APPENDIX A

This Appendix contains the Grasse River Project GIS Database. This database is provided electronically on the enclosed CD. A data dictionary is also included to facilitate use of the database.

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TABLES

FIGURES

START UP INSTRUCTIONS

Prior to viewing the Grasse River Project GIS Database, the user must perform the following tasks:

- mirror the drive letter of their CD drive to 'X'; and
- add an open database connectivity interface (ODBC) Access driver.

Mirroring the letter of your CD drive to X may be done whenever the computer is rebooted.

The ODBC Access Driver comes with Microsoft Office. If this driver has not been installed during setup, you will have to install it from the MS Office software. Note that the ODBC driver only has to be added once.

Change the drive letter of CD drive to X

1. Have ArcView v3.1 or higher installed on your computer (DO NOT execute the program yet).
2. Insert the GIS Database CD-ROM into your CD-ROM drive.
3. Open a DOS window and execute the following command:

   subst x: <cdrom letter>:

   where <cdrom letter> is the letter of your CD-ROM drive.

Add an ODBC Access driver (Needs to be done only once)

1. Go to SETTINGS, CONTROL PANEL, select ODBC.
2. Go to USER DSN (first tab) and choose ADD, add an Access Driver.

3. Enter the database file name (Grasse_River_5-0) in “Data Source Name” without the extension mdb.

4. Adding text under “Description” is optional.

5. Choose SELECT under “Database” to locate your database file (grasse_river_5-0.mdb) in Data_tables folder on the CD-ROM (now the X drive).

6. Click OK and close out of control panel.

To access the Customized Project, execute ArcView and open the project “Grasse_v5-0.apr” found on the CD-ROM (X drive) in the *Customized Project* folder. You will be asked to select a database to connect to, choose X:\Data_tables\Grasse_River_5-0.mdb.

VERY IMPORTANT: The project must be opened from within ArcView. If you try to open it through Windows Explorer or any other application you will get an error “Segmentation Violation” due to read/write restrictions.

NOTE: To delete the x: drive from your Windows Explorer, open a DOS prompt and type the command: subst *x: /D*

SECTION 1
INTRODUCTION

This appendix summarizes Version 5.0 of the Geographic Information Systems (GIS) Database developed for the Grasse River Project. Data collected as part of the 2004 river investigation, as well as appropriate data from previous investigations (including the Supplemental Remedial Studies [SRS] Program, River and Sediment Investigations [RSI] Phases I and II, and pre-, during- and post-Non-Time-Critical Removal Action [NTCRA] surveys), have been compiled into a single project database. All data were quality controlled for location and attribute data. Data generated after this release will be included in future updates. Data dictionary tables, which define the fields in each file on the CD-ROM, are included electronically on the CD-ROM.

Version 5.0 of the Grasse River Geographic Information System database includes updates from the previous April 2004 release, Version 4.0. These updates are listed in **Table 1-1.**

Table 1-1. Major updates included in Version 5.0.

Shapefile	Update	Notes
impoundment	New shapefile showing impoundment near Outfall 005	From CDM
Cmills_Osweg_locat	New shapefile showing locations of USGS gages at Chase Mills (Grasse River) and West Branch of Oswegatchi River	From USGS
histflow_locat	Superseded by Cmills_Osweg_locat.shp	Removed
Resfish_bbul_smbs_coords	Coordinates for adult brown bullhead and smallmouth bass collected in 2004	From BBL
Sed_probe_locat	Sediment probing conducted during 2004 Phase II and Focused Studies Sediment Sampling surveys	From BBL
Sediment_aro_locat	Collection locations for 2004 Focused Studies Sediment Sampling Programs	From BBL
Sediment_char_locat	Collection locations for grain size samples during 2004 Focused Studies Sediment Sampling Programs	From BBL

Data Table	Update	Notes
Climate	2004 daily precipitation data through 12/31/04	From Alcoa
Resfish_aro	2004 Trend Monitoring Survey; correction to identification of YOY shiners in database prior to 2001	From NEA and BBL
Riverflow_ChaseMills	New data table; real-time gage height and discharge data	From USGS
Riverflow_hist	Daily river flow data (estimated) through 12/31/04	From USGS
Riverflow_tapedown	2004 tapedown and flow data	From BBL
Sed_probe	2004 Phase II and Focused Studies probing data	From BBL
Sediment_aro	2004 Focused Studies Sediment Sampling Programs	From NEA and BBL
Sediment_char	2004 Focused Studies grain size data	From CDM and BBL
Water_field	2004 SRS Routine Monitoring	From BBL
Water_iupac	2004 SRS Routine Monitoring	From NEA and BBL

SECTION 2
CD-ROM CONTENTS

The Grasse River Project GIS Database exists in two formats: a GIS framework and a Microsoft Access database. A CD-ROM (included herein) contains both formats in two separate directories (**Table 2-1**). The first directory (*Shapefiles*) contains all GIS coverages as shapefiles. A listing of these GIS shapefiles is provided in **Table 2-2**. The second directory (*Data_tables*) contains the Microsoft Access database ("Grasse_River_5-0.mdb") which holds all of the related data tables. Information regarding both the GIS and the Access data tables is provided in the data dictionary tables (Section 5.0).

2.1 SPATIAL COVERAGES

2.1.1 Map Projections

A map projection is a set of mathematical equations used to explain the earth's curvature in order to display spatial data in a Cartesian coordinate system. Many different types of projection equations (or systems) have been developed, such as Lambert, Mercator, Albers, and Transverse Mercator. Although it is possible to view spatial data in the earth's coordinate system of geographic, in most cases, it is best to project the data into a standard x-y coordinate system. However, the projection process can not always preserve all four of the maps' primary characteristics of shape, area, distance, and direction. As a result, all states have individually developed standards for mapping which minimize the distortion of these four parameters within the state. Most states have two versions of their projection system -- one based on the North American Datum of 1927 (NAD27) and one based on the datum measured in 1983 (NAD83). It is very important to note that data projected into different coordinate systems cannot be overlaid onto one another. In fact, even data that has been projected into a NAD27 stateplane coordinate system cannot be shown with data projected into the same stateplane coordinate system, using the NAD83 equations. For example, a map of the Grasse River in New York Stateplane East-

1927 would not be shown in the same view as the state of New York, projected into New York Stateplane East-1983.

The projection system for New York is entitled New York Stateplane and uses Lambert Conic Conformal based equations. This system is divided into three areas: East, Central, and West. The Grasse River Project has been projected using the 1983 New York Stateplane-East parameters and equations. The horizontal distance unit is feet.

2.1.2 Basemaps

This section provides a brief overview of the available data in ArcView. The *Shapefiles*/*basemaps* directory contains the lower Grasse River shoreline, bridge crossings, dams and various other shapefiles. These shapefiles do not have corresponding data files in the *Data_tables* directory. Two shapefiles for the shoreline of the lower Grasse River have been included. The first coverage, called "river.shp", is the river outline provided by BBL[1] and the second coverage "river2.shp" is an older version that originated at HydroQual. The two shorelines match up relatively well, except in a few areas. This offset is noticeable when, for example, sediment sampling locations are overlain on the River. In this instance, some of the locations fall out of the second shoreline ("river2.shp"). Therefore, "river.shp" and "river_shade.shp" (corresponding shading file) should be used when data are overlain within the extent. The shapefiles "river2.shp" and "river2_shade.shp" (corresponding shading file) are included because the detail in the western portion of the river and the delineation of tributaries are more complete. All basemaps are included in the view "General Basemaps" in the customized project (see Section 3.0).

[1]Basemap provided by BBL was taken from planimetric mapping prepared by Lockwood Mapping, Inc. using aerial photography (November 9, 1992).

2.1.3 Data Coverages

The *Shapefiles*/*data* subdirectory contains six main subdirectories: *climate*, *riverflow*, *outfalls_tributaries, biota, water_qual* and *sed_qual*. Each subdirectory contains shapefiles which are linked to related data tables (found in the Access database located in the *Data_tables* directory) through a "key item." A "key item" is a unique identifier for each station or sample that exists in both the attribute table for the shapefile and a related data table (found in the *Data_tables* directory). This key item is used when linking and joining information to the attribute table for data analysis and display (see Section 2.2.2). The attribute tables of the shapefiles contain only location information, except for the sediment data where additional information is included. The fields contained in the shapefiles are indicated with an asterisk in the data dictionary tables (Section 5.0).

Climate - This directory contains climate measurements taken at Alcoa Building 65 and a location near Outfall 007 between 1992 and 2004.

River Flow - Flow data from three sources are contained in this directory: 1) historic records developed from Oswegatchie River at Harrisville and Grasse River at Pyrites flow records; 2) Grasse River flows estimated from pressure transducer readings taken at the Main Street Bridge in Massena; and 3) paired flow measurements (water column Transect WC001) and tapedown readings (Main Street Bridge) used to develop relationships between stage height and river flow.

Outfalls and Tributaries - This directory contains polychlorinated biphenyl (PCB) concentration data collected from plant facility outfalls during six storm events in 1997.

Biota - This directory contains data collected from resident fish surveys conducted between 1991 and 2004, benthic community assessment surveys conducted in 1993, 1996 and 1998, and caged mussel surveys performed in 1998.

Water Quality - All data pertaining to the water column surveys are included in this directory. These data include: pre-, during- and post-NTCRA surveys conducted in 1995; routine monitoring surveys performed in 1996 through 2004; and special studies conducted in the lower Grasse River (1997 dye study, 1997-1998 storm sampling surveys, 1997-1998 solids monitoring studies at the Main Street Bridge, 1997-1998 groundwater seepage measurements, 1995-2002 semi-permeable membrane device (SPMD) sampling, and 2000-2001 Float Survey).

Sediment Quality - Sediment data collected in 1991 (RSI Phase I), 1993 (RSI Phase II), 1995 (pre- and post-NTCRA), 1997 (Supplemental Remedial Studies), 2000-2001 (Supplemental Sediment Sampling), 2003 (Phases I and II), January 2004, and 2004 (Focused Studies) are contained in this directory. Soft sediment depth data collected in 1992, 2001, 2003, and 2004 are also included. In addition, sediment characterization data as part of the 2001 sediment probing survey and 2003-2004 surveys are included.

2.2 ACCESS DATABASE

2.2.1 Data

Data collected as part of the SRS Program, as well as appropriate data from previous investigations (including RSI Phases I and II, pre-, during- and post- NTCRA surveys), have been compiled into a single Access database ("Grasse_River_5-0.mdb"). The database is located in the *Data_tables* directory (**Table 2-1, right column**) and contains data tables for all of the shapefiles included in the *Shapefiles/data* directory. A total of 31 data tables comprise the database. When applicable, data tables were separated by quantification method (i.e., Aroclor, BZ, IUPAC, etc.). For example, the sediment data exists in Aroclor and BZ format, so two data tables exist for these data ("sediment_aro" and "sediment_bz"). Additional details of the data contained in these tables can be found in the data dictionary on the enclosed CD-ROM.

2.2.2 Linking to Data Tables

The coverages contained in the *Shapefiles* directory (**Table 2-1, left column**) can be viewed using ArcView and the data tables related to the coverages (found in *Data_tables*) can be linked to them for data analysis within ArcView. The steps for linking to a data table are outlined below.

Linking to data tables (Access database) while in ArcView

1. Execute ArcView. In the project window go to PROJECT and select "SQL connect". **Figure 2-1** shows what the user will see in the "SQL connect" window.

2. Under "Connection:" select a database to connect to (Grasse_River_5-0) and click on "Connect..."

3. The individual tables contained in the database will be listed under "Tables". When a table is selected (double-click on the name), all of its fields will be listed under "Columns". The user can choose to view any number or all of a table's corresponding fields (just be sure to bring in the field which contains the key so that it can be linked to the corresponding attribute table later).

4. Double-clicking on the column names will select them and place them in the "Select" window.

5. Queries may be performed at this point to reduce the size of the table that is imported into ArcView. Double-click on the column name to query on and the name will appear in the "where" window. In the example in **Figure 2-1**, the data was queried so that only 1997 data will be in the new table.

6. The tables that result from the queries will be read-only tables and will exist only within the project, however, they can be exported from ArcView into a text file or dbf table. Be sure to name the table in "Output Table".

7. These tables also may now be linked to their corresponding attribute tables within the project using the key field. Select the field to be linked in both the source table and the attribute table by clicking on the field name (i.e. 'Key', 'Transect', etc.). Under the table menu, select link.

Every time the main database is updated (and the name remains the same) all related tables and queries are automatically updated within the project. Unlike joining tables, linking tables simply defines a relationship between two tables, rather than appending the fields of the source table to those in the destination. When tables are linked, neither table is changed - they are just linked to one another. After a link is performed, selecting a record in the destination table will automatically select the record or records related to it in the source table. If the destination table is the feature attribute table of a theme, selecting one of the theme's features in the view selects that feature's record in the attribute table and, therefore, automatically selects the records related to it in the source table. Tables are linked based on a field that is found in both tables. The name of the field does not have to be the same in both tables, but the data type has to be the same. You can link numbers to numbers, strings to strings, booleans to booleans, and dates to dates.

Table 2-1. Directory structure for GIS CD-ROM.

Shapefiles		Data Tables
Basemaps	**Data**	**Grasse_River_5-0.mdb**
bridges	*Climate*	art_substrate
buildings	climate_locat	batch_equil
dams	*Riverflow*	benthic_comm
flow_dir	Cmills_Osweg_locat	cap_thickness
NY83_locator	tapedown_locat	climate
outfalls	transflow_locat	column_flux
potw		dye_study
river	*Outfalls_tributaries*	gw_seepage
river_shade	outfall_locat	mussel_aro
river2		mussel_bz
river2_shade	*Biota*	outfall_storms
road_labels	artsubs_locat	pelagic_comm
roads	benthic_locat	resfish_aro
route_labels	habitat_areas	resfish_bz
Seaway_outline	mussel_locat	resfish_peak
Seaway_shade	pelagic_locat	riverflow_ChaseMills
WD_canal_outline	resfish_bbul_smbs_coords	riverflow_hist
WD_canal_shade	resfish_RSI1_locat	riverflow_tapedown
impoundment	resfish_RSI2_TMS_locat	riverflow_trans
	resfish_RSI2_TMS_shiner_locat	sed_probe
	resfish_SRS_locat	sediment_aro
	resfish_YOY_locat	sediment_bank
		sediment_bz
	Water_qual	sediment_char
	dyestudy_locat	spmd_bz
	float_survey_locat	spmd_peak
	gw_seepage_locat	water_aro
	spmd_locat	water_bz
	water_locat	water_field
	water_NTCRA_locat	water_peak
		water_iupac
	Sed_qual	
	cap_thickness_locat	
	sed_probe_locat	
	sediment_aro_locat	
	sediment_bank_locat	
	sediment_bz_locat	
	sediment_char_locat	
	sediment_geotech_locat	
	sediment_stratig_locat	
	sediment_type	

Table 2-2. List of shapefiles on the CD-ROM.

Shapefiles/Coverages located in *basemaps*			
Name	**Description**	**Source**	**Key Item**
bridges	Location of bridges on the lower Grasse River	BBL	N/A
buildings	Location of Alcoa buildings at the Grasse River site	BBL	N/A
dams	Locations of dams on the lower Grasse River	BBL	N/A
flow_dir	Flow direction arrows for the lower Grasse River	BBL	N/A
NY83_locator	Locator Map of NY state (1:2 million scale)	ESRI	N/A
outfalls	Locations of Outfalls 001, 004, 005, and 007	CDM	N/A
potw	Location of the Massena water treatment plant on the lower Grasse River	BBL	N/A
river	Outline of the lower Grasse River and tributaries	BBL	N/A
river_shade	Area of the lower Grasse River	QEA	N/A
river2	Outline of the lower Grasse River	HQI	N/A
river2_shade	Area of the lower Grasse River	HQI	N/A
road_labels	Road name labels for roads in the vicinity of the lower Grasse River	BBL	N/A
roads	Roads in the vicinity of the lower Grasse River	BBL	N/A
route_labels	Route number labels for rural routes in the vicinity of the lower Grasse River	BBL	N/A
Seaway_outline	Outline of St. Lawrence Seaway in the vicinity of the lower Grasse River	BBL	N/A
Seaway_shade	Area of St. Lawrence Seaway in the vicinity of the lower Grasse River	BBL	N/A
WD_canal_outline	Outline of the Wiley Dondero Canal	BBL	N/A
WD_canal_outline	Area of the Wiley Dondero Canal	BBL	N/A
impoundment	Outline of the 005 Impoundment	CDM	N/A

Shapefiles/Coverages located in *data\biota*			
Name	**Description**	**Source**	**Key Item**
artsubs_locat	1993 RSI Phase II and 1996 SRS Artificial Substrate Study sampling locations	QEA	Transect
benthic_locat	1993 RSI Phase II, 1996 SRS, and 1998 PBTS benthic community studies sampling locations	QEA	Transect
habitat_areas	Fish habitat areas along the Grasse River shoreline	BBL	N/A
mussel_locat	1998 SRS caged mussel survey sampling locations	QEA	Transect
pelagic_locat	1998 PBTS pelagic community studies sampling locations	QEA	Transect
resfish_bbul_smbs_coords	2000-04 coordinates for brown bullhead and smallmouth bass samples	BBL	Key
resfish_RSI1_locat	1991 RSI Phase I (Aroclor)	QEA	Location
resfish_RSI2_TMS_locat	1993 RSI Phase II, 1995 Post-NTCRA, 1996-04 TMS (Aroclor); 1995 Post-NTCRA, 1996-98 TMS (BZ); and 1999-03 TMS (Peak)	QEA	Location
resfish_RSI2_TMS_shiner_locat	1993 RSI Phase II, 1995 Post-NTCRA, 1996-04 TMS (Aroclor); 1995 Post-NTCRA, 1996-98 TMS (BZ); and 1999-03 TMS (Peak)	QEA	Location
resfish_SRS_locat	1995 Pre-NCTRA and 1996 SRS resident fish sampling locations (Peak)	QEA	Location
resfish_YOY_locat	1998-99 YOY (Aroclor and BZ) and 1999 (Peak) resident fish sampling locations	QEA	Location

Shapefiles/Coverages located in *data\climate*			
Name	**Description**	**Source**	**Key Item**
climate_locat	Daily climatic data measured at Alcoa Building 65 and near Outfall 007	QEA	Location

Shapefiles/Coverages located in *data\outfall_tributaries*			
Name	**Description**	**Source**	**Key Item**
outfall_locat	1997 storm event sampling locations	QEA	Location

Shapefiles/Coverages located in *data\riverflow*			
Name	**Description**	**Source**	**Key Item**
Cmills_Osweg_locat	Historical (estimated) flow records for the Grasse River at Massena and real-time flow records for the Grasse River at Chase Mills	USGS	Location
tapeflow_locat	Paired tapedown measurements from Main Street Bridge and measured flows (at water sampling transect WC001)	QEA	Location
transflow_locat	Flows estimated from pressure transducer measurements taken at the Main St. Bridge in Massena	QEA	Location

Shapefiles/Coverages located in *data\sed_qual*			
Name	**Description**	**Source**	**Key Item**
cap_thickness_locat	2003 Pre-Phase I measurement locations	BBL	Key
sed_probe_locat	1992, 2001, 2003, and 2004 soft sediment depths and sampling locations	BBL	N/A
sediment_aro_locat	01 SSS, 2003 Phase II, anuary 2004, and 2004 Focused Studies Sediment Data (Aroclor)	BBL	Key
sediment_bank_locat	2003 Phase II bank sample locations	BBL	Transect
sediment_bz_locat	1993 RSI Phase II, 1995 Pre- and Post-NTCRA, 1997-98 SRS, 2000-01 SSS, and 2003 Phase I Sediment Data (BZ)	BBL	Key
sediment_char_locat	2001, 2003, and 2004 sediment characterization locations	BBL	Sample_ID
sediment_geotech_locat	2003 Phase II sampling locations for geotechnical cores; note: no associated data table	BBL	Location
sediment_stratig_locat	2003 Phase II sampling locations for stratigraphic cores; see table sediment_aro for data	BBL	N/A
sediment_type	sediment type defined during 2003 side scan sonar surveys	OSI	N/A

Shapefiles/Coverages located in *data\water_qual*			
Name	**Description**	**Source**	**Key Item**
dyestudy_locat	1997 dye study transects	QEA	Transect
float_survey_locat	2000-01 float survey sampling transects	QEA	Transect
gw_seepage_locat	1997-98 groundwater seepage meter locations	CDM	Key
spmd_locat	SPMD transects for SPMD sampling studies	QEA	Transect
water_NTCRA_locat	1995 local water sampling locations during-NTCRA	BBL	Location
water_locat	Water column transects for water quality sampling studies	QEA	Transect

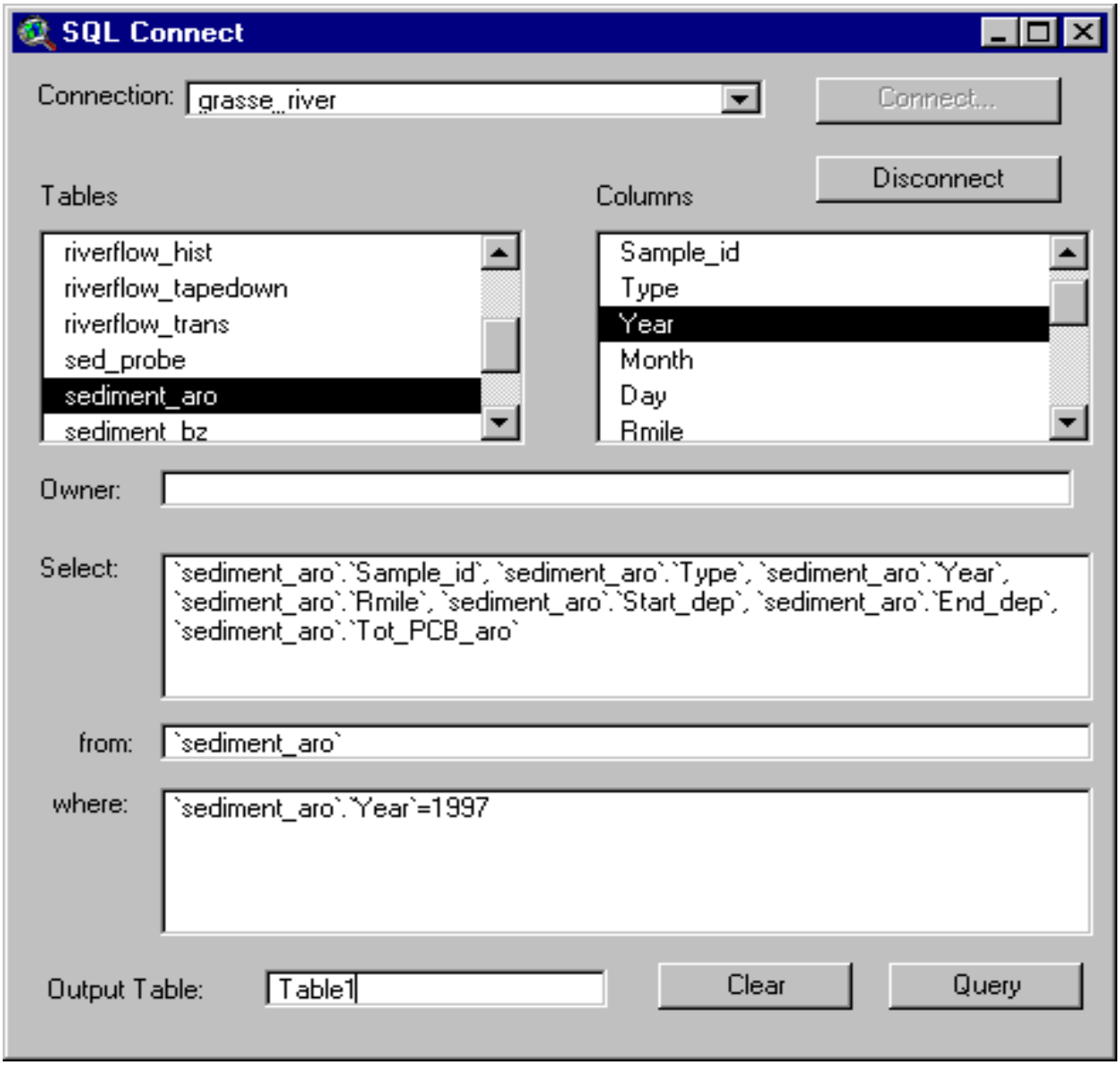


Figure 2-1. SQL connect window.

SECTION 3
CUSTOMIZED PROJECT

Included on the CD-ROM is a customized ArcView project that is meant to give the user an overview of the available data. In addition, three macros have been developed to assist in navigating around the project.

A brief description of the views contained in the customized project is provided in **Table 3-1.** As part of this project, a number of the related tables have been imported into the project and linked to their corresponding spatial coverages. Linked tables for each spatial coverage are listed in the Comments window under the Theme:Properties menu item. All spatial coverages in the Customized Project have linked tables. Data not included in the project can be linked to their corresponding coverages using the key item listed in the data dictionary and the procedure discussed in Section 2.2.2. **Figure 3-1** shows an example window of one of the views, "Water Data", in the project. The left side of the window shows the various coverages available for viewing. Clicking in the box next to the shapefile name will display it on the map

Within the customized project, there are three macros to assist the user in project navigation and data analysis. These macros are invoked by buttons on the far right-hand side of the toolbar. The first macro, zoom to reach, is executed by the blue diamond button on the top toolbar. This tool assists in viewing different reaches of the lower Grasse River. Five extents are available for viewing: upstream of the plant facility, in the vicinity of the plant facility, in the vicinity of the Unnamed Tributary, the lower portion of the river, or the full extent of the lower Grasse River.

The second tool is meant to assist in viewing data tables which have been linked to themes within a view. A number of tables have already been linked to themes within the customized project. However, this tool will also work on additional tables that are imported and linked. This macro is invoked by clicking on the eyeglass icon on the far right-hand side of the bottom toolbar. Once activated, data tables may be viewed by making the theme being analyzed active in the table of contents of the view and selecting the points or transects of interest. Upon

selection, the points (or transects) will turn yellow and all the available linked tables will open, showing the related data (also in yellow). Multiple points and transects can be selected from the same theme by holding down the shift key and clicking or drawing a rectangle around the points within the view.

The third tool produces a simple statistical analysis of selected data from a chosen linked table. To activate this tool, select the calculator button from the right-hand side of the bottom toolbar, make active the theme within the table of contents and draw a polygon around the points to be analyzed (**Figure 3-2**). The macro will then step through a series of windows to determine how statistics should be performed. The first window (**Figure 3-3, panel a**) displays the available linked data tables – the table that contains the data to be analyzed should be chosen. The second window (**Figure 3-3, panel b**) displays the fields within that linked table that will narrow the choices for the statistics. For example, to compute statistics for a particular survey, choose the field 'Survey' in this window. Another example may be to choose the field 'Year' if statistics are to be performed for a single year. Once the field for sub-selection is chosen, select the criteria for sub-selection in the next window. In **Figure 3-3 (panel b)**, 'Year' was chosen, so that in **Figure 3-4 (panel a)**, either 1995 or 1997 can be selected for the analysis. After the data is narrowed down, the last step is to select the field on which to perform the statistics (**Figure 3-4, panel b**) – this field must be numeric and is typically a measured parameter such as TSS or total PCBs. The results of the calculation are displayed in a final window (**Figure 3-5**). Please note that this statistics tool is meant for general analysis. Although the macro does ignore data points designated as –999 (no data available), it does not account for below detection limits values that may be listed as negative in the database (i.e. TSS data). Currently, negative values are included in the statistical analysis. Advanced analyses should be performed with tools other than this statistical macro.

Table 3-1. List of views in customized project.

View Title	Description
Caged Mussels Data	Data from survey conducted in 1998.
Flow and Climate Data	Climate measurements taken at Alcoa Bldg 65 and a location near Outfall 007 between 1992 and 2004. Flow data from 3 sources.
General Basemaps for Grasse River	Basemaps of shorelines, dams, canals, roads, and cities.
Habitat Areas	Aquatic/resident fish habitat showing littoral vegetation areas from 1997 surveys.
Macroinvertebrate Community Studies	Data from surveys conducted in 1993, 1996 and 1998.
Outfall Data (Storm Event)	PCB data collected from plant facility outfalls during 6 storm events in 1997.
Resident Fish Data	Data from surveys conducted between 1991 and 2004.
Sediment Characterization	Sediment characterization data collected during 2001 soft sediment probing survey, 2003 Phases I and II, January 2004, and 2004 Focused Studies; cap thickness measurements from 2003 pre-Phase I survey.
Sediment Data	Data from surveys conducted in 1991 (RSI Phase I), 1993 (RSI Phase II), 1995 (pre- and post-NTCRA), 1997, 2000-01, 2003, and 2004.
Sediment Probing Data	Soft sediment data from surveys conducted in 1992, 2001, 2003, and 2004.
SPMD Data	PCB data collected during surveys in 1995 and 1997 through 2002.
Water Data	Data from pre-, during- and post-NTCRA surveys in 1995, routine monitoring and storm monitoring surveys in 1996 through 2004, groundwater seepage measurements from 1997-98, float surveys in 2000-01, and a dye study performed in 1997.

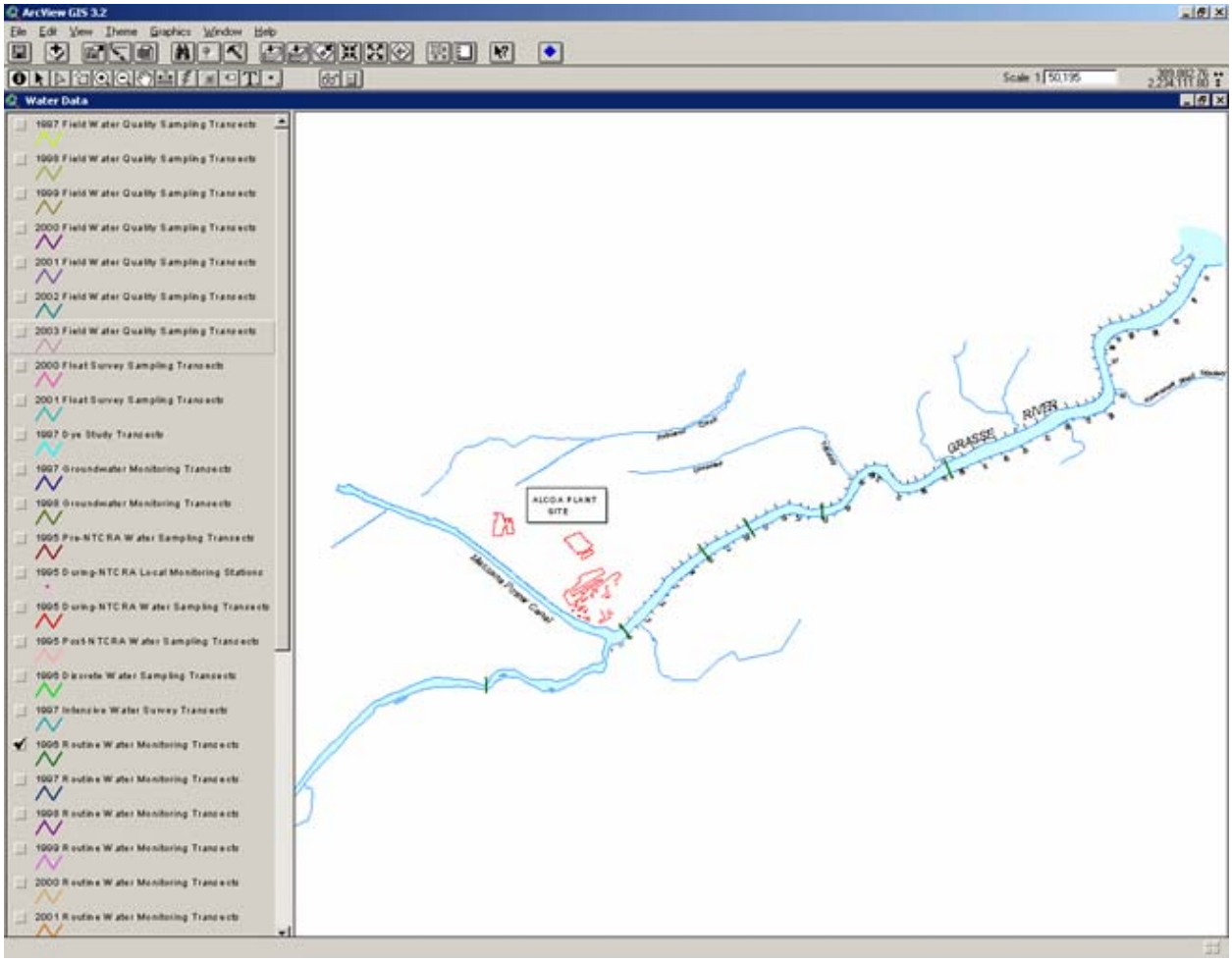


Figure 3-1. Example view in customized project.

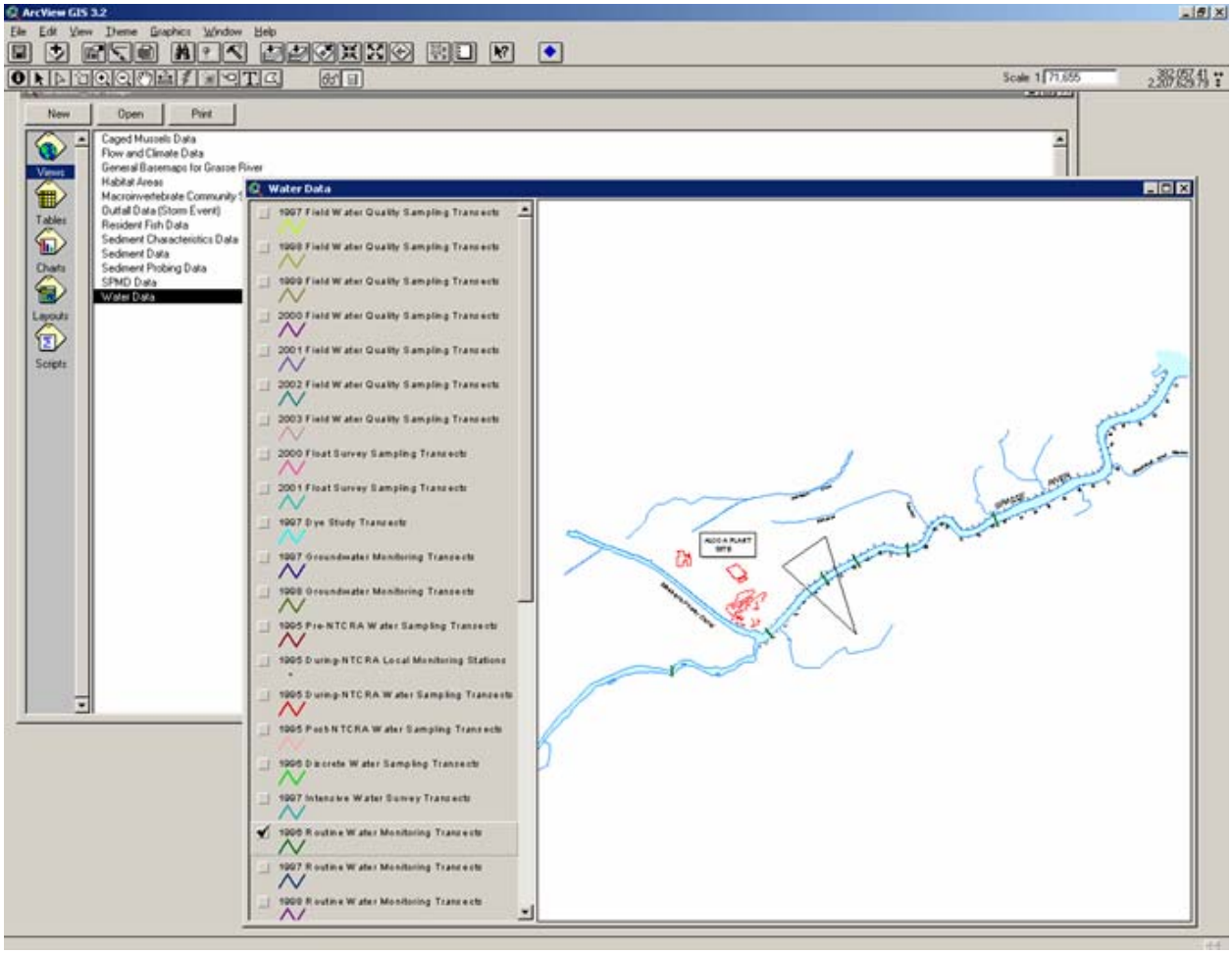
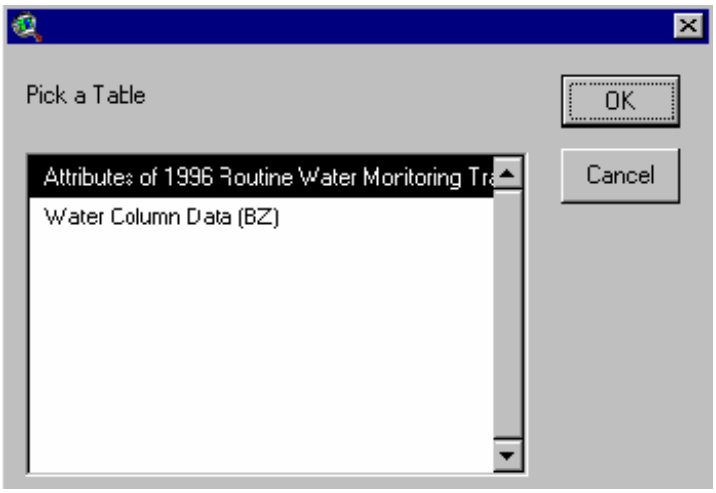
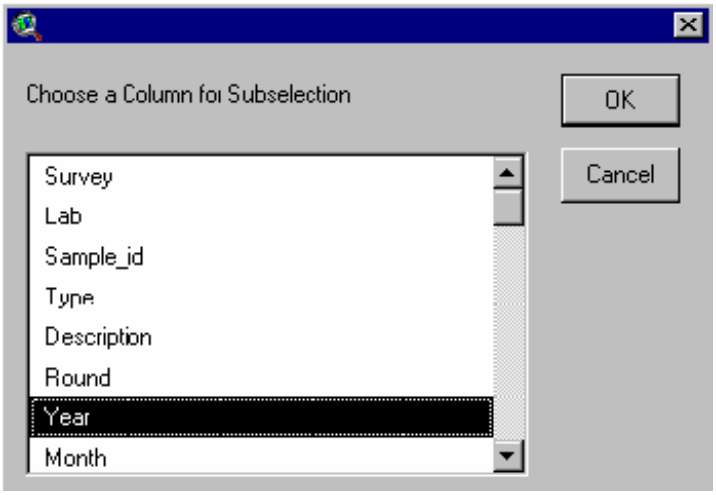


Figure 3-2. Example of a select polygon for the 'Statistics by Polygon' tool.

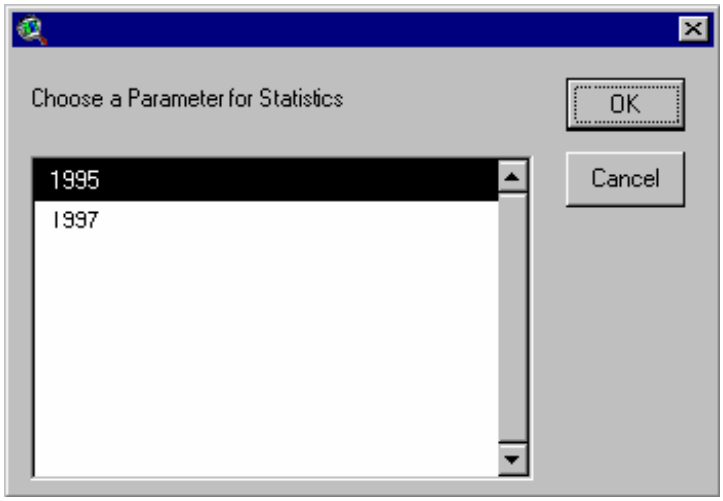


a)

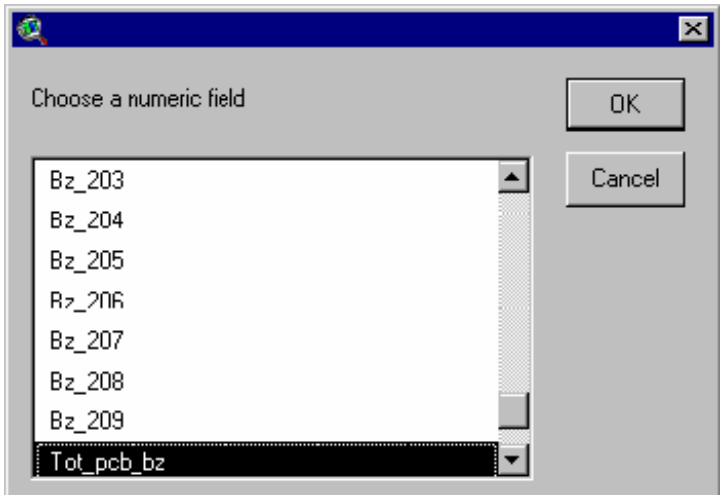


b)

Figure 3-3. Example windows for the 'Statistics by Polygon' tool where user is queried for related table (a) and the field on which to perform the sub-selection of data for analysis (b).



a)



b)

Figure 3-4. Example windows for the 'Statistics by Polygon' tool where the user is queried on the criteria for sub-selection (a) and the field on which to perform the calculation (b).

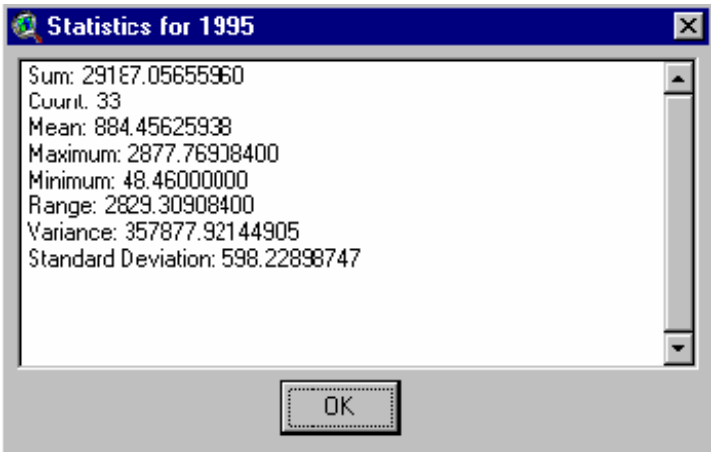


Figure 3-5. Final window displaying results of the 'Statistics by Polygon' macro.

SECTION 4
DATABASE UPDATES AND FUTURE WORK

The Grasse River Project GIS Database (v5.0) contains data collected in the lower Grasse River between 1991 and 2004. As monitoring programs in the lower Grasse River continue, additional data will be generated, checked for quality control and incorporated into the database. These updates will be transferred to Alcoa on a periodic basis, depending on the extent of the changes and the additions that occur. When revisions do occur, the version number for the database will be upgraded and an addendum to this report will be released. In most cases, a new CD-ROM also will be released. Future releases will contain the entire database, including all previous coverages and data, along with any new or updated information.