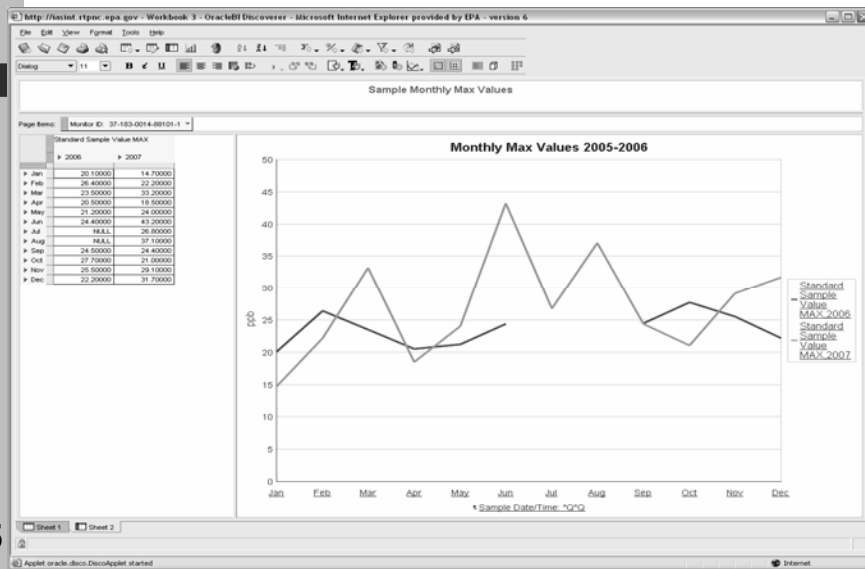
Page 1 of 5 25 Rows per Page

53

More Sample Queries . . .

54

Monthly Max Values with Graph



55

Sample Monthly Max, Min, Mean by Monitor

File Edit Sheet Tools Graph Help

Monthly Max, Min and Arithmetic Mean Values
State: '06' | County: '025' | Site: '0005' | Parm: '44201' | Year: '2003, 2004'
Report Created: 11-JUN-02 02:58:02 AM

Monitor ID	Month	Standard Sample Value MAX		Standard Sample Value MIN		Standard Sample Value Arith Mean		Number of Obs	
		> 2003	> 2004	> 2003	> 2004	> 2003	> 2004	> 2003	> 2004
06-025-0005-44201-1	> Month								
	> Jan	.10700	.10900	.00200	.00200	.01954	.02519	8309	8326
	> Feb	.04300	.03900	.00200	.00200	.01067	.01174	682	707
	> Mar	.06400	.04500	.00200	.00200	.01769	.01846	659	659
	> Apr	.06100	.07400	.00200	.00200	.02194	.02528	712	700
	> May	.06600	.07300	.00200	.00200	.03203	.03770	687	680
	> Jun	.10000	.08400	.00200	.00200	.03198	.03358	712	696
	> Jul	.10700	.10400	.00200	.00200	.02840	.02790	682	682
	> Aug	.07100	.10800	.00200	.00200	.02381	.02680	709	727
	> Sep	.07700	.10000	.00200	.00200	.01918	.02471	696	710
	> Oct	.05100	.08100	.00200	.00200	.01468	.02766	680	682
	> Nov	.06000	.08000	.00200	.00200	.01227	.02683	703	703
	> Dec	.03700	.07100	.00200	.00200	.01022	.02358	683	677
		.05700	.05200	.00200	.00200	.01116	.01816	705	703

Page 1 of 1 25 Rows per Page

Sheet 1 Monthly Max, Min, Avg

56

Sample Quarterly Max, Min, Mean

File Edit Sheet Tools Graph Help

Quarterly Max, Min and Arithmetic Mean Values
State: '06' | County: '025' | Parm: '44201' | Year: '2004'
Report Created: 11-JUN-02 02:57:10 AM

Scoring Grp	Monitor ID	> Q1				> Q2				> Q3				> Q4			
		Std Sample Value MAX	Std Sample Value MIN	Std Sample Value AVG	Number of Obs	Std Sample Value MAX	Std Sample Value MIN	Std Sample Value AVG	Number of Obs	Std Sample Value MAX	Std Sample Value MIN	Std Sample Value AVG	Number of Obs	Std Sample Value MAX	Std Sample Value MIN	Std Sample Value AVG	Number of Obs
CALIFORNIA 2	06-025-0005-44201-1	.07400	.00200	.02050	4128	.12400	.00200	.03766	4122	.10800	.00200	.02892	4212	.08000	.00200	.02262	4143
	06-025-0005-44201-1	.07400	.00200	.01847	2096	.10400	.00200	.03306	2050	.10000	.00200	.02636	2119	.06000	.00200	.02266	2063
	06-025-0006-44201-1	.06500	.00200	.02253	2090	.12400	.00600	.04225	2004	.08300	.00600	.03146	2093	.06500	.00200	.02238	2060
	06-025-0006-44201-1	.06700	.00200	.02274	8250	.10600	.00200	.04060	8322	.10600	.00200	.02967	8364	.06700	.00200	.02027	7629
CALIFORNIA 3	06-025-0004-44201-1	.06900	.00200	.01803	2041	.10500	.00200	.03020	2089	.09400	.00200	.01934	2116	.06000	.00200	.01078	2108
	06-025-1003-44201-1	.06700	.00200	.02203	2033	.09000	.00200	.04657	2056	.09600	.00200	.03667	2050	.06700	.00200	.02657	2074
	06-025-4003-44201-1	.07700	.00200	.01546	2089	.10800	.00200	.04078	2091	.10800	.00200	.03140	2096	.08300	.00200	.02273	1581
	06-025-4004-44201-1	.07900	.00700	.03433	2087	.06200	.00200	.04616	2086	.08300	.00200	.03241	2102	.08100	.00200	.02176	2066

Page 1 of 1 25 Rows per Page

Sheet 1 Qtrly Max, Min, Avg by Monitor ID

57

Hints and Tips and Other Good Stuff

- Discoverer is accessing the live production database (AQSPROD – same as the AQS application)
- Your Discoverer userid and password are the same as your AQS application userid and password
- Only registered AQS users can access AQSPROD via Discoverer
- There is one EUL for AQS; multiple Business Areas
- AQS basic has the most commonly used tables
- AQSPROD includes all the tables in AQS basic plus raw data – current and a few other related tables
- Online Help is pretty good!
- Any workbook you share with others will have your userid appended to the beginning of the workbook name
- You can get to Discoverer from the AQS Web Application link on the EPA TTN AQS page - <http://www.epa.gov/ttn/airs/airsaqs/>
- Many of the reference tables are viewable from <http://www.epa.gov/ttn/airs/airsaqs/manuals/codedescs.htm>

58

Hints and Tips and Other Good Stuff, cont'd

- Max time for Discoverer queries = 60 mins (Query Governor tab from Tools/Options)
- Max number of rows=100,000 (Query Governor tab from Tools/Options)
- Many of the date fields are defined as YYYYMonDD HH:MM – e.g., 2005Jun11 01:22. Many date fields are also defined for just the YYYY, or Q, Mon, or DD, or HH, or MM
- If you can't get a total to work within Discoverer, you may want to export to a spreadsheet to create your totals (and other calculations)
- Oracle Technology Network is a good source for information – free registration – look for Discoverer with Data Warehousing and Business Intelligence (<http://www.oracle.com/technology/products/discoverer/index.html>)

59

There's lots you can do!
Discover the data
with **DISCOVERER!**

