

IV. GIS APPLICATION

Introduction

The objective of these applications is to provide the NHCRWA with the tools needed to view and update their ACCESS database. The applications were created using ESRI's ArcView Version 3.2 and Avenue as the primary programming language. The data entry application is stored in an ArcView Project File (.apr) called *module_dataentry*, while the queries, qa/qc/link application and print applications are in an .apr file called *nhcrwa_queries*

Note: ArcView cannot open an .apr file stored in a folder or directory that has spaces in its name.

Data Entry Application

As discussed in the scope of work an application was to be produced that would facilitate the entering and updating of attribute data into the ACCESS database. This application allows the user to input new water districts and their corresponding features such as wells, tanks, wastewater treatment plants, etc. The application also has the capability to edit information currently in the database.

QA/QC-Link Application

NHCRWA requested an application that would link the graphic data in the GIS coverages to the attribute data in the ACCESS database. This application populates the USER_ID fields in the coverage tables with the corresponding USER_ID from the tables in ACCESS. The coverages and the database tables then have a mutual field and the ACCESS tables can be brought into ArcView via an ODBC Connection and linked to the coverages. A report is presented to the user detailing how many features in the coverage are linked before and after the application was run, and how many features changed USER_IDs.

Well Query

This application allows the user to select a water district from a drop down list, and the script will gather data from the database on what wells serve that particular district. The application then zooms the View window in ArcView to the district and labels the wells and districts on the screen.

District/Service Area Features

This application finds the wells, tanks (ground and elevated), and wastewater treatment plants that are located within the boundaries of a selected water district. This application does not find those features that **serve** the district -- only those features that are **within the boundaries** of a selected district. A message box is presented for each feature, and the View window zooms to the district in question and labels all features.

System Interconnect Query

This application determines the entities that are connected to a selected district by means other than NHCRWA supply lines. The message box presented includes the names of the entities connected to the district via system interconnects. The view zooms to the extent of the selected district and the system interconnects.

Age of Wells Query

An important factor of this study was obtaining data on the ages of the wells within the NHCRWA's boundaries. This application takes the construction information from the ACCESS database and applies it to the well coverage so that the ages can be viewed spatially. The age groups are represented by a graduated color legend. The script creates a new shapefile that can be stored and manipulated at a later date.

Well Pumpage Query

The well pumpage query is quite similar to the age of wells query; but, in this instance, the application is pulling data on the annual well pumpage from the database. The pumpage groups are represented in this application by a graduated symbol legend. This script creates a new shapefile that can be stored and manipulated at a later date.

Tank Capacity Query

In this application, a new shapefile is created representing the tank capacities retrieved from the database. This new file includes the elevated and the ground storage tanks. The capacity groups are represented by a graduated symbol legend.

Print Application

This application allows the user to select the page size, orientation, and title of a map layout. It will take the current view and apply it to the layout screen. The user is asked to preview or directly print the layout. This layout is stored in the query project.

System Requirements

Recommended System Configurations For NHCRWA PC Workstations

Component	PC Workstation
Processor	Pentium
Memory	32 MB
Video Display	17" Monitor 1024 X 768 Screen Area
Hard Disk	1GB
Pointing Device	Mouse
Operating System	Windows
Required Software	ArcView 3.2

Set-up

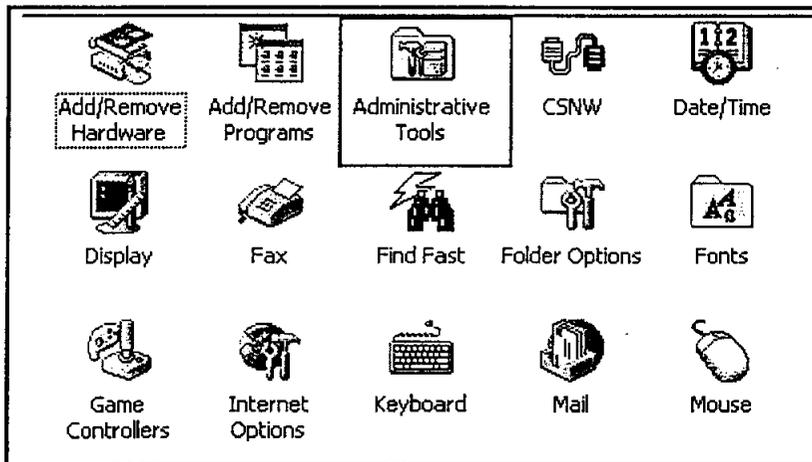
ODBC Connections

Both of the project files require ODBC connections already established on the users PC to allow ArcView to communicate with ACCESS. These connections are **NOT** established by loading the .apr file into an ArcView session. They must be created prior to opening either project.

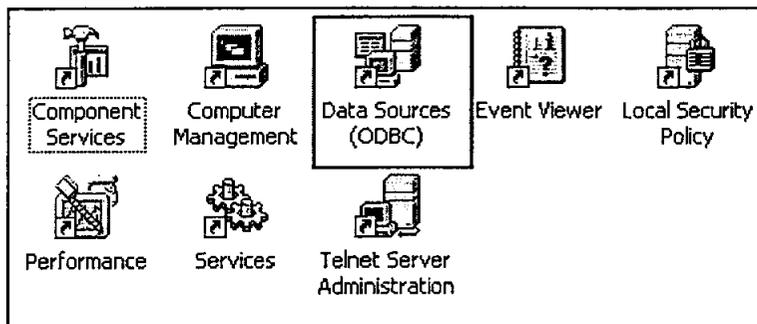
Steps to creating an ODBC Connection

These connections can be created either through the **Control Panel** on the user PC or through ArcView. To establish the connection through ArcView the **Database ACCESS** extension must be loaded. These instructions outline how to set up the connection through the **Control Panel**.

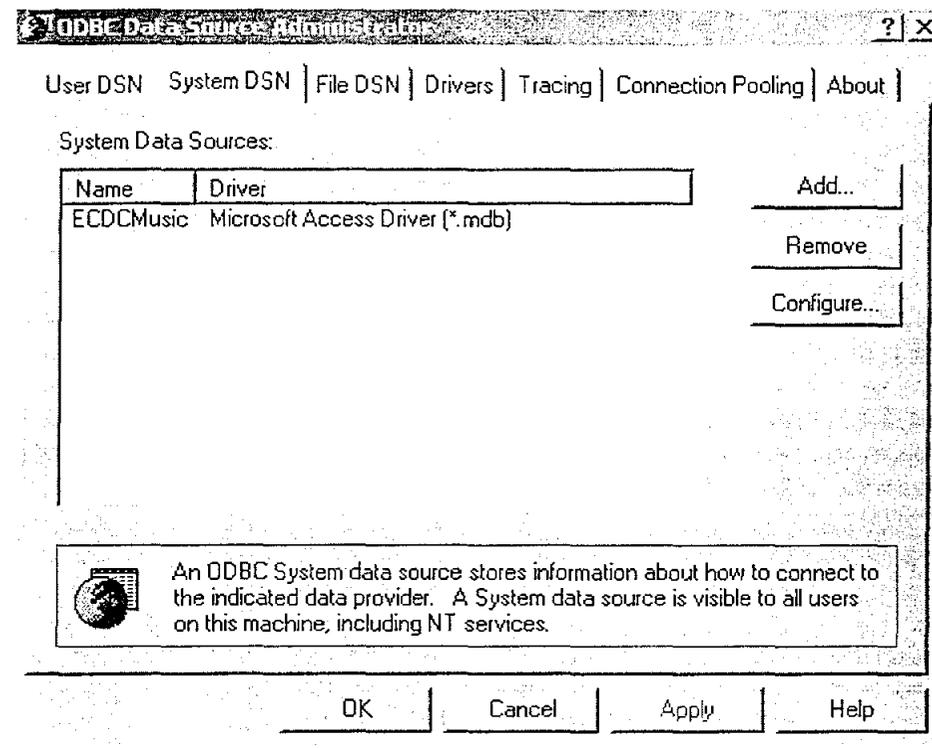
1. Open up the PC's Control Panel screen
Start – Settings - Control Panel
2. Select **Administrative Tools** from the **Control Panel Window**.
On some machines you may be able to skip this step and go directly to **Data Sources (ODBC)**.



3. Select **Data Sources (ODBC)** from the **Administrative Tools Window**.

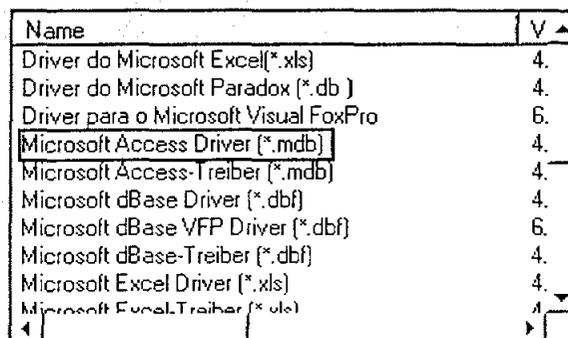


- In the ODBC Administrator window the connections will be established in either the **USER** or **SYSTEM** DSN tabs. When installed in the **USER** tab, only the user who created the connection will be able to use the connection. If installed in the **SYSTEM** tab then anyone who logs onto the computer can use the connection.

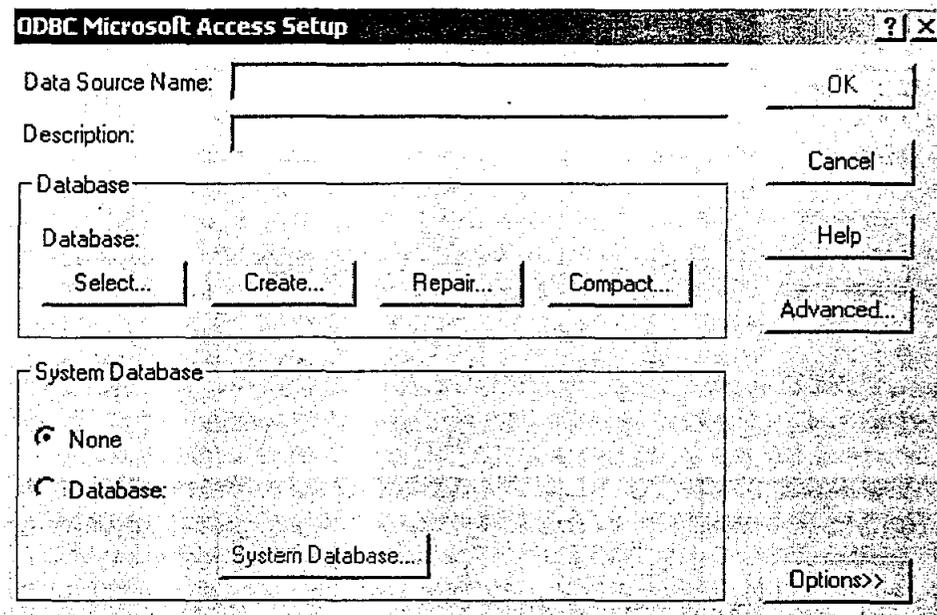


- If a connection called **nhrwa** is not listed or the ACCESS database has changed locations, then a new connection must be created. Select the **Add** button on the right side of the screen.
- From the **Create New Data Source** window select the **Microsoft Access Driver** (highlighted in red below) and select the **Finish** button.

Select a driver for which you want to set up a data source.



7.



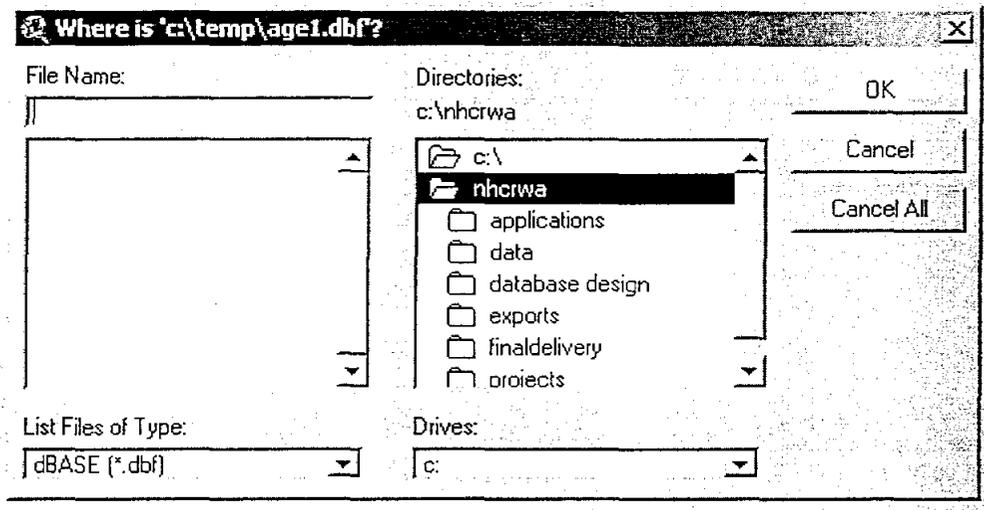
- In the Data Source Name line, call the connection **nhcrwa**. The name must be all lower case letters.
 - Fill in the Description field with any information the user may need.
 - In the **Database** section, hit the **Select** button and give the path name to the ACCESS database.
 - System Database can remain with **None** selected.
 - Select OK.
8. The user will be returned to the ODBC Administrator window. Confirm the ODBC Connection is listed in the window and select the OK or Apply button.

You now have established the ODBC Connection needed to run both the Data Entry and NHCRWA query applications.

Application Requirements

When the projects are opened for the first time in ArcView, the user may encounter some file location errors. These errors occur when a project is created on one computer and moved to another PC where the file structure is different, or when a necessary shapefile or coverage has been deleted from the PC. ArcView gives you this opportunity to try to retrieve any files that it cannot find before you lose your information. Listed below are two ways to solve this error.

The first method should be used by those users who are not familiar with ArcView and its project files. This method is done interactively and is done when ArcView tries to open the project file the first time.



The user can give the path name to the files or select cancel. The procedure can get lengthy depending on how many themes were originally saved in the project.

Another method, and one that should be reserved for those familiar with ArcView and working with .apr files in text form, is to open the ArcView .apr project file in a text editor such as Notepad or Microsoft word. **It is strongly recommended that a copy of the .apr file is made before opening it in the text editor and making any changes.**

```
FTTename: 22
Name: "tank_capacity.shp"
SubName: "Point"
ownerClass: "shpsrc"
)
(FN.22 Path: "c:/temp/tank_capacity.shp"
)
(FTab.23
Name: "tank_capacity.dbf"
BTab: 24
Fields: 36
Fields: 25
```

Once opened the user can change the pathnames (see red box above) to match the established pathnames set on their PC. Using the Find/Replace edit tool is the easiest way to accomplish this task.

Module_dataentry application

The ACCESS database tables cannot have any design windows open while ArcView communicates with them. The user will get an ODBC error stating that the table is locked by the user. This holds true when running the Nhcwa_queries application as well.

Nhcwa_queries application

To accurately run the query functions in the project, the following coverages must be in the View window of the project and also have the following names. The order of the coverages in the table of contents is not important.

- Well
- Mud
- Ccn
- Sysint
- Wwtp
- Tank
- Boundary and Vote are added for printing purposes only – they will not affect the queries.

To run the print application, the template.def file supplied by The CLR Team must be in the ArcView systems directory. See the ArcView help for details on where to place the template file on the PC or see Appendix E. Additional templates may be added to this file, but the templates for the print application are stored in this .def file.

Methodology

This section of the documentation describes the applications in great detail. Each program is broken down into individual modules. The explanation will include a description and screen capture of the module, a table outlining any pertinent information on buttons or text lines, the name and description of the scripts that run the module, a work flow diagram, and any special situation or additional notes.

Data Entry Application – module_dataentry.apr

This program file can be run as a fully functioning ArcView session. Views, layouts, and tables can be added to the session, although it is not recommended. This project should be used for data entry and editing of the ACCESS database only. The scripts will be situated so that they cannot be removed from the project. This will inhibit any new scripts from being added as well. For any kind of customization work a separate ArcView session should be created.

In the case that the delivered project file, module_dataentry.apr, is somehow lost or corrupted, the scripts and the dialogs will be delivered to the NHCRWA in a separate zip file called **data_entry_scripts.zip**. The dialog and the scripts that run that dialog are bundled into one file with a **.ded** extension. The **.ded** files need only be loaded into a new ArcView session. This action will load the dialog window and the scripts that are associated with that window.

When the dialogs are loaded, they should be named the same as in the same file. In each script the name is outlined in the beginning documentation (see "A" below) along with what other scripts or dialogs are required to run this script (see "B" below). If errors occur in reloading, a good check would be to use these two sections and make sure the loaded scripts or dialogs are named correctly. For additional help in reloading the scripts refer to Appendix E.

A →	<pre>'Name: WaterConnect.Open</pre>
	<pre>'Description: Opens the Water Connections module</pre>
	<pre>'Developed by: Laura Carr, IT Nexus</pre>
B →	<pre>'Requires: WaterConnect Dialog</pre>
	<pre> DBConnections script</pre>
	<pre>'Global Variables: _Watsys_Name - FeatureEdit.lbtFeatureEditContinue.Click</pre>
	<pre> _theYearList - created in DBConnections</pre>
	<pre> _theSelectType - created in FeatureEdit.lbtFeatureEditContinue.Click</pre>
	<pre> _Watconnect_Table - created in DBConnections</pre>
	<pre> _Watconnect_UID - created in WaterConnect.Open</pre>
	<pre>'Self: n/a</pre>
	<pre>'Returns: n/a</pre>
	<pre>'History: 02/01/2001 ICC original code</pre>

Note: Refer to end of section IV for all application work flow diagrams.

Starting the application

The data entry application can be started one of two ways.

- The application will automatically begin when module_dataentry.apr is loaded into ArcView.
- The project can be started from a button in the Project screen. All other buttons were removed from the default project. Only the Data Entry start button remains.



Script: *StartScript*

Description: Begins the Data Entry application and opens the Feature Edit Window.

Feature Edit Module

This module is the core to the data entry application. In this module the user selects the Water District or Entity, decides whether to add or edit a feature, and then selects the feature type. The user is returned to this screen after each feature addition or edit.

Field Name	Required?	Data Format	Notes
Select District or Service Area	Y	List Box	Select the District or Service Area you want to add or edit data to in the database.
Add a new District/Service Area	N	Check Box	Check this box when you do NOT find the name of the entity you are interested in the above listing. Opens a new screen to enter the new entity.
Action	Y	Radio Button	Select to add a new feature to the database or edit an existing feature.
Enter Your Initials	Y	All capital letters	The person who is entering data's initials.
Features	Y	Radio Button	Select the feature to add or edit.

Button	Operation
Cancel (Leave Data Entry Application)	Ends the Data Entry Application. Application can be started again with the start button in the project window.
Continue on to Feature Screen	Opens the module screen for the feature selected.

Script: *FeatureEdit.Open*

Description: Opens the Feature Edit window and runs the *DBConnections* script.

Script: *DBConnections*

Description: Establishes the communication between ArcView and the ACCESS database tables.
This script also sets up some basic variables used throughout the module.

Script: *FeatureEdit.IbxDistrict.Select*

Description: Checks if the selected District/Service area was entered in by a questionnaire.

Script: *FeatureEdit.chxNewDistrict.Click*

Description: Opens the New District/Service Area module when the box is checked

Script: *FeatureEdit.IbtFeatureEditCancel.Click*

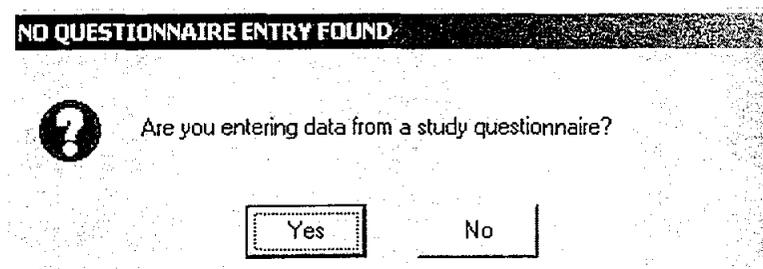
Description: Closes the data entry application

Script: *FeatureEdit.IbtFeatureEditContinue.Click*

Description: Continues the user on to the selected feature's module

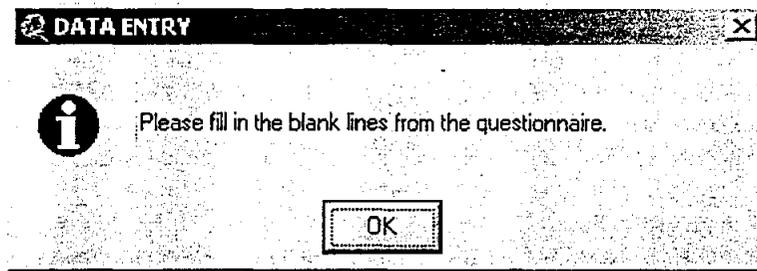
Notes

When the user selects the District/Service area in the Feature Edit screen, a check is run in the background to determine if the District/Service area was entered into the database from an NHCRWA questionnaire. If the program finds that the pertinent questions are blank in the database then the user is presented with the following screen:



If the user selects **No**, then they continue on with the Feature Edit screen actions.

If the user selects **Yes**, they are prompted to add data from the questionnaire in the New District/Service Area module, which will be described in greater detail in the next section.



New District/Service Area Module

This module allows the user to enter a new District or Service Area into the database. This screen is reached by selecting the "Add a new District/Service area to the list" checkbox in the Feature Edit screen, or when a selected entity does not have the questionnaire information in the database, see above notes. The user is returned to the Feature Edit screen when data entry of the new entity is completed.

NEW DISTRICT/SERVICE AREA INFORMATION X

Please enter the following information:

New District/Service Area Name:

New District/Service Area Type:

Mud Number: Pws-Id

Your Initials:

Is this new district/service area being entered from a study questionnaire?
 Yes No

Date New District/Service Area Data Collected: Format: 00/00/0000

Person Who Collected Data For New District/Service Area:

Phone Number Of Person Who Collected Data: Number with area code and no symbols

Field Name	Required?	Data Format	Notes
New District/Service Area Name	Y	All capital letters preferred	The name of the new entity being added to the database.
New District/Service Area Type	Y	List Box	User selects District, Service Area (CCN), Private Individual, or District with a CCN
Mud Number	Only if Type Selected = District	Number Field	Number assigned to MUD District by the TNRCC.
Pws-Id	Only if Type Selected = District	Number Field	TNRCC identifier for owner of MUD.
CCN Number	Only if Type Selected = Service Area (CCN)	Number Field	Number assigned to CCN by the TNRCC.

New District/Service Area Type:

CCN Number:

Field Name	Required?	Data Format	Notes
Your Initials	Y	All capital letters preferred	Initials of the individual adding the new entity
Is the new district/service area being entered from a study questionnaire?	Y	Radio Button	Asks the user if the new entity is being entered into the database by a study questionnaire.
Next four questions come from questionnaire		Blanked out if answer to study question = No	
Date New District/Service Area Data Collected	N	Text Field MM/DD/YYYY	Date the entity completed the questionnaire
Person who collected data for new District/Service Area	N	TextField	Name of the individual who filled out the questionnaire for the entity.
Phone number of person who collected data	N	Text Field Include area code No Punctuation AAAPPPNNNN	Phone number of the individual who filled out the questionnaire for the entity

Button	Operation
Cancel	Takes the user out of the New District module and back to the Feature Edit screen. No data entered into the database.
Enter New District/Service Area Into the Database	Enters the new entity's information into ACCESS and returns the user to the Feature Edit screen.

Script: *NewWatsys.Open*
Description: Opens the New District/Service Area module.

Script: *New Watsys.cbxNewWatsysType.Select*
Description: Enables the TNRCC number fields on the screen based on the type selected.

Script: *New Watsys.rbtNewDistQuesNo.Select*
Description: Disables the bottom three questions if the entity is not being added from a study questionnaire

Script: *New Watsys.rbtNewDistQuesYes.Select*
Description: Enables the bottom three questions if the entity is being added from a study questionnaire

Script: *NewWatsys.lbtNewWatsysContinue.Click*
Description: Enters the new entity into the database. Returns the user to the Feature Edit screen.

Contact Information Module

In this module, the user enters in contact information for the entity they selected in the Feature Edit screen. There are currently six contact types in the ACCESS database. More can be added as the need arises. The current six are:

- Operator
- Engineer
- Attorney
- District Office
- Current Owner
- Board President

Some of these contact types pertain only to entities of particular types. Example: Only an entity being entered that is a MUD would need to enter contact information on the District Office or Board President. These two contact types would not be included in a CCN entity. The user must select the contact type, enter the data, and hit the Enter button to have the information entered into the database. The user will be returned to the Feature Edit screen and they must re-enter the Contact Information Module to add any additional contacts.

Contact Information

Please enter the contact information for: TYMBER PUD

*Contact Type:

*Name: Attention:

*Address:

*City: *State: *Zip:

*Phone number with area code (no symbols): Fax number with area code (no symbols):

Email:

Field Name	Required?	Data Format	Notes
Contact Type	Y	List Box	Select the Contact Type from list Operator, Engineer, Attorney, District Office, Current Owner, Board President.
Name	Y	Text Field No titles (Mr., Mrs., etc)	Enter name of contact for the specified contact type.
Attention	N	Text Field No titles (Mr., Mrs., etc)	
Address	Y	Text Field Number Street Name	Enter street address of contact.
City	Y	Text Field	

Field Name	Required?	Data Format	Notes
State	Y	Text Field 2-digit state abbreviation	
Zip	Y	Number Field 5-digit (#####)	
Phone Number	Y	Number Field Include area code No Punctuation AAAPPPNNNN	Enter phone number of contact.
Fax Number	N	Number Field Include area code No Punctuation AAAPPPNNNN	Enter fax number of contact if applicable.
Email	N		Enter email address of contact if applicable.

Button	Operation
Cancel Contact Data Entry	Takes the user out of the Contact Information module and back to the Feature Edit screen. No data entered into the database.
Add Contact Data To Database	Enters the entity's contact information into ACCESS and returns the user to the Feature Edit screen.

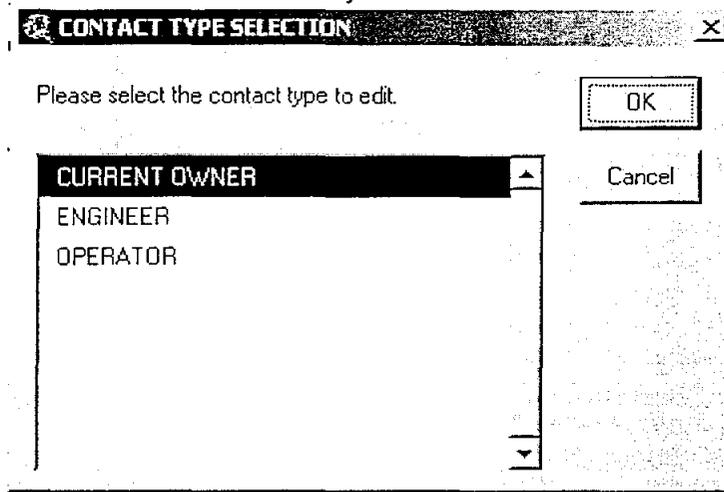
Script: *ContactInfo.Open*
Description: Opens the Contact Information module.

Script: *ContactInfo.lbtContactAdd.Click*
Description: Adds the contact data to the ACCESS database. Returns the user to the
Feature Edit screen.

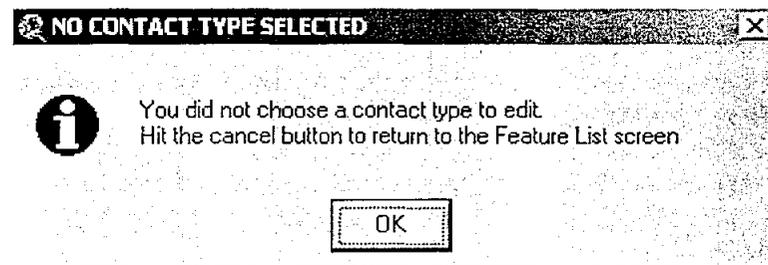
Script: *CancelScript*
Description: Closes the Contact Information module and returns the user to the
Feature Edit screen. No data is entered into the database.

Notes

When editing a contact, the user is provided with a screen to select from the contact types already entered for the selected water system.



If cancel is selected, the user receives the message below and must hit cancel in the Contact Module screen. The add button is disabled so no data will be entered into the database.



Water Connections Module

In this module the user enters data on the water connections for a selected entity. Care must be taken when entering in the number values. The database is currently set up for the values to be in millions of gallons. Some entities did not fill out the questionnaires in this manner and some conversion may be needed. The year drop down list is currently set for the years of 1996 – 2030. Additional years can be added by populating the records in the LUT_YEAR table in ACCESS.

Water Connections

Please enter the water connection information for: ALBURY MANDR UTILITY COMPANY

*Year: *Through Month:

*Annual Water Usage: Mgal/yr

Peak Monthly Water Usage: Mgal/yr Month of Peak Water Usage:

Minimum Monthly Water Usage: Mgal/yr Month of Minimum Water Usage:

Peak Daily Water Usage: Mgal/yr

Number of Active Connections: (Average per Year) If questionnaire has a NA or X in the field, please leave the field on the screen blank.

Residential: Commercial: Irrigation: Industrial:

Active Connections Water Usage: (Average per Year)

Residential: Mgal/yr Commercial: Mgal/yr Irrigation: Mgal/yr Industrial: Mgal/yr

Number of External Connections: (Average per Year)

Residential: Commercial: Irrigation: Industrial:

External Connections Water Usage: (Average per Year)

Residential: Mgal/yr Commercial: Mgal/yr Irrigation: Mgal/yr Industrial: Mgal/yr

Field Name	Required?	Data Format	Notes
Year	Y	List Box	Select the year in interest. Currently can input Water Connections data for the years 1996 – 2030. Only 1998 – 2000 collected in NHCRWA study.
Through Month	Y	List Box	Month the selected year goes through.
Annual Water Usage	Y	Number Field Valid Range: 0-1200	Usage value should be in Mgal/yr.
Peak Monthly Water Usage	N	Number Field Valid Range: 0-100	Usage values should be in Mgal/month
Month of Peak Water Usage	N	List Box	
Minimum Monthly Water Usage	N	Number Field Valid Range: 0-100	Usage values should be in Mgal/month
Month of Minimum Water Usage	N	List Box	
Peak Daily Water Usage	N	Number Field Valid Range: 0 - 10	Usage values should be in Mgal/day
Number of Active Connections	N	Number Field	If questionnaire has a NA or X, leave this field blank.
Active Connections Water Usage	N	Number Field Valid range: 0-1200	Usage values should be in Mgal/year If questionnaire has a NA or X, leave this field blank.
Number of External Connections	N	Number Field	If questionnaire has a NA or X, leave this field blank.
External Connections Water Usage	N	Number Field Valid range: 0-1200	Usage values should be in Mgal/year If questionnaire has a NA or X, leave this field blank.

Button	Operation
Cancel Water Connections Data Entry	Takes the user out of the Water Connections module and back to the Feature Edit screen. No data entered into the database.
Add Water Connections Data To Database	Enters the new entity's information into ACCESS and returns the user to the Feature Edit screen.

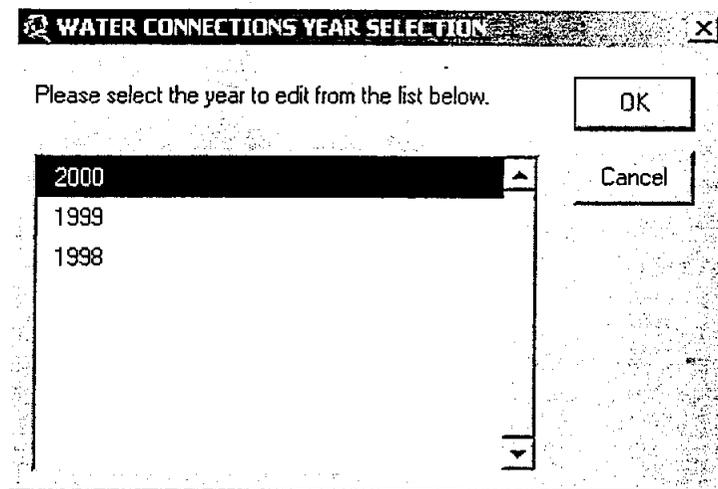
Script: *WaterConnect.open*
Description: Opens the Water Connections module.

Script: *WaterConnect.IbtConnectAnother.Click*
Description: Adds the water connection data for the year selected to the ACCESS database. Returns the user to the Feature Edit screen.

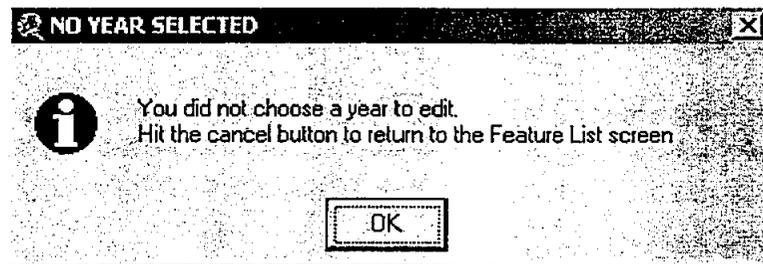
Script: *CancelScript*
Description: Closes the Water Connections module and returns the user to the Feature Edit screen. No data is entered into the database.

Notes

When editing a water connection, the user is provided with a screen to select from the years already entered in the database for the selected water system.



If cancel is selected, the user receives the message below and must hit cancel in the Water Connections Module screen. The add button is disabled so no data will be entered into the database.



Potential Water Connections Module

In this module the user enters data on the potential water connections for the selected entity. The data collection method drop down list is taken from the LUT_WPMETHOD table in ACCESS. It currently only contains one method of collection and that is the NHCRWA study questionnaires. Additional collection methods can be added to this table and selected in the data entry application. The time period drop down list is currently set for the years 2000 – 2050 in ten year increments and also includes “ULTIMATE DEVELOPMENT”. Additional time periods can be added by populating the records in the LUT_PERIOD table in ACCESS.

Potential New Water Connections

Please enter the potential new water connections for: ALBURY MANOR UTILITY COMPANY

*Data Collection Method:

*Time Period:

Potential New Water Connections:

*Residential:

*Commercial:

*Irrigation:

*Industrial:

Cancel Potential Water
Connections Data Entry

Add Potential Water
Connections Data to Database

Field Name	Required?	Data Format	Notes
Data Collection Method	Y	List Box	Select the method of collection. Currently, the user can select 5MIL, which means the data was collected via study questionnaires.
Time Period	Y	List Box	Select the time period. Currently can enter Potential Water Connection for years 2000 – 2050 and Ultimate Development.
Potential New Water Connections	Y	Number Field	Number of potential connections for each category.

Button	Operation
Cancel Potential Water Connections Data Entry	Takes the user out of the Potential Water Connections module and back to the Feature Edit screen. No data entered into the database.
Add Potential Water Connections Data To Database	Enters the new entity's information into ACCESS and returns the user to the Feature Edit screen.

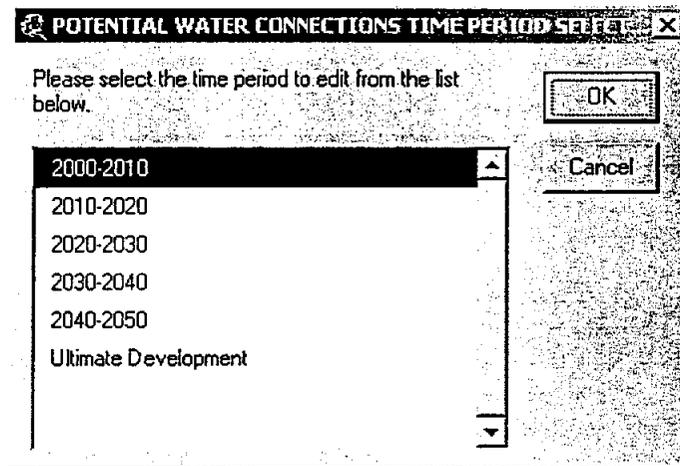
Script: *PotentialConnects.open*
Description: Opens the Potential Water Connections module.

Script: *PotentialConnects.lbtPotentialAnother.Click*
Description: Adds the potential water connection data for the time period selected to the ACCESS database. Returns the user to the Feature Edit screen.

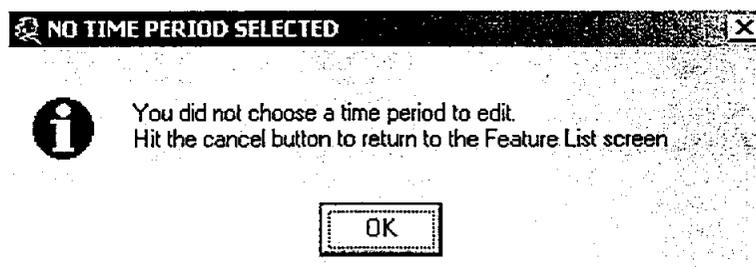
Script: *CancelScript*
Description: Closes the Potential Water Connections module and returns the user to the Feature Edit screen. No data is entered into the database.

Notes

When editing a potential water connection, the user is provided with a screen to select from the time periods already entered into the database for the selected water system.



If cancel is selected, the user receives the message below and must hit cancel in the Potential Water Connections Module screen. The add button is disabled so no data will be entered into the database.



Elevated Storage Tank Module

The user can add data on the elevated storage tank that serve the selected entity in this module. There are actually two ways to enter in this data. One way is by accessing this module through the Feature Edit screen; another is through the Existing Water Well Module. The latter will be discussed in greater detail with the Existing Water Well Module description.

Elevated Storage Tank	
Please enter the elevated storage tank information for: ALBURY MANOR UTILITY COMPANY	
*Tank Name or ID:	<input type="text"/>
Tank Capacity:	<input type="text"/> Gal
Overflow Elevation Relative To Ground Surface:	<input type="text"/> ft
Bottom of Bowl Elevation Relative To Ground Surface:	<input type="text"/> ft
Tank Manufacturer:	<input type="text"/>
Bowl Configuration:	<input type="text"/>
<input type="button" value="Cancel Elevated Storage Tank Data Entry"/> <input type="button" value="Add Elevated Storage Tank Data to Database"/>	

Field Name	Required?	Data Format	Notes
Tank Name or ID	Y	Text Field	If elevated storage tank does not have a tank name or id, name the tank (District/Service Area) EST-1, (District/Service Area) EST-2, etc. for each district/service area.
Tank Capacity	N	Number Field Value > 0	Capacity should be in gallons.
Overflow Elevation Relative To Ground Surface	N	Number Field Value > 0	Elevation should be in feet with no decimal places.
Bottom of Bowl Elevation Relative To Ground Surface	N	Number Field Value > 0	Elevation should be in feet with no decimal places.
Tank Manufacturer	N	Text Field	
Bowl Configuration	N	Text Field	

Button	Operation
Cancel Elevated Storage Tank Data Entry	Takes the user out of the Elevated Storage Tank module and back to the Feature Edit screen. No data entered into the database.
Add Elevated Storage Tank Data To Database	Enters the new entity's information into ACCESS and returns the user to the Feature Edit screen.

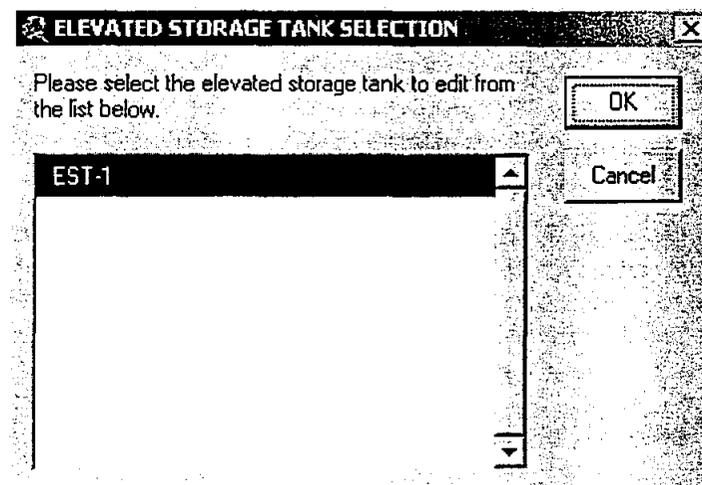
Script: *ElevatedTanks.Open*
Description: Opens the Elevated Storage Tank module.

Script: *ElevatedTanks.lbtContinue.Click*
Description: Adds the elevated storage tank data to the ACCESS database. Returns the user to the Feature Edit module if they selected the module through that screen, or it will bring them back to the Existing Water Well module if they are entering tanks connected to a well (see Existing Water Well module for further explanation).

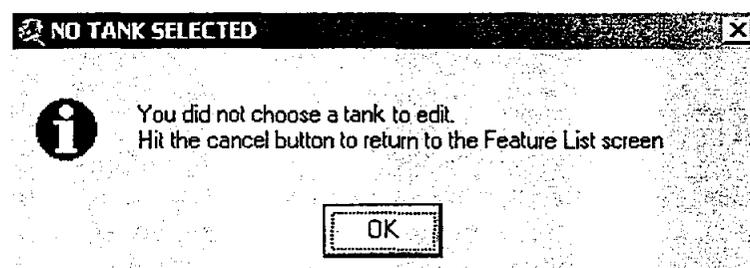
Script: *CancelScript*
Description: Closes the Elevated Storage Tank module and returns the user to the Feature Edit screen or the Well Data module depending on how the user entered the Elevated Storage Tanks module. No data is entered into the database.

Notes

When editing an elevated storage tank, the user is provided with a screen to select from the tanks already entered into the database for the selected water system.



If cancel is selected, the user receives the message below and must hit cancel in the Elevated Storage Tank screen. The add button is disabled so no data will be entered into the database.



Existing System Interconnects

This module allow the user to enter data on the interconnects between two entities.

Existing System Interconnects	
Please enter the existing system interconnect information for: ALBURY MANOR UTILITY COMPANY	
Is this a future system interconnect? <input type="radio"/> Yes <input checked="" type="radio"/> No	
Location of Interconnect: Latitude <input type="text"/> in decimal degrees	Longitude <input type="text"/> in decimal degrees
Type of Interconnect: <input type="radio"/> Emergency <input type="radio"/> Normally Open <input checked="" type="radio"/> Not Answered	Size of Interconnect: <input type="text"/> in (if reducer/increaser, give minimum size)
*Entity Connected: <input type="text" value="Select From List"/>	Size of Connecting Pipe: <input type="text"/> in
<input type="button" value="Cancel System Interconnect Data Entry"/> <input type="button" value="Add System Interconnect Data to Database"/>	

Field Name	Required?	Data Format	Notes
Is this a future system interconnect?	Y	Radio Button	No is the default option
Latitude	N	Number Field ##.####	
Longitude	N	Number Field -##.####	Longitude must be a negative number.
Type of Interconnect	Y	Radio Button	Not Answered is the default option
Size of Interconnect	N	Number Field Inches (no decimal places)	
Entity Connected	Y	List Box or Text Field See NOTES below	The name of the connected entity.
Size of Connecting Pipe	N	Number Field Inches (no decimal places)	

Button	Operation
Cancel System Interconnect Data Entry	Takes the user out of the Existing System Interconnect module and back to the Feature Edit screen. No data entered into the database.
Add System Interconnect Data To Database	Enters the new entity's information into ACCESS and returns the user to the Feature Edit screen.

Script: *SystemInterconnect.Open*
Description: Opens the Existing System Interconnects module.

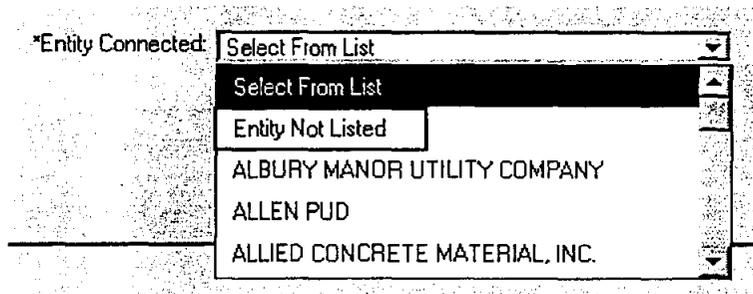
Script: *SystemInterconnects.cbxWatsysLut.Select*
Description: Runs when "Entity Not Listed" is selected from the Entity Connected drop down box. Presents a text box for the user to type in an entity name.

Script: *SystemInterconnects.lbtAddAnother.Click*
Description: Adds the system interconnect data for the entity selected to the ACCESS database. Returns the user to the Feature Edit screen.

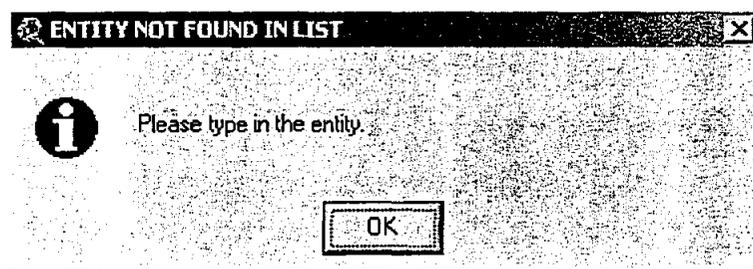
Script: *CancelScript*
Description: Closes the System Interconnects module and returns the user to the Feature Edit screen.

Notes

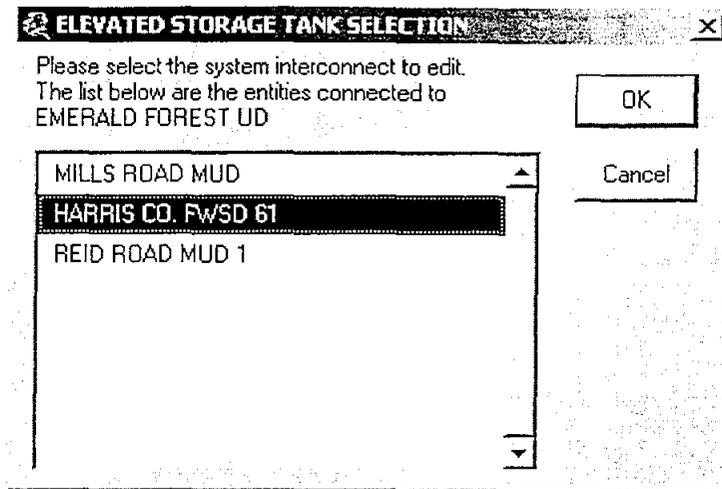
If the user selects "Entity Not Listed" in the Entity Connected drop down box,



the drop down list will change to a text box, and the user has the ability to type in an entity name.



When editing a system interconnect, the user is provided with a screen to select from the system interconnects already entered into the database for the selected water system.



If cancel is selected, the user must hit cancel in the Existing System Interconnects screen. The add button is disabled so no data will be entered into the database. The Entity Connected box will be changed to a text box when editing so the name of the entity cannot be changed.

Wastewater Treatment Plants Module

In this module the user enters in the data on the wastewater treatment plants that service the selected entity. Information on plants that the entity owns or plants that the entity may share with others can be entered into the database.

Shared Wastewater Treatment Plants

When the YES radio button is selected for the question "Do you share a wastewater treatment plant?", a series of questions become available to the user to determine which district or service area the selected entity shares a plant with and the name of that shared plant.

Please enter the wastewater treatment plant information for: EMERALD FOREST UD

Shared Plant?

Do you share a wastewater treatment plant? (Meaning you do not own a plant)

 Yes No

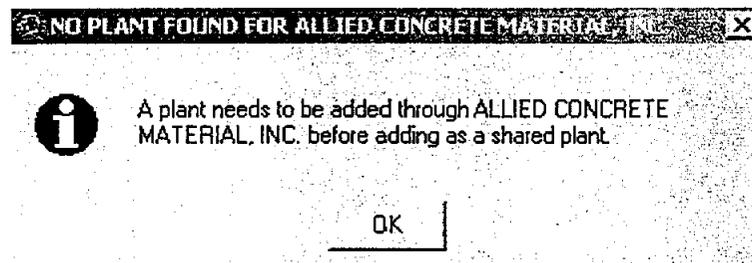
Shared Plant?

Do you share a wastewater treatment plant? (Meaning you do not own a plant)

 Yes No

Select the District/Service Area you share the plant with: FAULKEY GULLY MUD

Select the District/Service Area drop down list is a list of all the MUDs, CCNs, and privately owned districts in the NHCRWA's boundaries. If the application does not find any wastewater treatment plants associated with the selected district then the following messages appear.



NO PLANT FOUND FOR WASTEWATER TREATMENT [X]



You can:
Select a different District/Service Area in the share list.
Select NO for sharing and enter data for an owned plant.
Hit the CANCEL button and exit data entry

OK

If the program does find wastewater treatment plants in the database, then the user is taken to the next screen below.

Wastewater Treatment Plant

Please enter the wastewater treatment plant information for: EMERALD FOREST UD

Shared Plant?
Do you share a wastewater treatment plant? (Meaning you do not own a plant) Yes No

Select the District/Service Area you share the plant with: FAULKEY GULLY MUD

Select the name of the plant you share:

Own Plant

Name of plant:

Location: Latitude: degrees

Actual Annual Average Daily Flow: Mgal/day

SELECT PLANT

Select the wastewater treatment plant you share.

OK

The **Select the name of the plant you share** drop down box are the names of the wastewater treatment plants associated with the entity selected in the previous question.

Wastewater Treatment Plant

Please enter the wastewater treatment plant information for: EMERALD FOREST UD

Shared Plant?
Do you share a wastewater treatment plant? (Meaning you do not own a plant) Yes No

Select the District/Service Area you share the plant with: FAULKEY GULLY MUD

Select the name of the plant you share: Faulkey Gully MUD

Own Plant

Name of plant:

Location: Latitude: degrees

Actual Annual Average Daily Flow: Mgal/day

Has there been any reuse of treated effluent?

If yes, please answer the following questions:

Type of treatment:

How much reuse of treated effluent:

REUSE PROGRAM INTEREST

Would your district be interested in a potential reuse program?

Yes
No
Unknown

OK
Cancel

Once this last question has been answered, the shared plant is recorded in the database and the user is returned to the feature edit screen.

Script: *Wwtp.Open*
Description: Opens the Wastewater Treatment Plant module.

Script: *ShareScripts.rbtShareYes.Click*
Description: Runs when the user selects YES that they share a wastewater treatment plant.

Script: *ShareScripts.rbtShareNo.Click*
Description: Runs when the user selects NO that they share a wastewater treatment plant. Sets up the screen so the user can input owner information.

Script: *WWTP.cbxWWTPShareDistrict.Select*
Description: Runs when the user selects a district they share a plant with. The program checks if there are indeed wastewater treatment plants entered for the selected district.

Script: *WWTP.cbxWWTPSharePlant.Select*
Description: Runs when the user selects the plant name they share. It then adds the information to the database.

Owned Wastewater Treatment Plants

When the NO radio button is selected for sharing a plant, the bottom portion of the screen becomes active and information for the plant the entity owns can be entered.

Field Name	Required?	Data Format	Notes
Name of Plant	Y	Text Field	
Texas/TPDES Permit Number	Y	Text Field	
Latitude	N	Number Field ##.####	Longitude must be a negative number.
Longitude	N	Number Field -##.####	Longitude must be a negative number.
Actual Annual Average Daily Flow	N	Number Field	Daily Flow should be in mgal/day
Average Daily Flow For Minimum Flow Month	N	Number Field	Daily Flow should be in mgal/day
Has there been any reuse of treated water from this plant in the last three years	Y	Radio button	See below description of Reuse screen to get more information.
Would your district be interested in a potential reuse program?	Y	Radio button	Not Answered is the default.
Button	Operation		
Cancel Wastewater Treatment Plant Data Entry	Takes the user out of the Wastewater Treatment Plant module and back to the Feature Edit screen. No data entered into the database.		
Add Wastewater Treatment Plant Data To Database	Enters the new entity's information into ACCESS and returns the user to the Feature Edit screen.		

Script: *Wwtp.Open*
Description: Opens the Wastewater Treatment Plant module.

Script: *WWTP.IbtWWTPAnother.Click*
Description: Adds the wastewater treatment plant data for the entity selected to the ACCESS database. Returns the user to the Feature Edit screen.

Script: *WWTP.IbtWWTPCancel.Click*
Description: Closes the Wastewater Treatment Plant module, but first checks if there were records entered into the WWTP_REUSE table, but no plant information. Gives the user the option to delete the REUSE records or go back and add the plant information.

Reuse Data on the Wastewater Treatment Plant

The Reuse section of the Wastewater Treatment Plant module is not accessible until YES to the question "Has there been any reuse of treated water from this plant in the last three years?" has been selected.

If yes, please answer the following:

Type of treatment: Type I Type II

How much reuse of treated water:

*Through Month: *For the year of: Mgal/day

Field Name	Required?	Data Format	Notes
Type of Treatment	N	Radio Button	Type I is the default
Through Month	N	List Box	
For the year of	N	List Box	
Amount	N	Number Field	Amount field should be mgal/day

Button	Operation
Add Year To Reuse Table	Adds the inputted data into the WWTP_REUSE table. Clears the fields and allows the user to add data on another year / month / amount.

Script: *WWTP.rbtWWTPtreatNo.Click*
Description: Disables the Reuse portion of the module if the user selects NO to the reuse question.

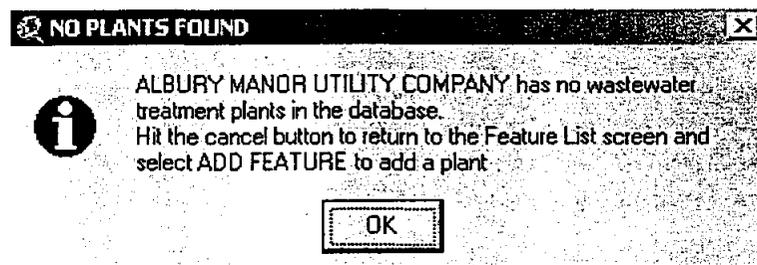
Script: *WWTP.rbtWWTPtreatYes.Click*
Description: Enables the Reuse portion of the module if the user selects YES to the reuse question.

Script: *WWTP.txlWWTPtreat2000.Change*
Description: Enables the "Add Year To Reuse Table Button" when a year is entered into the text line.

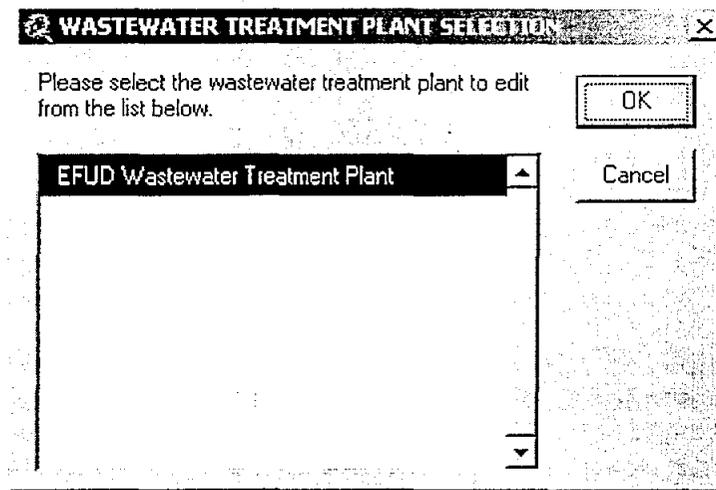
Script: *WWTP.lbtWWTPtreatYear.Click*
Description: Adds the data in the reuse section to the WWTP_REUSE holding dictionary _ReuseDict.

Notes

When the user chooses to edit a wastewater treatment plant, the system will allow the user to edit only those plants that the selected entity owns. If no plants are found in the database then the user receives this message.



If there are plants that are editable then the user can select which plant to edit.



If cancel is selected, the user must hit cancel in the Wastewater Treatment Plant screen. The add button is disabled so no data will be entered into the database.

If applicable, the user can also edit a year from the WWTP_REUSE table. The program will provide the user with a list box to select the year to edit. When the module is presented it will have the reuse information present. If the user selects NO they don't need to edit a year or cancel on the selection screen, then the module screen is created with the reuse section blank.

Non-Potable Users Module

Information on the non-potable users in the selected entity can be added to the database through this module.

Non-Potable Users

Please enter the non-potable user information for: EMERALD FOREST UD

*Name of non-potable user: _____

Address: _____ City: _____ Zip: _____

Phone number with area code (no symbols): _____

Fax number with area code (no symbols): _____

Email: _____

Type of user:

Commercial Irrigation

Industrial Institutional

Are you currently using non-potable (reclaimed wastewater)? Yes No Not Answered If yes, how much: _____ Mgal/day

If yes, would you be willing to use more? Yes No Not Answered If yes, how much: _____ Mgal/day

If yes, TNRCC 210 authorization? Yes No Not Answered

If not currently using non-potable water, would you be willing to convert? Yes No [Not Answered] If yes, how much: _____ Mgal/day

Are you also currently using well water? Yes No Not Answered If yes, how much: _____ Mgal/day

Would you be interested in a potential reuse program? Yes No Not Answered

Field Name	Required?	Data Format	Notes
Name of non-potable user	Y	Text Field	Company name or first name, last name
Address	N	Text Field Number, Street Name	
City	N	Text Field	
Zip	N	Number Field 5 digit ##### code	
Phone Number	N	Number Field Include area code No Punctuation AAAPPPNNNN	Enter phone number of contact.
Fax Number	N	Number Field Include area code No Punctuation AAAPPPNNNN	Enter fax number of contact.
Type of User	Y	Radio Button	Commercial is the default
Are you currently using non-potable?	Y	Radio Button	Not Answered is the default
How Much	N	Number Field	Amount should be in mgal/day
Willing to use more	Y	Radio Button	Not Answered is the default
How Much	N	Number Field	Amount should be in mgal/day
TNRCC 210 authorized	Y	Radio Button	Not Answered is the default

If not currently using non-potable water, would you be willing to convert?	Y	Radio Button	Not Answered is the default
How Much	N	Number Field	Amount should be in mgal/day
Are you also currently using well water?	Y	Radio Button	Not Answered is the default
How Much	N	Number Field	Amount should be in mgal/day
Field Name	Required?	Data Format	Notes
Would you be interested in a potential reuse program?	Y	Radio Button	Not Answered is the default.

Button	Operation
Cancel Data Entry For Non-Potable Users	Takes the user out of the Non-Potable Users module and back to the Feature Edit screen. No data entered into the database.
Add Non-Potable User Data Into Database	Enters the new entity's information into ACCESS and returns the user to the Feature Edit screen.

Script: *NonPotable.Open*
Description: Opens the Non-Potable User's module.

Script: *NonPotable.rbtPotableUserYes.Click*
Description: Runs when the user selects Yes to "Are you currently using non-potable?" It enables the amount text line and enables "Are you willing to use more" questions.

Script: *NonPotable.rbtPotableUserNo.Click*
Description: Runs when the user selects No to "Are you currently using non-potable?" It disables the amount text line and the "Are you willing to use more" questions.

Script: *NonPotable.rbtPotableUserUnknown.Click*
Description: Runs when the user selects Not Answered to "Are you currently using non-potable?" It disables the amount text line and the "Are you willing to use more" questions.

Script: *NonPotable.rbtPotableUserMoreYes.Click*
Description: Runs when the user selects Yes to "Would you be willing to use more (non-potable)?" It enables the amount text line and the TNRCC questions.

Script: *NonPotable.rbtUserMoreNo.Click*
Description: Runs when the user selects No to "Would you be willing to use more (non-potable)?" It disables the amount text line and the TNRCC questions.

Script: *NonPotable.rbtUserMoreUnknown.Click*
Description: Runs when the user selects Not Answered to "Would you be willing to use more (non-potable)?" It disables the amount text line and the TNRCC questions.

Script: *NonPotable.rbtPotableConvertYes*
Description: Runs when the user selects Yes to "If not currently using non-potable, would you be willing to convert?" It enables the amount text line.

Script: *NonPotable.rbtPotableConvertNo*
Description: Runs when the user selects No to "If not currently using non-potable, would you be willing to convert?" It disables the amount text line.

Script: *rbtPotableConvertUnknown.Click*
Description: Runs when the user selects Not Answered to "If not currently using non-potable, would you be willing to convert?" It disables the amount text line.

Script: *NonPotable.rbtPotableWellYes.Click*
Description: Runs when the user selects Yes to "Are you also currently using well water?" It enables the amount text line.

Script: *NonPotable.rbtPotableWellNo.Click*
Description: Runs when the user selects No to "Are you also currently using well water?" It disables the amount text line.

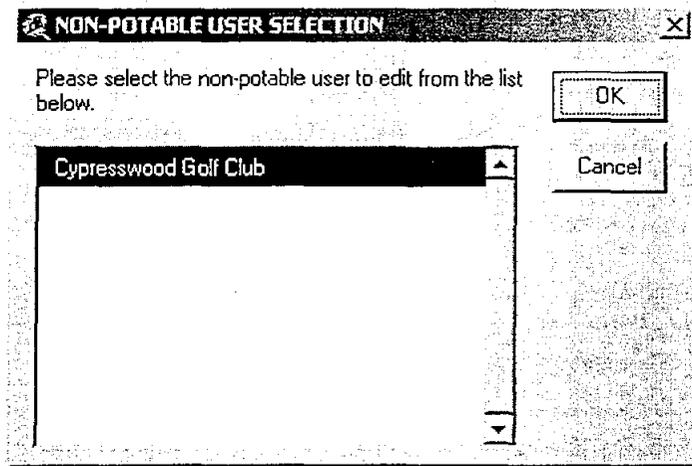
Script: *NonPotable.rbtPotableWellUnknown.Click*
Description: Runs when the user selects Not Answered to "Are you also currently using well water?" It disables the amount text line.

Script: *NonPotable.lbtPotableAnother.Click*
Description: Adds the non-potable user data to the ACCESS database. Returns the user to the Feature Edit screen.

Script: *CancelScript*
Description: Closes the Non-Potable Users module and returns the user to the Feature Edit screen. No data is entered into the database.

Notes

When editing a non-potable user, the person entering the data is provided with a screen containing the names of the non-potable users already entered in the database for the selected entity.



If cancel is selected, the user must hit cancel in the Non-Potable User's screen. The add button is disabled so no data will be entered into the database.

Existing Water Well Module

This module allows the user to enter information about an existing well. The user can enter data on pumpage, other districts the well may serve, modifications, or the depth of the well. Through this module the user can also enter data on ground or elevated storage tanks that the well discharges into. The user can select from a list of tanks already entered into the database or they can enter the data for a new tank.

Field Name	Required?	Data Format	Notes
Well Number	Y	Number Field	Number associated with water well as established by HGCSO (permit number).
Well Address	N	Text Field Number Street Name	
Does this well service more than one district	Y	Radio Button	If Yes selected, the Add Districts to list and Districts serviced by this well are activated.

If the well services any additional districts, the user should select from the drop down list **Add Districts to List**. The selected names will appear in the box **Districts Served By This Well**.

Does this well service more than one district? Yes No

Well Properties

Well Diameter: _____ in

Well pumping capacity: _____ gpm

Annual pumpage rate: _____ Mgal/yr

Approximate date of well construction: _____ (Please enter the year only)

Date of most recent groundwater modification of the well: _____ (Please enter year only)

Total well depth relative to ground surface: _____ ft (must be a negative value)

Districts serviced by this well: AMBERWOOD UTILITY COMPANY
ALLIED CONCRETE MATERIAL, INC.

Add Districts to list: AMBERWOOD UTILITY COMPANY
ALBURY MANOR UTILITY COMPANY
ALLEN PUD
ALLIED CONCRETE MATERIAL, INC.
AMBERWOOD UTILITY COMPANY

Modification Type: AMBERWOOD UTILITY COMPANY

Care must be taken when selecting the names. They CANNOT be deleted by the data entry personnel. The records will need to be deleted by the database administrator. The easiest "fix" to this situation is to select CANCEL DATA ENTRY FOR WELL DATA. The user will be returned to the feature edit screen and will need to return to the Existing Water Well module, but no information will be entered into the database.

Field Name	Required?	Data Format	Notes
Well Diameter	N	Number Field No Decimal Place	Diameter should be in inches.
Well Pumping Capacity	N	Number Field	Capacity should be in gallons/minute
Annual Pumpage Rate	N	Number Field	Rate should be in millions gallons/year
Approximate Date of Well Construction	N	Number Field Year Only - YYYY	
Date of most recent groundwater modification of the well	N	Number Field Year Only - YYYY	When a year is typed in, the Add Modification to List and Modification Type screens become active.

If the user knows the modifications made to the well, the user should select from the drop down list **Add Modification to List**. The selected modifications will appear in the box **Modification Type**. If the user has a modification type that is not listed, he should inform the database administrator who can add the type to the appropriate tables in the ACCESS database. Other information can be added and entered into the database and the well edited at a later date to add the modification types.

Date of most recent groundwater modification of the well: _____ 1995 (Please enter year only)

Total well depth relative to ground surface: _____ ft (must be a negative value)

Estimated well replacement time frame: _____

Current submergence of well pump: _____ ft (must be a negative value)

Does this well produce sand? Yes No Not Answered

Does this well produce gas? Yes No Not Answered

Does this well have a known radon or radium problem? Yes No Not Answered

Modification Type: NEW WELL
ADD A PUMP
RAISE WELL HEAD

Add Modifications to list: NEW WELL
NEW WELL
RAISE WELL HEAD
ADD A PUMP
SET_PUMP
LOWERING OF PUMP

Once again care must be given when adding modifications to the list as they cannot be deleted by the user. See notes on adding additional districts above.

Field Name	Required?	Data Format	Notes
Total well depth relative to ground surface	N	Number Field Depth <.0	Depth should be in feet.
Estimated Well Replacement Time Frame	N	List Box	
Current submergence of well pump	N	Number Field Submergence < 0	Submergence should be in feet.
Does this well produce sand?	Y	Radio Button	Not Answered is the default
Does this well produce gas?	Y	Radio Button	Not Answered is the default
Does this well have a known radon or radium problem?	Y	Radio Button	Not Answered is the default
Any other know problems?	N	Text Field	
What does this well discharge into?	Y	Radio Button	

Button	Operation
Cancel Data Entry For Well Data	Takes the user out of the Existing Water Well module and back to the Feature Edit screen. No data entered into the database.
Add Well Data Into Database	Enters the new entity's information into ACCESS and returns the user to the Feature Edit screen.

Script: *WellData.Open*
 Description: Opens the Existing Water Well module.

Script: *WellData.rbtWellServiceYes.Click*
 Description: When YES is selected that the well services another district, this script activates the "Add Districts to List" drop down list and the "Districts serviced by this well" list box.

Script: *WellData.rbtWellServiceNo.Click*
 Description: When NO is selected that the well services another district, this script disables the "Add Districts to List" drop down list and the "Districts serviced by this well" list box.

Script: *WellData.cbxWellExtraDistrict.Select*
 Description: When the user selects a district from the drop down list, this script populates the list box with the selected entity.

Script: *WellData.txlWellModDate.Change*

Description: When the user enters a year for well modifications, this script enables the "Add modifications to list" drop down list and the "Modification Type" list box.

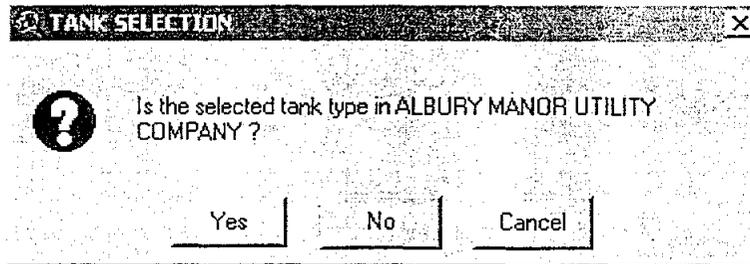
Script: *WellData.cbxWellExtraMod.Select*

Description: When the user selects a modification type from the drop down list, this script populates the list box with the selected modification type.

Entering Tanks Through The Existing Water Well Module

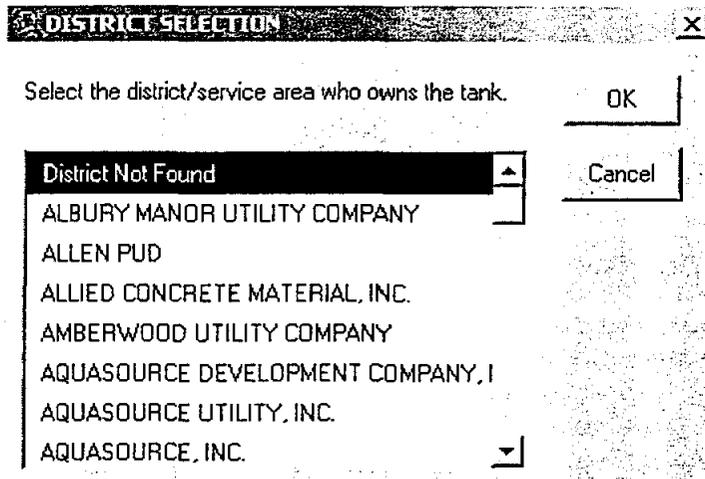
If the user selects "Elevated Storage Tank" or "Ground Storage Tank" as what the well discharges into, they are asked to select an existing tank already in the database or input the data for a new tank. The next few screens walk you through this process.

This screen asks the user if the tank is located in the entity selected in the Feature Edit window.

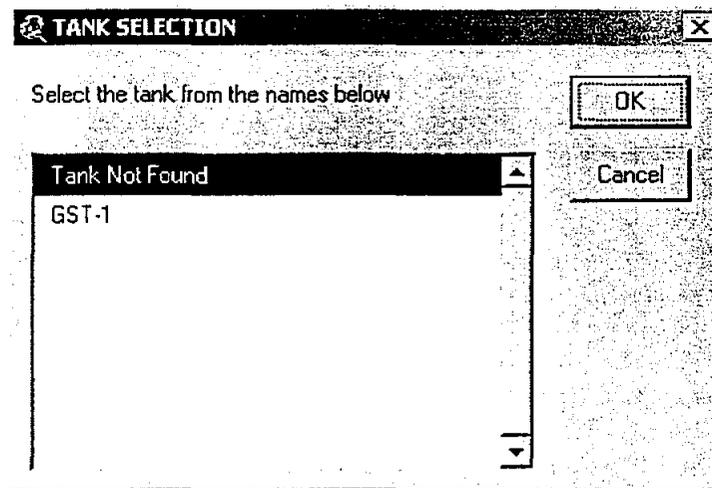


Button	Operation
Yes	Brings the user to a list of tanks associated with entity selected in the Feature Edit screen.
No	Will ask the user what district the tank is located
Cancel	Brings the user back to the Existing Water Well module

The next few screens represent what the user sees if they select **No** to the above question.

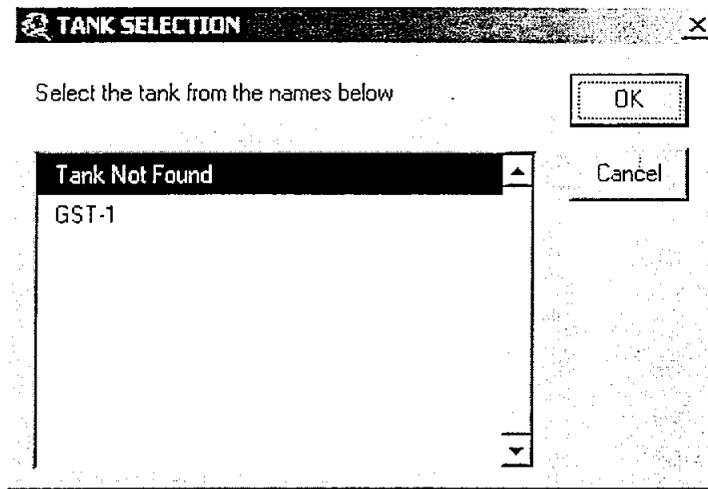


Button	Operation
Cancel	Brings the user to the Existing Water Well module
OK	If District Not Found , user gets message that only well data will be entered into the database and returns to the Existing Water Well Module If a district is selected then the user is presented with a list of tanks associated with that entity.

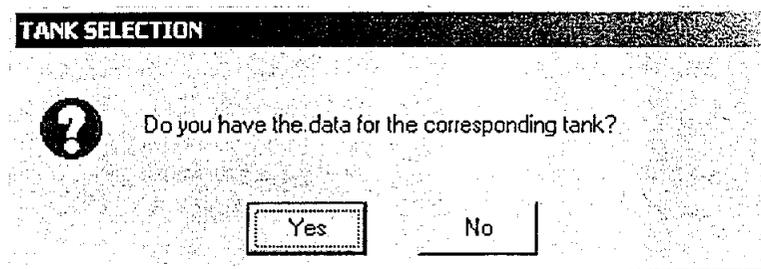


Button	Operation
Cancel	Brings the user to the Existing Water Well module
OK	If Tank Not Found , user gets message that only well data will be entered into the database and returns to the Existing Water Well Module If a tank is selected then the record entered in the ACCESS database.

The next few screens represent what the user sees if they select **Yes** to the question that the tank resides in the entity selected in the Feature Edit screen.



Button	Operation
Cancel	Brings the user to the Existing Water Well module
OK	If "Tank Not Found", user is asked if they have the tank information. If a tank is selected then the record is entered into the ACCESS database.



Button	Operation
No	The user gets message that only well data will be entered into the database and returns to the Existing Water Well Module
Yes	Informs the user to click in the Well Number field to activate the tank module

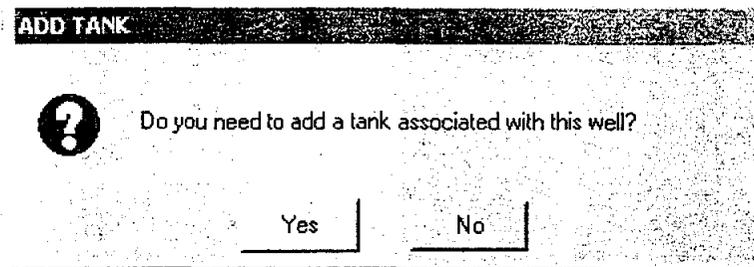
Script: *Well/Tank Selection*

Description: When the well discharges to a Ground or Elevated Storage Tank and the user selects the corresponding radio button, this script runs and allows the user to add tank information.

How To Add Tanks When Editing A Well

When the user chooses to edit a well, see notes below, they also have the option to add a tank.

- If edits to a tank need to be done, the user should select the EDIT action and select the elevated or ground storage tank feature.
- If the user needs to add a tank they are taken through the next series of screens.

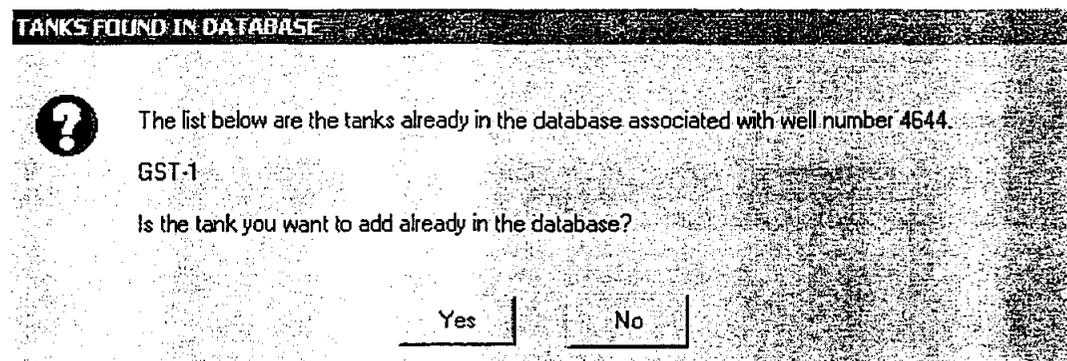


ADD TANK

Do you need to add a tank associated with this well?

Yes No

Button	Operation
Yes	Brings the user to a list of tanks already entered in the database for that well.
No	Brings the user to the Existing Water Well module



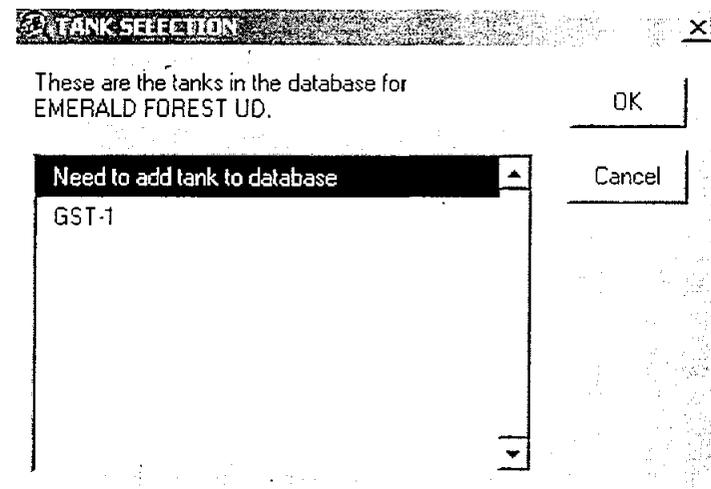
TANKS FOUND IN DATABASE

The list below are the tanks already in the database associated with well number 4644.
GST-1

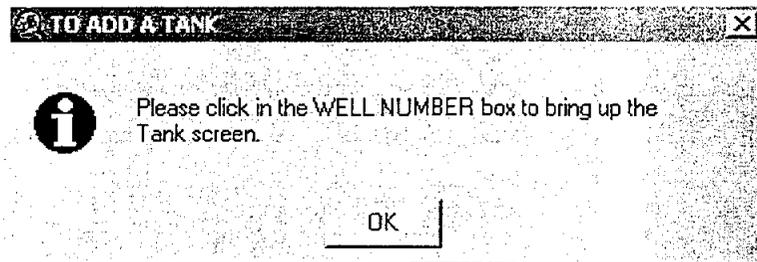
Is the tank you want to add already in the database?

Yes No

Button	Operation
Yes	The tank is already in the database for that well. Brings the user to the Existing Water Well module.
No	Brings the user to a list of tanks in the database for the entity selected in the Feature Edit screen.



Button	Operation
Cancel	Brings the user to the Existing Water Well module
OK	If Need to add tank to database , user must click in the Well Number field in the Existing Water Well module to bring up the corresponding Tank module. If a tank is selected then the record is input into the table in the ACCESS database.



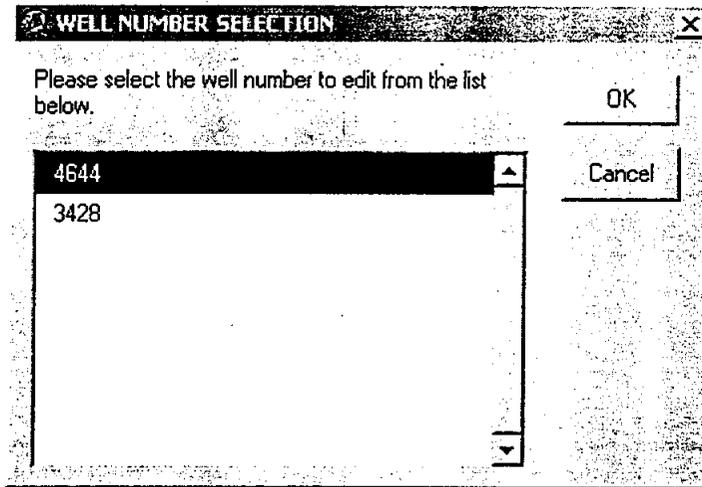
All of these actions are run in the *WellData.Open* script and:

Script: *WellData.txlWellNumber.Click*

Description: Activates the ground or elevated tank module when editing a well.

Notes

When editing a well, the person entering the data is provided with a screen containing the well numbers for the selected entity.



If cancel is selected, the user must hit cancel in the Existing Water Well module. The add button is disabled so no data will be entered into the database.

Ground Storage Tank Module

The user can add data on the ground storage tank that serve the selected entity in this module. There are actually two ways to enter this data. One way to access this module is through the Feature Edit Screen while another is through the Existing Water Well Entry Module. The latter is discussed in greater detail with the Existing Water Well Entry Module description.

Ground Storage Tank	
Please enter the ground storage tank information for: ALBURY MANOR UTILITY COMPANY	
*Tank name or ID:	<input type="text"/>
Tank Capacity:	<input type="text"/> gal
Overflow elevation relative to ground surface:	<input type="text"/> ft
Bottom of tank elevation (bottom elevation of water storage section) relative to ground surface:	<input type="text"/> ft
Tank diameter:	<input type="text"/> ft
<input type="button" value="Cancel Data Entry For Ground Storage Tank"/> <input type="button" value="Add Data For Ground Storage Tank In Database"/>	

Field Name	Required?	Data Format	Notes
Tank Name or ID	Y	Text Field	If ground storage tank does not have a tank name or id, name the tank (District/Service Area) EST-1, (District/Service Area) EST-2, etc. for each district/service area.
Tank Capacity	N	Number Field Value > 0	Capacity should be in gallons.
Overflow Elevation Relative To Ground Surface	N	Number Field Value > 0	Elevation should be in feet with no decimal places.
Bottom of Bowl Elevation Relative To Ground Surface	N	Number Field Value > 0	Elevation should be in feet with no decimal places.
Tank Diameter	N	Number Field	Diameter should be in feet

Button	Operation
Cancel Data Entry For Ground Storage Tank	Takes the user out of the Ground Storage Tank module and back to the Feature Edit screen. No data entered into the database.
Add Data For Ground Storage Tank Into Database	Enters the new entity's information into ACCESS and returns the user to the Feature Edit screen.

Script: *GroundTank.Open*

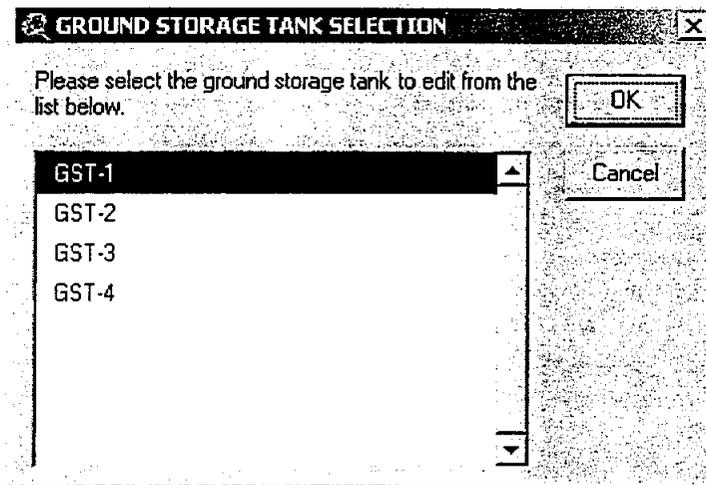
Description: Opens the Ground Storage Tank module.

Script: *GroundTank.lbtGroundAdd.Click*
Description: Adds the ground storage tank data to the ACCESS database. Returns the user to the Feature Edit screen if they selected the module through that screen, or it will bring them back to the Existing Water Well module if they are entering tanks connected to a well (see Existing Water Well module for further explanation).

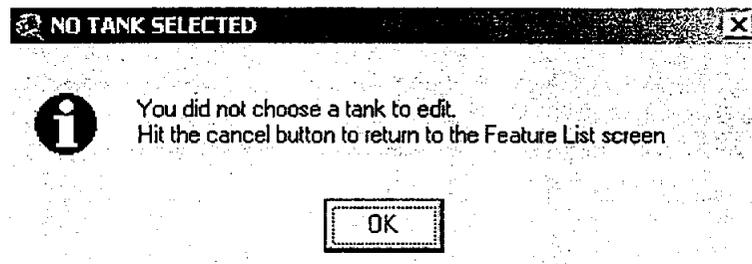
Script: *GroundTank.lbtGroundCancel.Click*
Description: Closes the Ground Storage Tank module and returns the user to the Feature Edit screen or the Well Data module depending on how the user entered the Ground Storage Tank module. No data is entered into the database.

Notes

When editing a ground storage tank, the user is provided with a screen to select from the ground storage tank already entered in the database for the selected entity.



If cancel is selected, the user receives the message below and must hit cancel in the Ground Storage Tank screen. The add button is disabled so no data will be entered into the database.

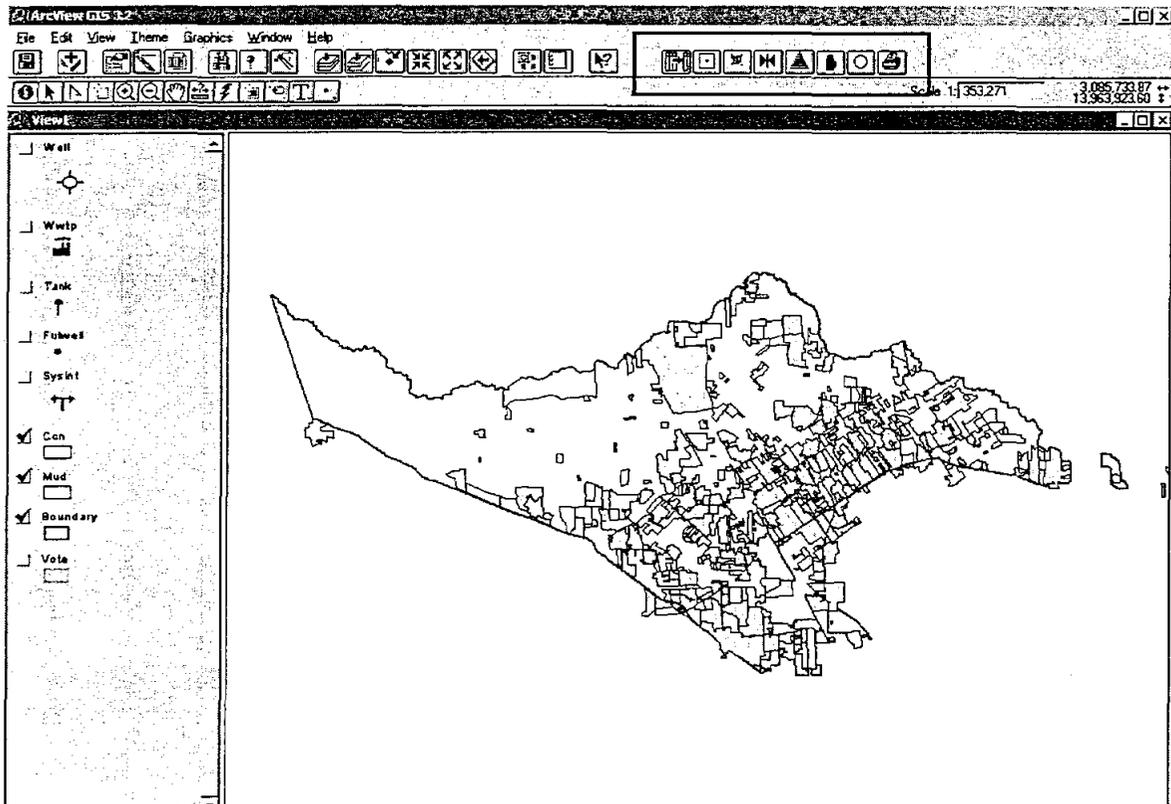


Query and Print Application – nhcrwa_queries.apr

This program file can be run as a fully functioning ArcView session. Views, layouts, and tables can be added to the session, although it is not recommended. The scripts will be situated so that they cannot be removed from the project. This will inhibit any new scripts from being added as well. For any kind of customization work a separate ArcView session should be started.

In the case that the delivered project file, nhcrwa_queries.apr, is somehow lost or corrupted, the scripts and the dialogs will be delivered to the NHCRWA in a separate zip file called **nhcrwa_queries_scripts.zip**. These scripts need only be loaded into a new ArcView session and a new button created in the view window. The installation of the scripts are outlined in Appendix E.

The nhcrwa_queries.apr opens to the screen seen below.



To run the queries there are eight new buttons on the upper right portion of the view screen (in the red box in the above screen). Each one runs a separate application, which are described in detail below.

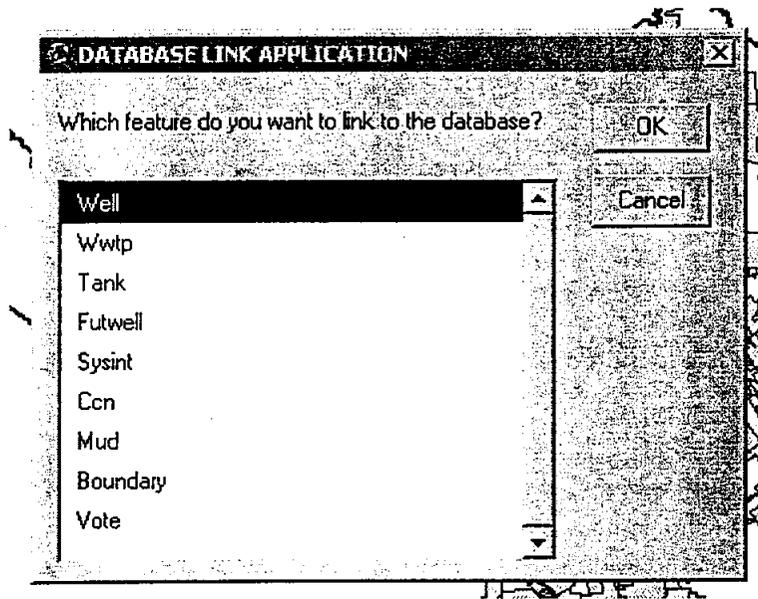
The queries will be described in the same fashion as the data entry module descriptions.

QA/QC-Link Application

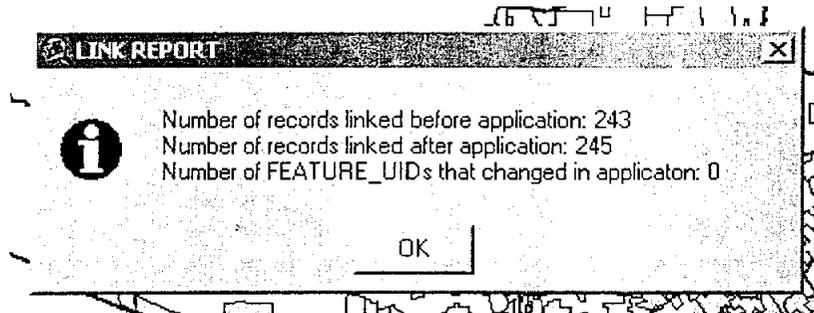
An application was requested by the NHCRWA that would link the attribute data in the GIS coverages to the corresponding feature tables in the ACCESS database. This application populates the USER_ID fields in the coverage tables with the USER_IDs created in the ACCESS tables. The coverages and the database then have a mutual field and the ACCESS tables can be brought into ArcView via an ODBC Connection and linked to the coverages. A report is presented to the user detailing how many features in the coverage are linked before and after the application was run, and how many features changed USER_IDs.



Upon activating this application, the user is provided with the list box shown below. The user is to select the theme they wish to link the features of the coverage to the feature table in ACCESS.



When the application has finished linking the attributes, the user is provided with the report listed below. In this report, 243 polygons were linked to the database before running the application. An additional two were linked after running the application. The report will also keep track if USER_IDs change in the database. For example, if a well was removed from the database its link will change from the current number to a 0 and a 1 would be listed in the report below.



Script: QA/QC Start
Description: Presents the user with the list box of themes in the view window. Depending upon the selection, runs the appropriate script for linking the feature to the database.

Script: QA/QC Ccn
Description: Links the CCN (CCN or Service Area) coverage features to the database

Script: QA/QC Mud
Description: Links the MUD (MUD or District) coverage features to the database

Script: QA/QC Sysint
Description: Links the SYSINT (System Interconnects) coverage features to the database

Script: QA/QC Tank
Description: Links the TANK (Elevated and Ground Storage Tanks) coverage features to the database

Script: QA/QC Well
Description: Links the WELL (Existing Water Well) coverage features to the database

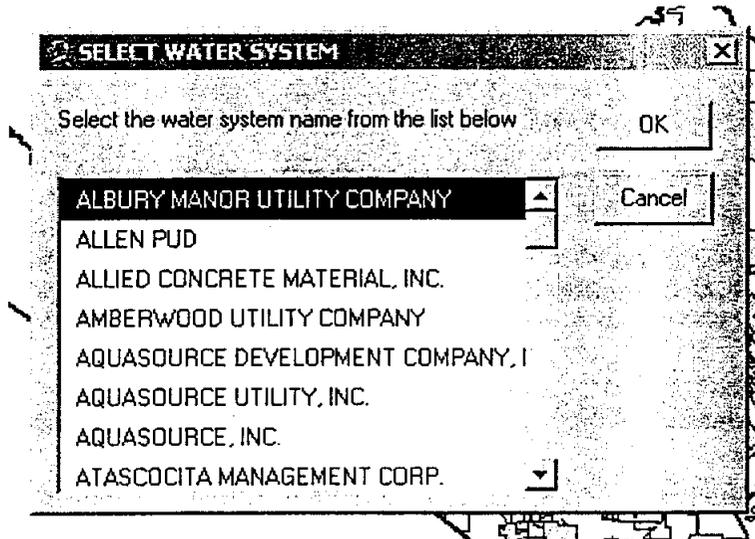
Script: QA/QC Wwtp
Description: Links the WWTP (Wastewater Treatment Plant) coverage features to the database

Well Query

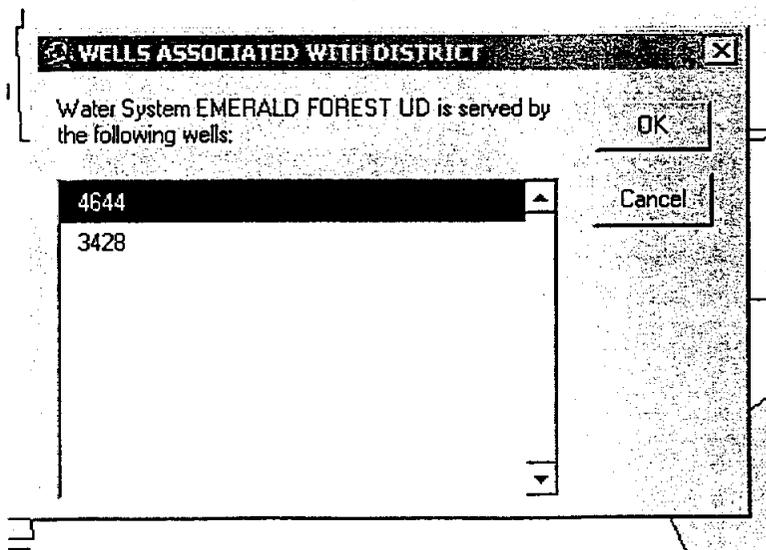
This application allows the user to select a water district from a drop down list, and the script will determine what wells serve the selected district. The application then zooms the view window into the area of the selected district and labels the wells and districts seen on the screen.

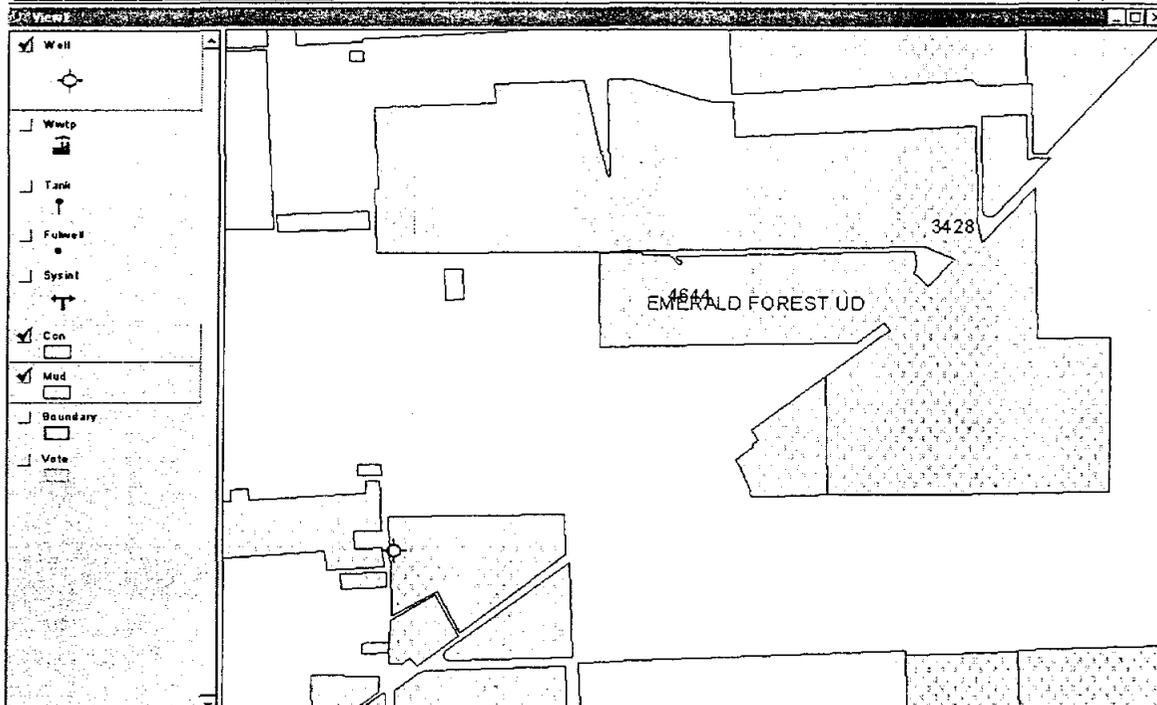


Upon activating this application, the user is provided with the list box shown below. The user is to select the water district.



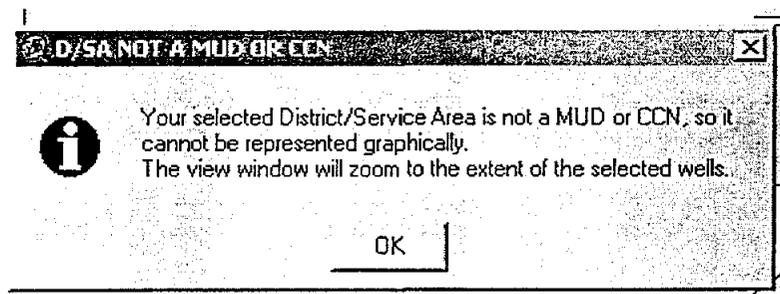
The application retrieves from the database the well numbers that are associated with the selected entity, displays a report (see screen) and zooms the view window to the selected entity and labels the district and the wells. The wells listed in the report are left highlighted so they can be seen (see screen).



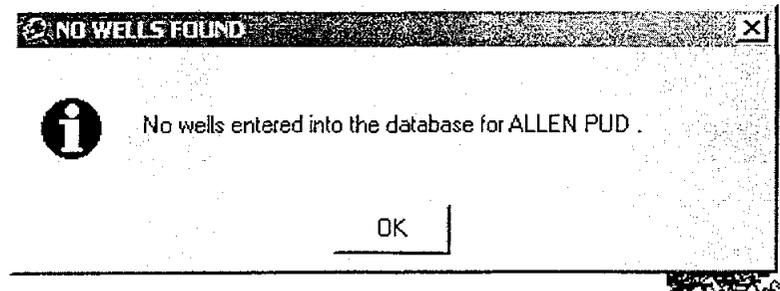


There are two main errors that a user can run into while running this application. They are listed in the screens below and the application will just quit running when the user selects OK.

1. The selected entity is not in the MUD or CCN coverage



2. No wells have been entered into the database for the selected entity



Script: WellsThatServeDistrict

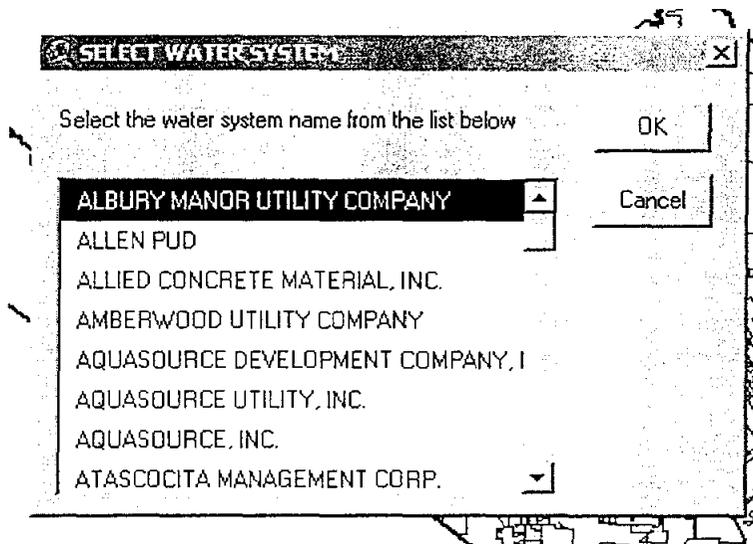
Description: Finds the well numbers from the database that serve the selected entity and zooms the view window to the extent of the entity and the selected wells.

District/Service Area Features

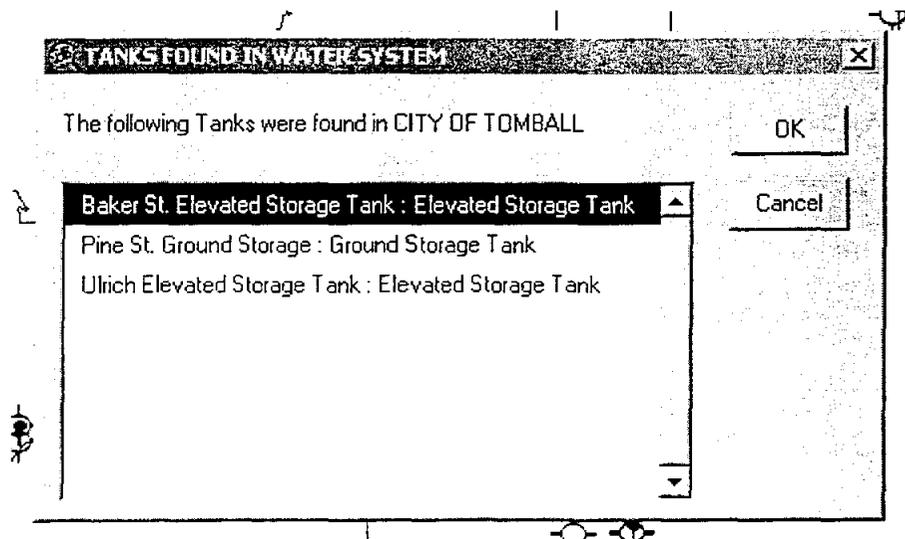
This application finds the wells, tanks (ground and elevated tanks), and wastewater treatment plants that are located within the boundaries of a selected water district. This application does not find those features that **serve** the district only those features **within the bounds** of a district. A report is presented for each feature and the View window zooms to the district in question and labels all features.

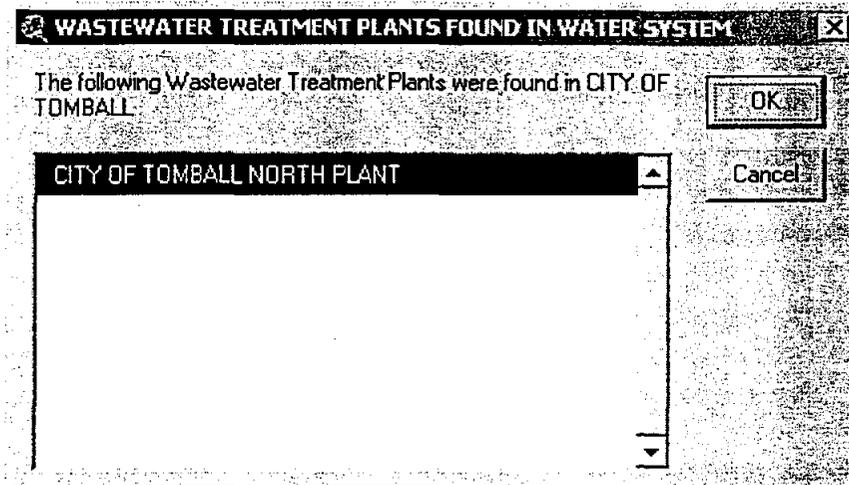
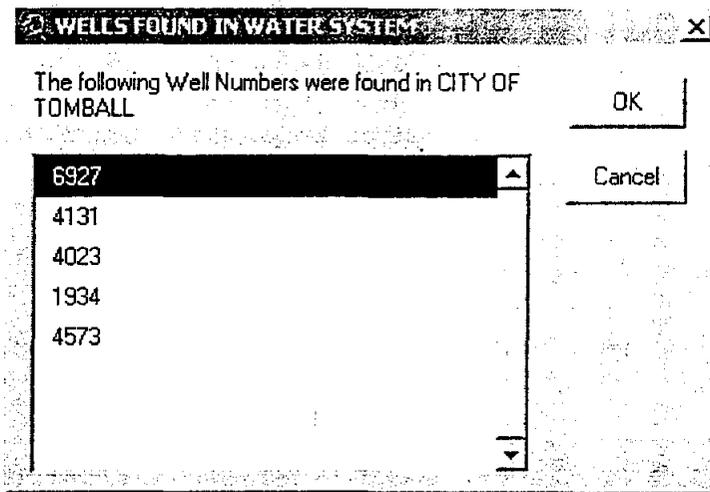


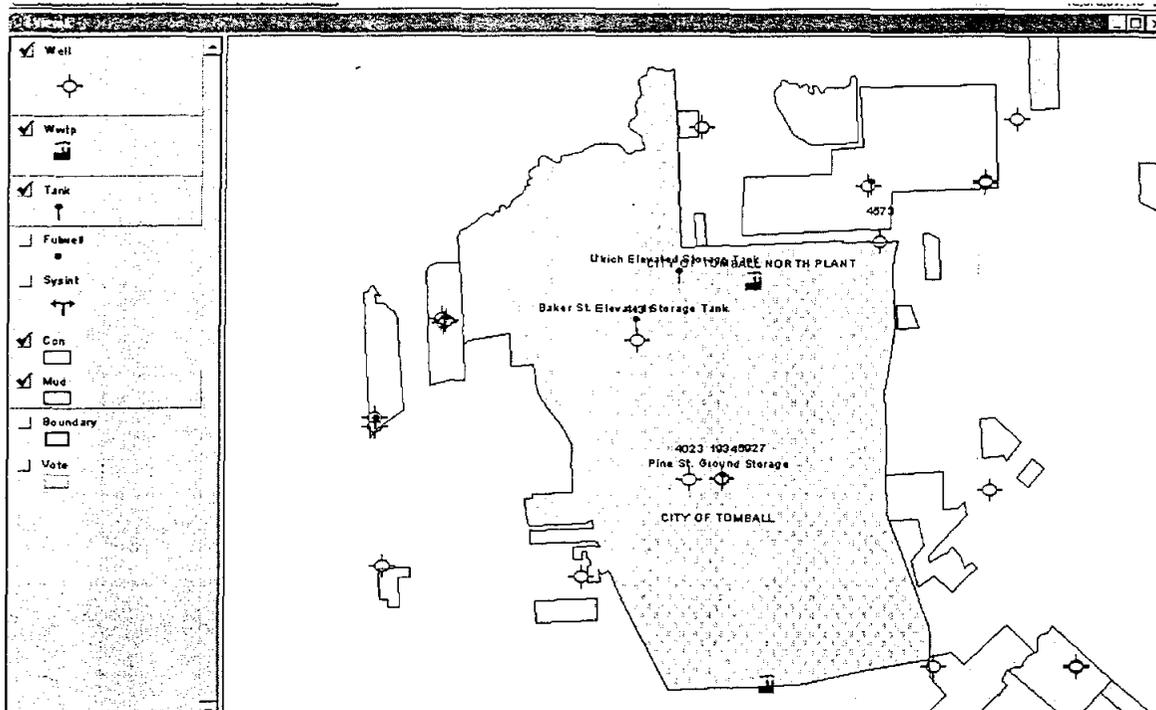
Upon activating this application, the user is provided with the list box shown below. The user is to select the water district.



The application retrieves from the database the features described above, displays a report for each feature and zooms the view window to the selected entity and labels all features.

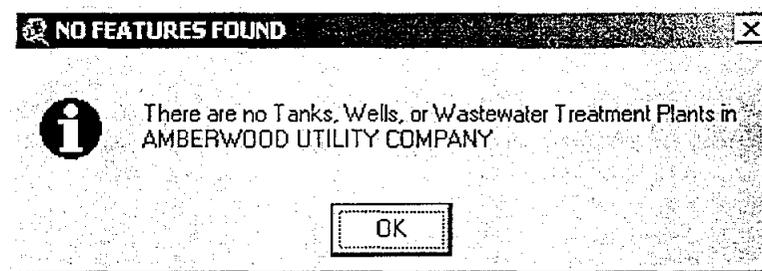




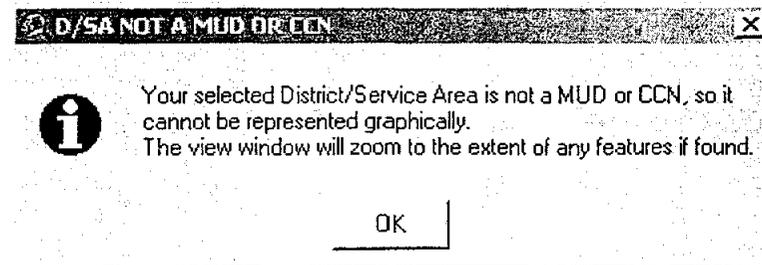


There are two main errors that a user can run into while running this application. They are listed in the screens below and the application will just quit running when the user selects OK.

1. There are no features in the database for the selected entity.



2. The selected entity is not in the MUD or CCN coverage. This error does not stop the application. The view window will zoom to the features if any are found.

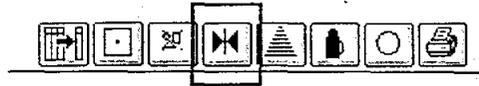


Script: District/Service Area Features

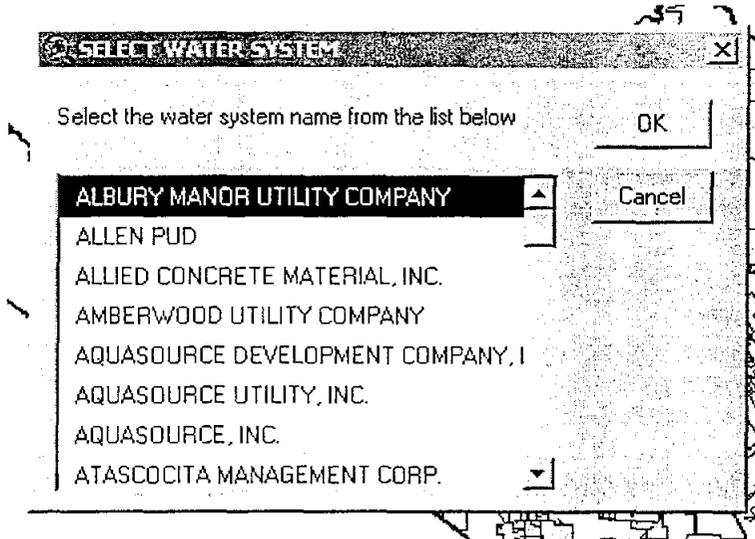
Description: Finds the tanks, wells, and wastewater treatment plants that fall within the selected entity's boundaries and zooms the view window to the extent of the entity and the selected features.

System Interconnect Query

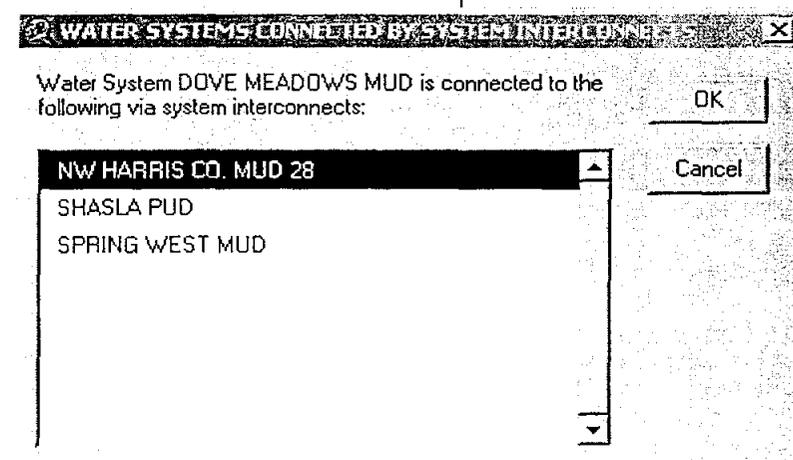
The application determines the system interconnects that connect a selected district to other districts by means other than NHCRWA supply lines. The report includes the names of the entities connected to the selected district. The view zooms to the extent of the selected district labels all districts seen in the view window.

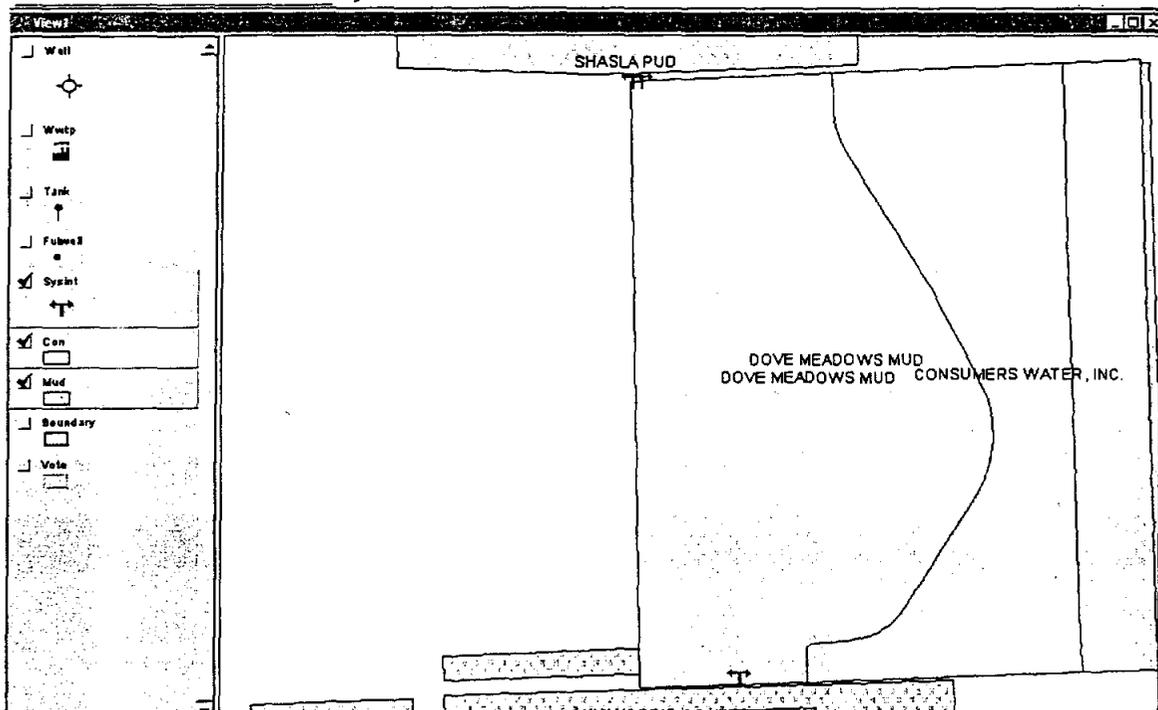


Upon activating this application, the user is provided with the list box shown below. The user is to select the water district.

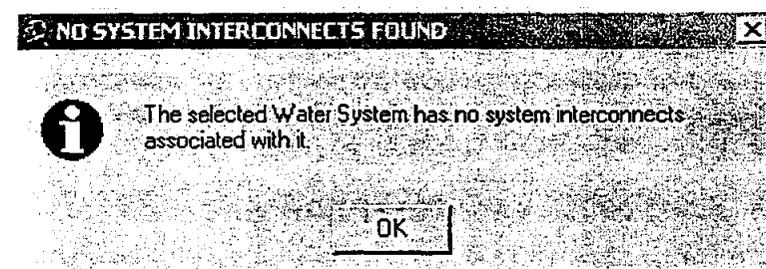


The application retrieves from the database the system interconnects, displays a report with the names of the districts or service areas the selected entity is connected, and zooms the view window to the selected entity and labels all features.





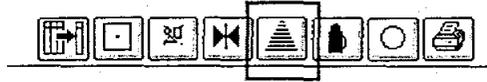
The only error a user will encounter is if the selected entity has no system interconnects entered into the database. The application will stop running when OK is selected.



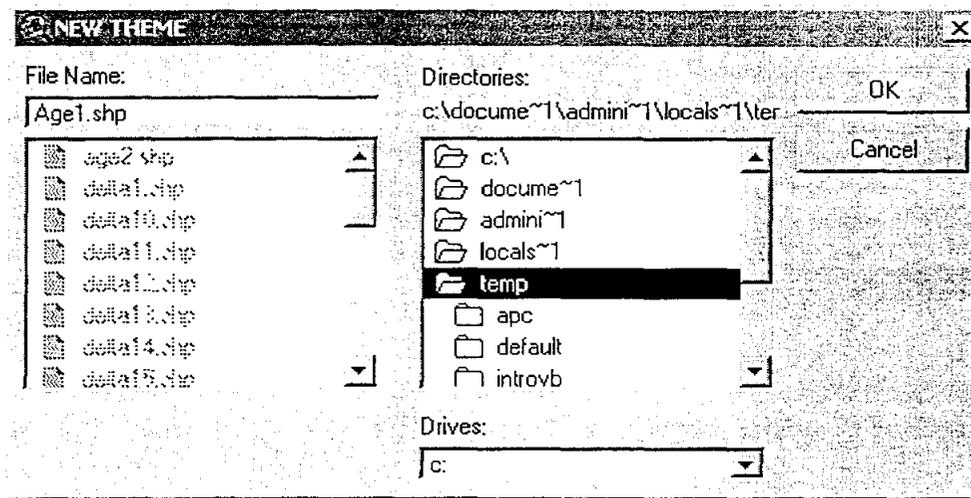
Script: System Interconnects
 Description: Finds the system interconnects for the selected entity and zooms the view window to the extent of the entity and the selected features.

Age of Wells Query

An important factor of this study was obtaining data on the ages of the wells within the NHCRWA boundaries. This application takes the date constructed information from the ACCESS database and applies it to the well coverage so that the ages can be viewed spatially. The age groups are represented by a graduated color legend. The script creates a new shapefile that can be stored and manipulated at a later date.



Upon activating this application, the user is asked where they would like to store the new shapefile. The default name for the file is **Age1.shp**.



The application adds the new shapefile to the project and the user can determine the age range of the well by the graduated color legend. This file can remain in the query project or be deleted and added to other ArcView projects.

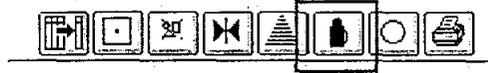


Script: *Age of Wells*

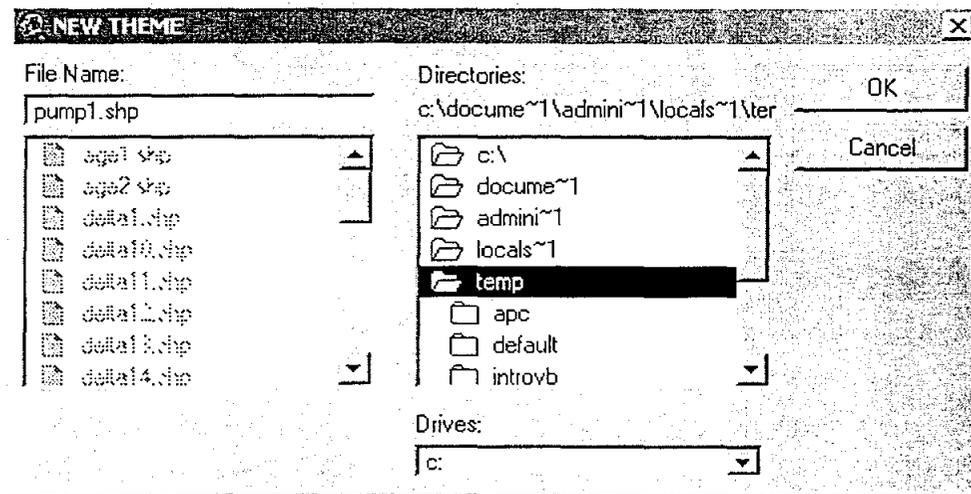
Description: Determines the age of the wells based on the "Date Constructed" field in the WELL table in the ACCESS database. A new shapefile is created with a graduated color legend for the ages of the wells.

Well Pumpage Query

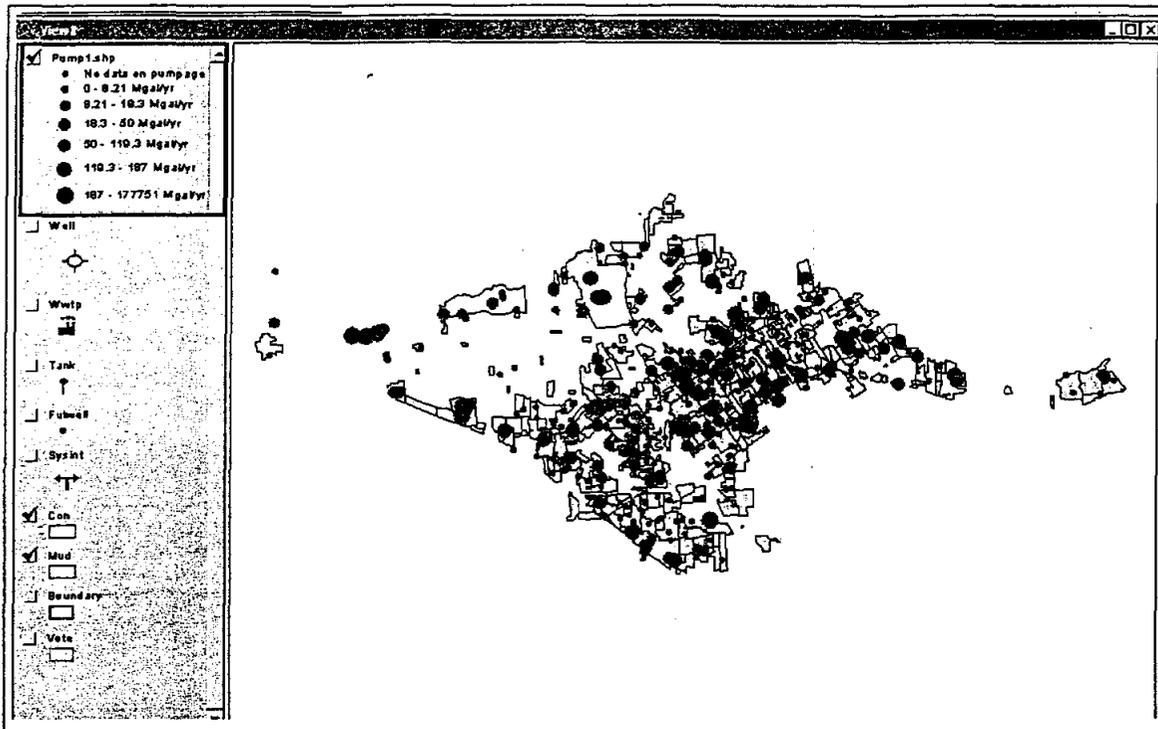
The well pumpage query is quite similar to the age of wells query, but in this instance the application is pulling data on the annual well pumpage from the database. The pumpage groups are represented in this application by a graduated symbol legend. This script creates a new shapefile that can be stored and manipulated at a later date.



Upon activating this application, the user is asked where they would like to store the new shapefile. The default name for the file is **Pump1.shp**.



The application adds the new shapefile to the project and the user can determine the age range of the well by the graduated color legend. This file can remain in the query project or be deleted and added to other ArcView projects.



Script: *Well Pumpage*

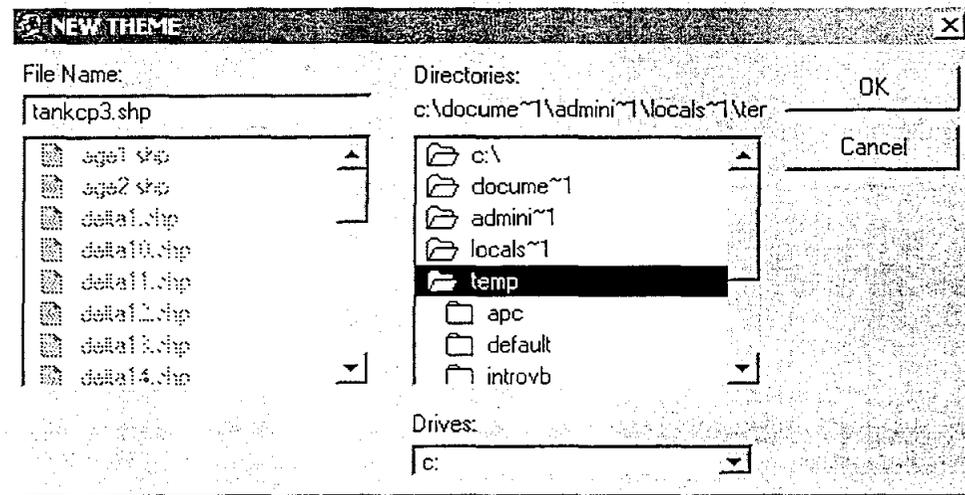
Description: Determines the annual pumpage of the wells based on the "Well_Ann_Pump_Rate" field in the WELL table in the ACCESS database. A new shapefile is created with a graduated symbol legend for the pumpage values of the wells.

Tank Capacity Query

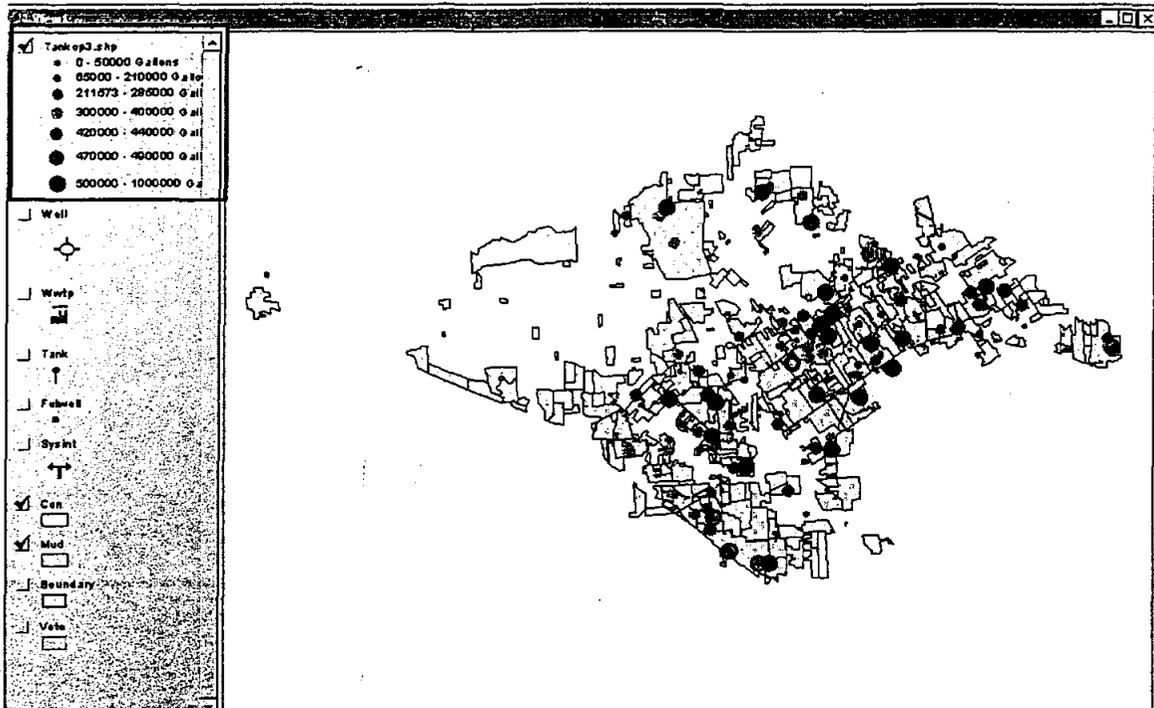
In this application a new shapefile is created representing the tank capacities retrieved from the database. This new file includes the elevated and the ground storage tanks. The capacity groups are represented by a graduated symbol legend.



Upon activating this application, the user is asked where they would like to store the new shapefile. The default name for the file is **tankcp1.shp**.



The application adds the new shapefile to the project and the user can determine the capacity of the well by the graduated symbol legend. The file can remain in the query project or be deleted and added to other ArcView projects.



Script: TankCapacity

Description: Determines the capacity of the tanks based on the "Tank_Capacity" field in the TANK table in the ACCESS database. A new shapefile is created with a graduated symbol legend for the capacity values of the tanks.

Print Application

This application allows the user to select the page size, orientation, and title of a map layout. It will take the current view and apply it to the layout screen. The user is asked to preview or directly print the layout. This layout is stored in the query project. The name of the layout is the name the user enters in the **ENTER DATA FOR LAYOUT** screen for a map title. If the user wishes to use this layout in other ArcView projects, it can be stored in as a template. See ArcView help for details on templates.

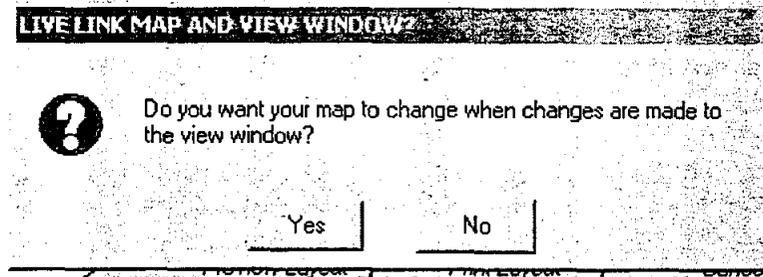


Upon activating this application, the user is asked to provide some information on the page size, orientation, and title of their map.

Field Name	Required?	Data Format	Notes
Select the page size for your layout:	Y	List Box	Allows the user to select page size from 8.5x11, 11x17, 36x48.
Select paper orientation:	Y	Radio Button	Capacity should be in gallons.
Title of map:	Y	Text Field	

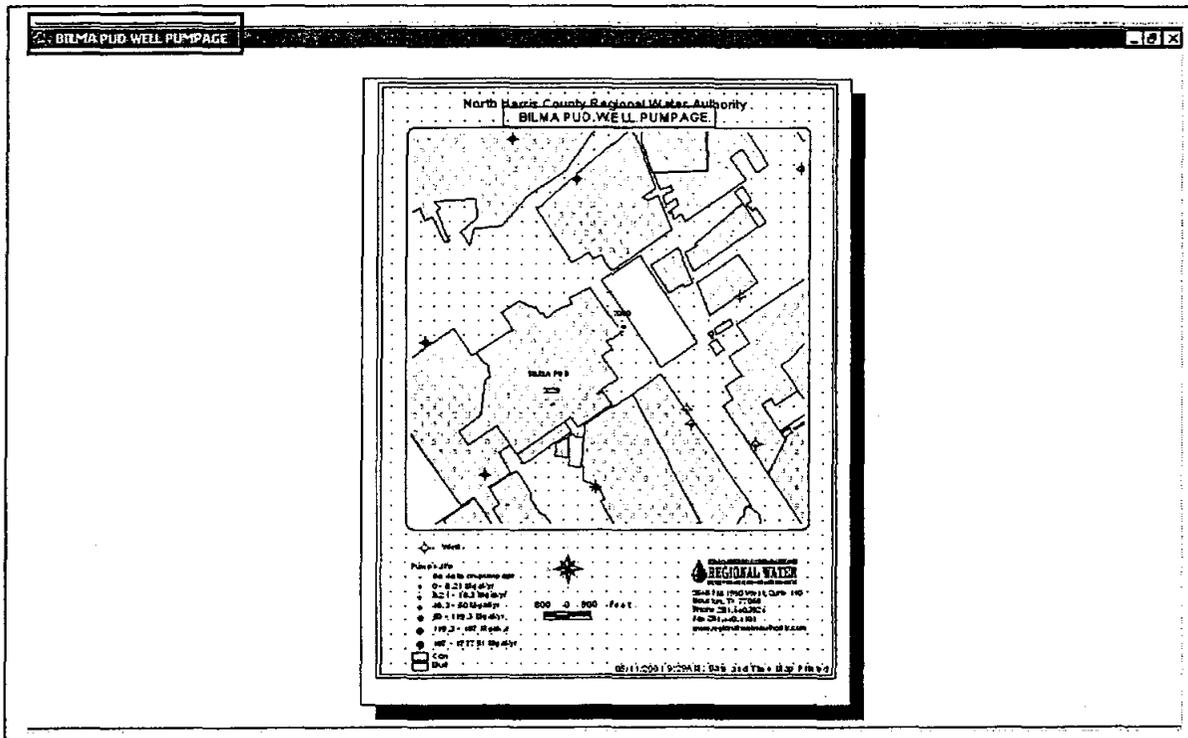
Button	Operation
Preview Layout	Opens the layout window and the user can modify, save, or print the map.
Print Layout	Sends the map directly to the printer.
Cancel	Stops the application and returns the user to the view window.

Once the user selects to either **Preview** or **Print** the map, they are presented with the question below.



This question means if the user wants the map layout to be **live linked** to the view window. Live linked means that when changes are made in the view window, such as turning on or off themes or changing the scale, the modifications will also occur in the map layout. If the user says **NO** to the question then they will receive a snap shot of what is in the View window and it will not change.

If the user selects **Preview**, they are presented with the layout window. They can move text, increase or decrease the size of the graphics, etc, etc. They can customize the map to any format they wish.



The title of the stored layout (see red box) is the same as the title given to the map.

Script: *Print.Open*
Description: Opens the print screen dialog. Asks the user for page size, orientation, and map title.

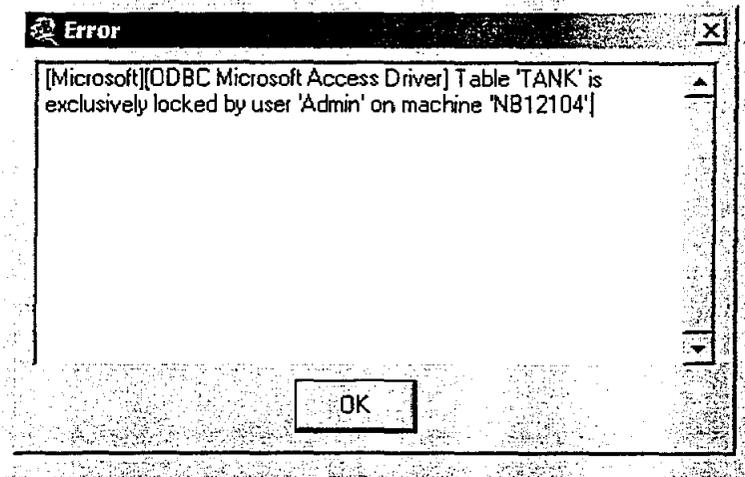
Script: *Print.IbtPrintPreview.Click*
Description: Opens the layout window and allows the user to preview the map before sending it to the printer.

Script: *Print.IbtPrint.Click*
Description: Sends the map directly to the printer.

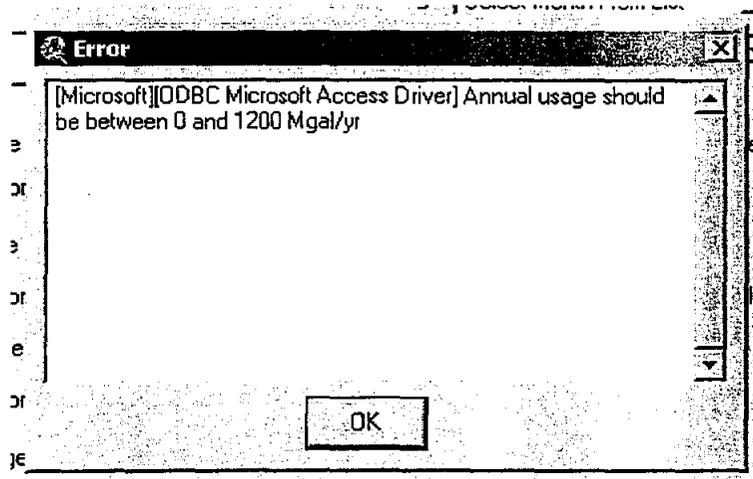
Script: *Print.IbtPrintCancel.Click*
Description: Cancels the print application and sends the user to the view window.

Troubleshooting

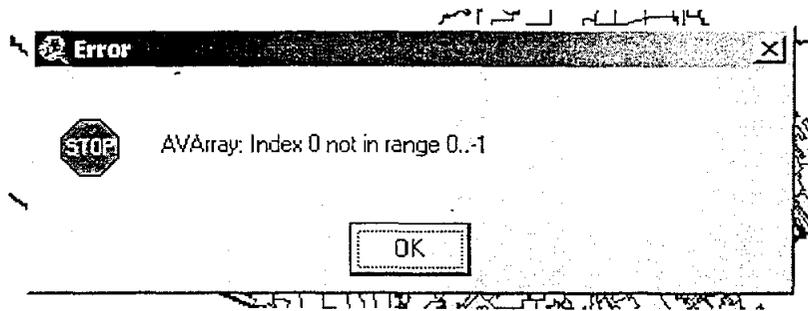
This is only a short list of the possible error a user may receive while using the module_dataentry or nhcrwa_queries ArcView projects.



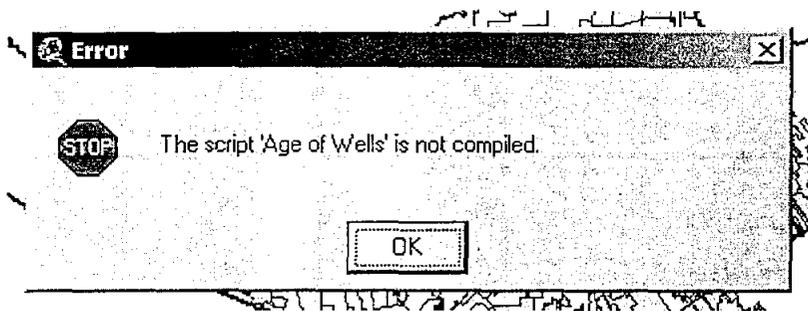
If the user receives this error message, then the table listed on the screen is in DESIGN mode in ACCESS. Simply select OK, close the application, close the DESIGN screen in ACCESS, and rerun the application.



A user will receive this message when they try to add a value not within a permitted range set in the ACCESS database. In the above case, the value cannot exceed 1200. When the user selects OK, they are shown a screen telling them the database is not updated, and returned to the Feature Edit screen. No data is entered into the database.



When a user encounter this error message, they should select OK, end the application and inform the administrator or programmer of the error.

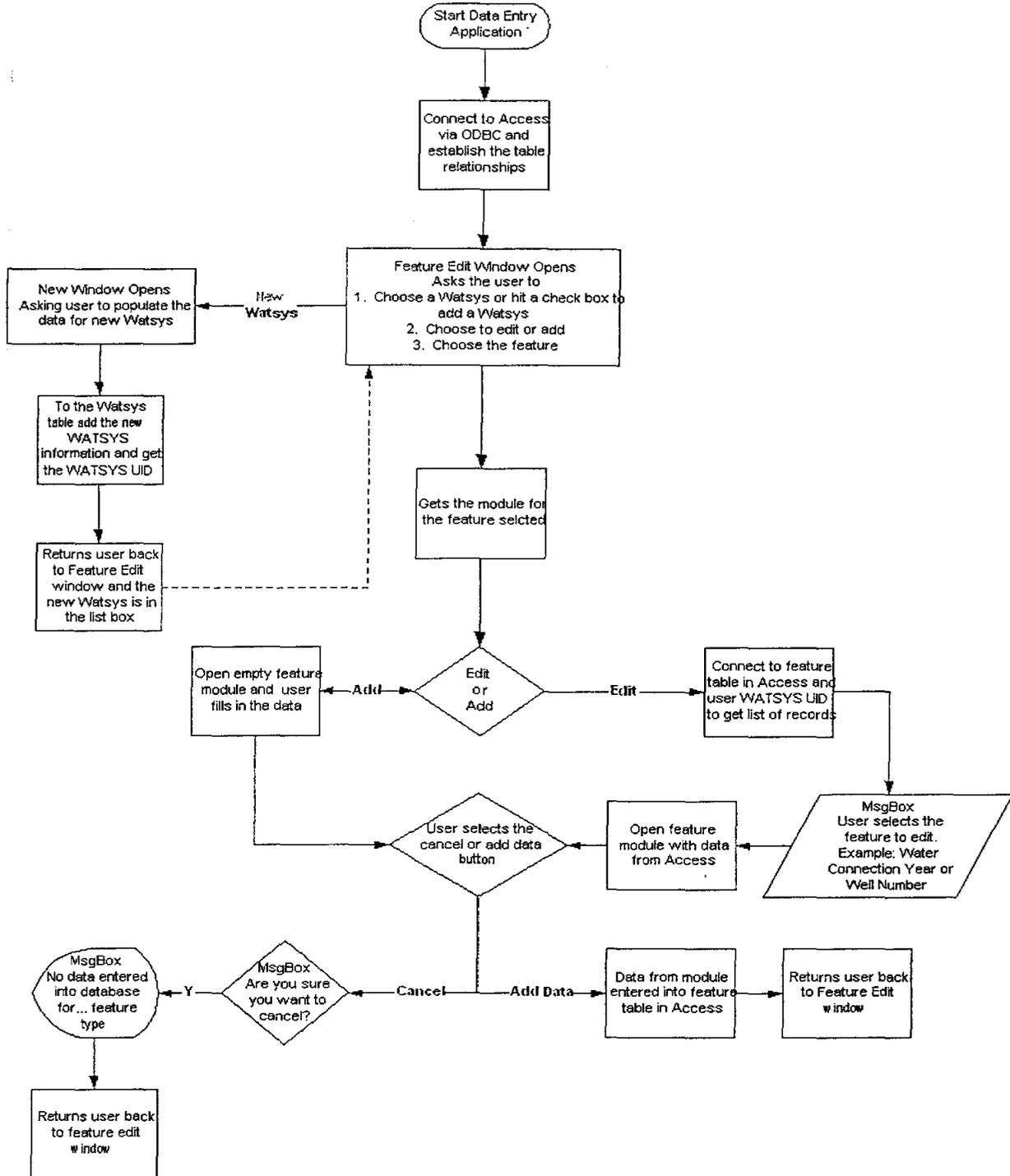


When a user encounters this error message, they should select OK, end the application and inform the administrator or programmer of the error.

Work Flow Diagrams

Exhibits IV-1 – IV-19

Exhibit IV-1
Basic Data Entry Application
Feature Edit Module
Work Flow Diagram



**Exhibit IV-2
New District/Service Area Module
Work Flow Diagram**

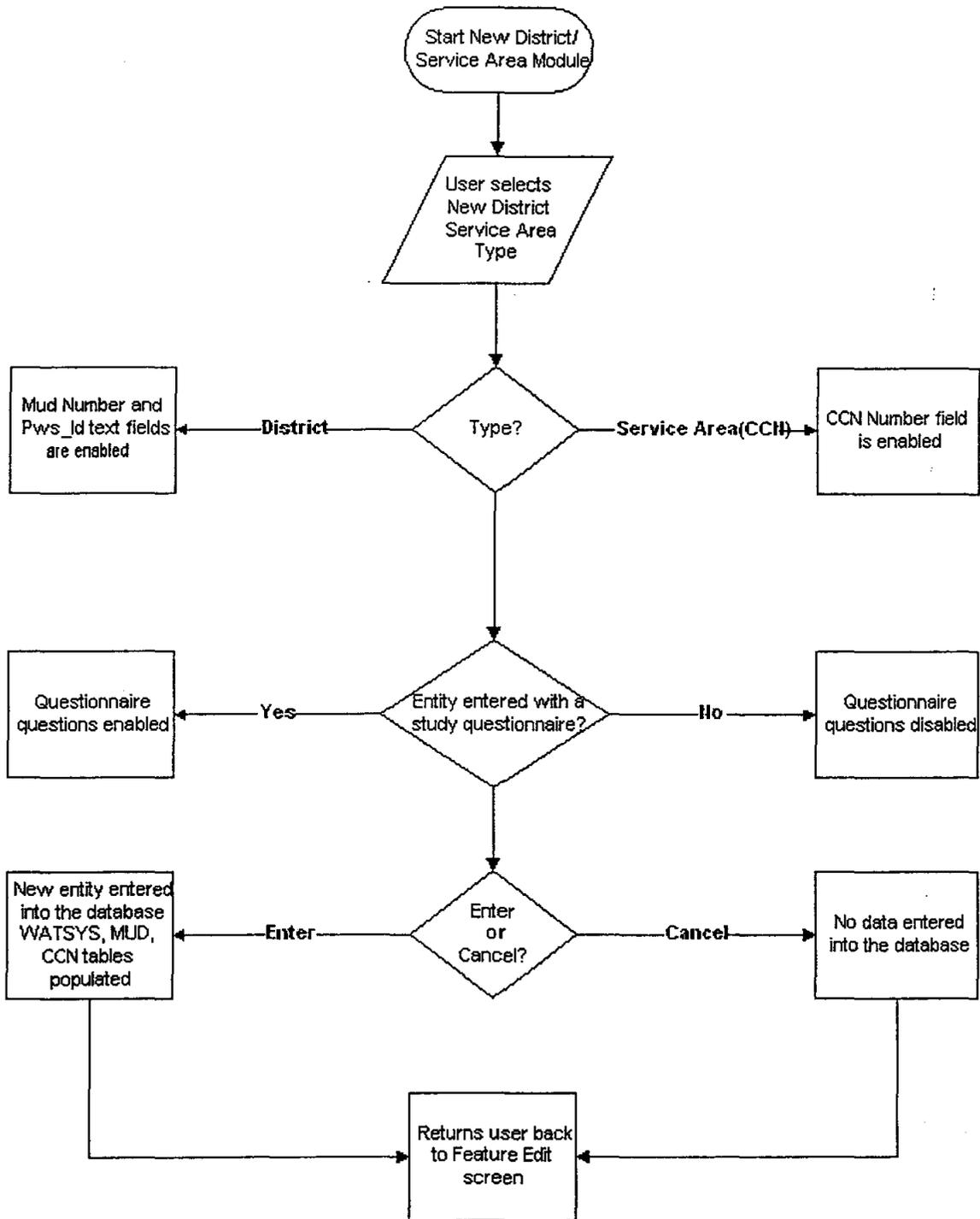


Exhibit IV-3 Contact Information Module Work Flow Diagram

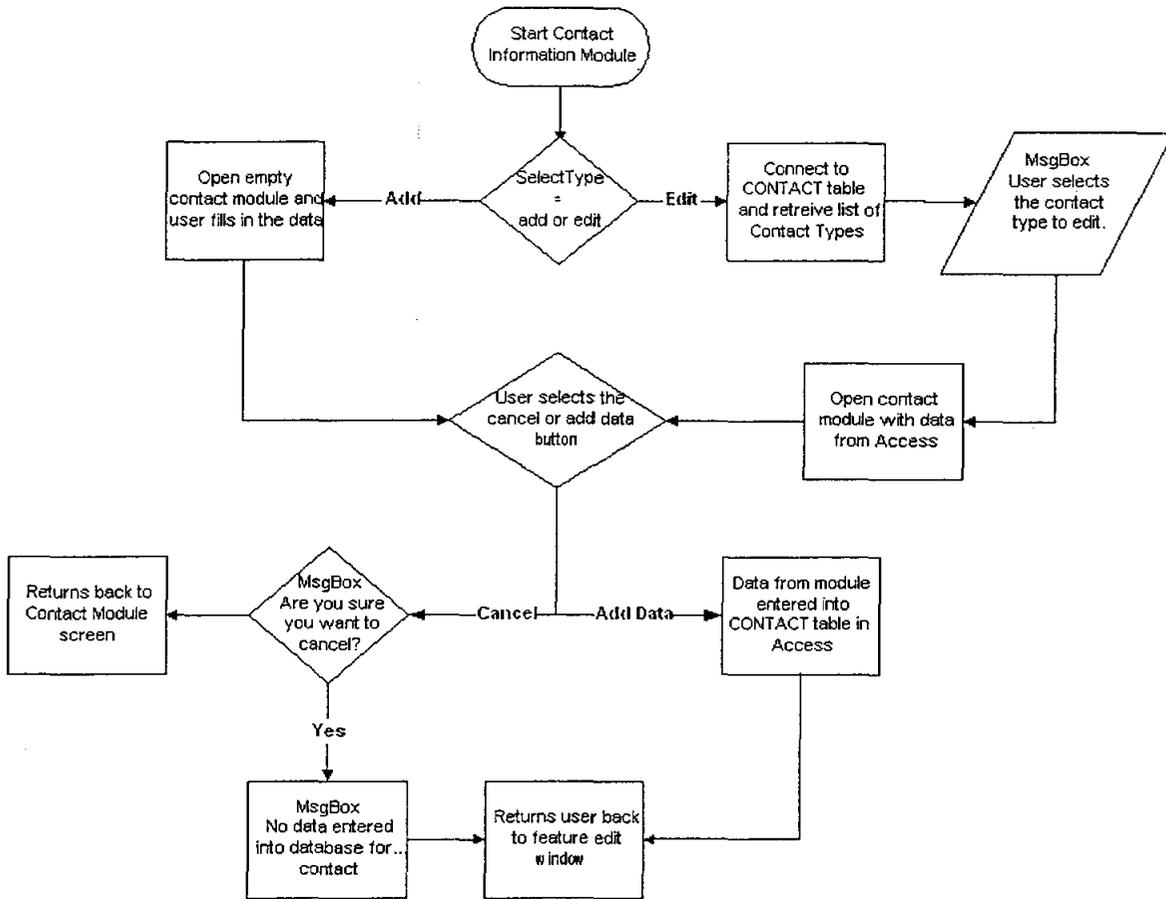


Exhibit IV-4 Water Connections Module Work Flow Diagram

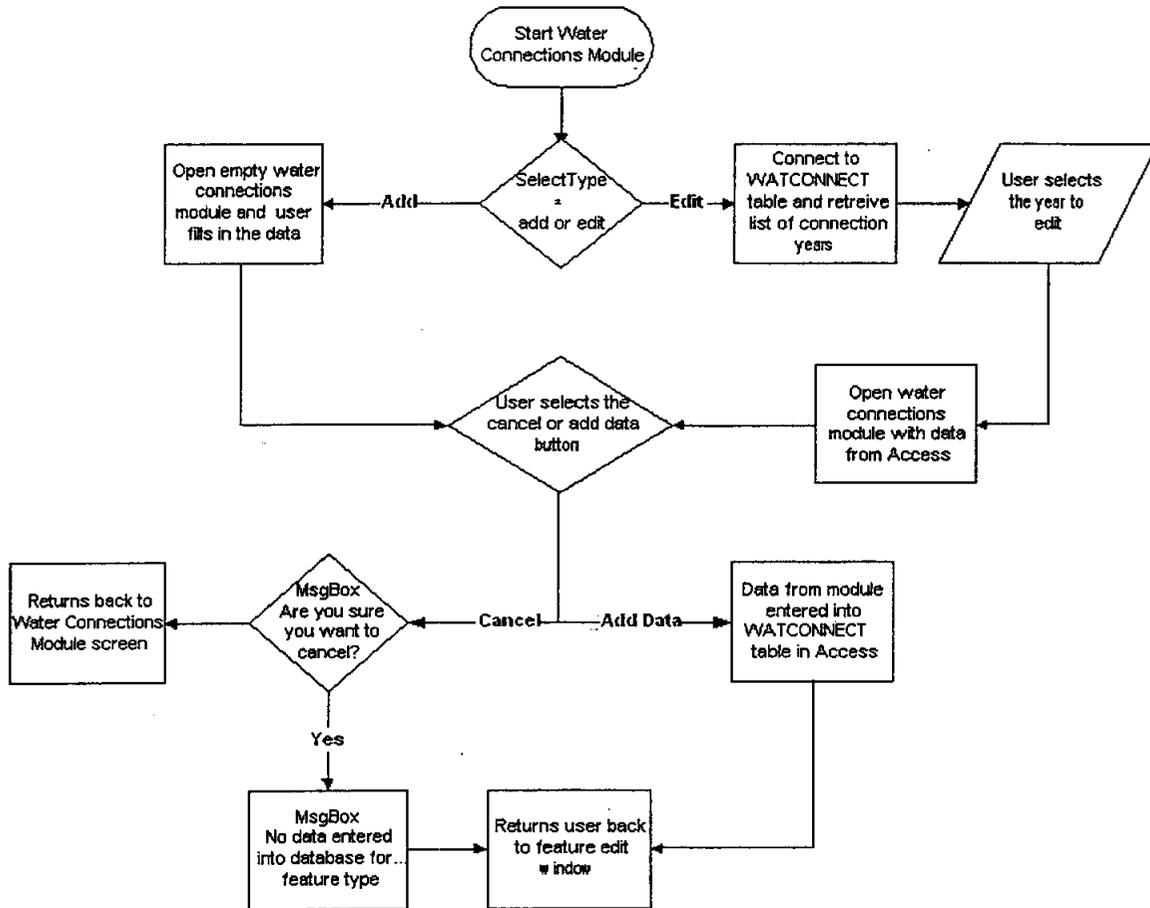


Exhibit IV-5 Potential Water Connections Module Work Flow Diagram

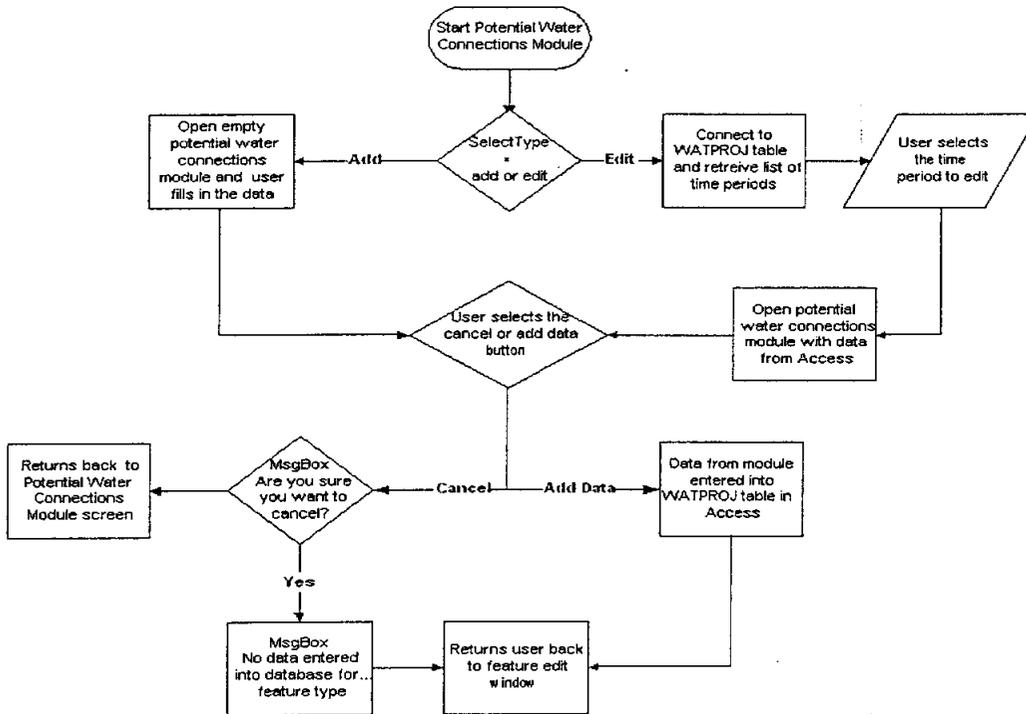


Exhibit IV-6 Elevated Storage Tank Module Work Flow Diagram

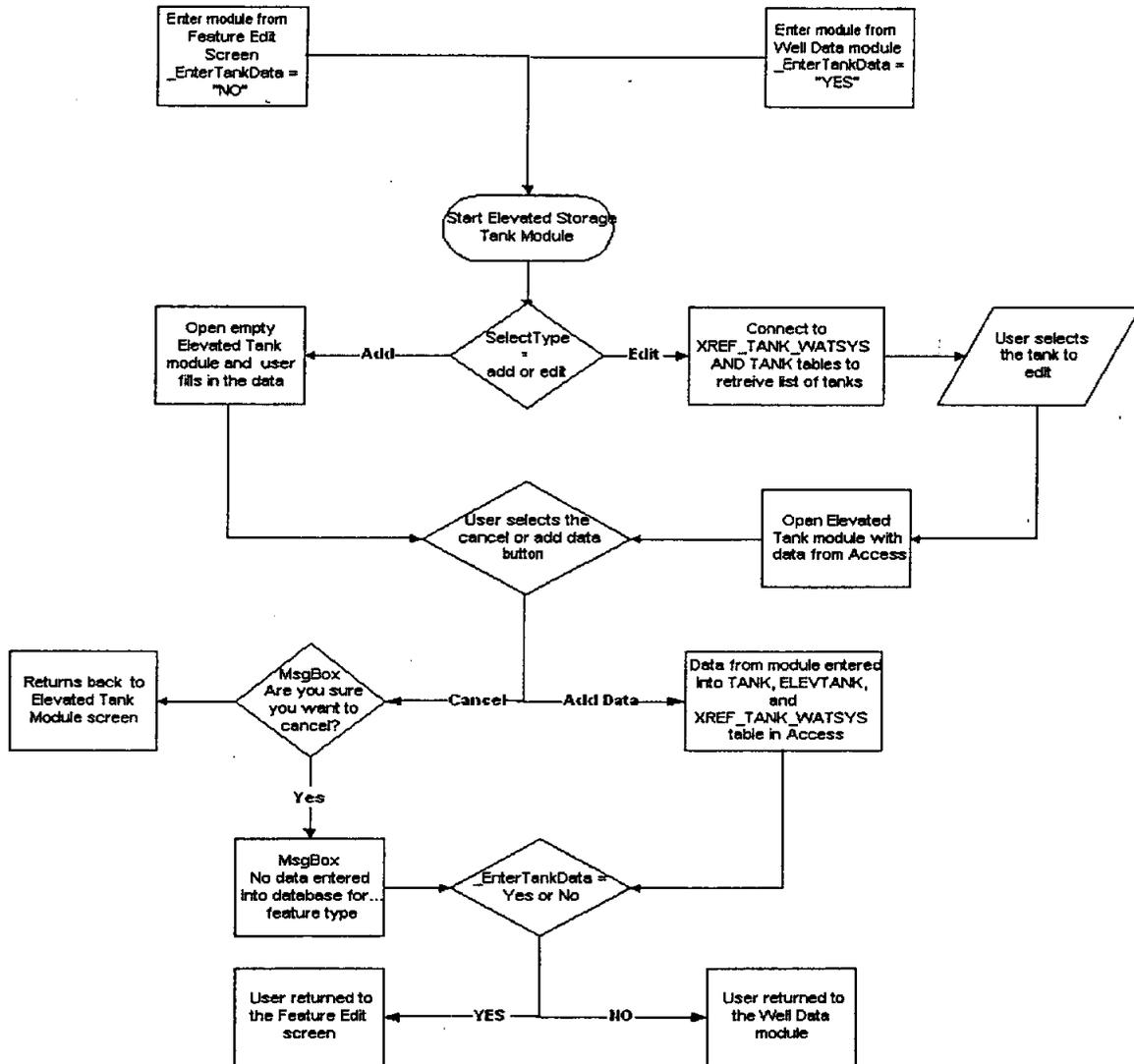


Exhibit IV-7 Existing System Interconnects Module Work Flow Diagram

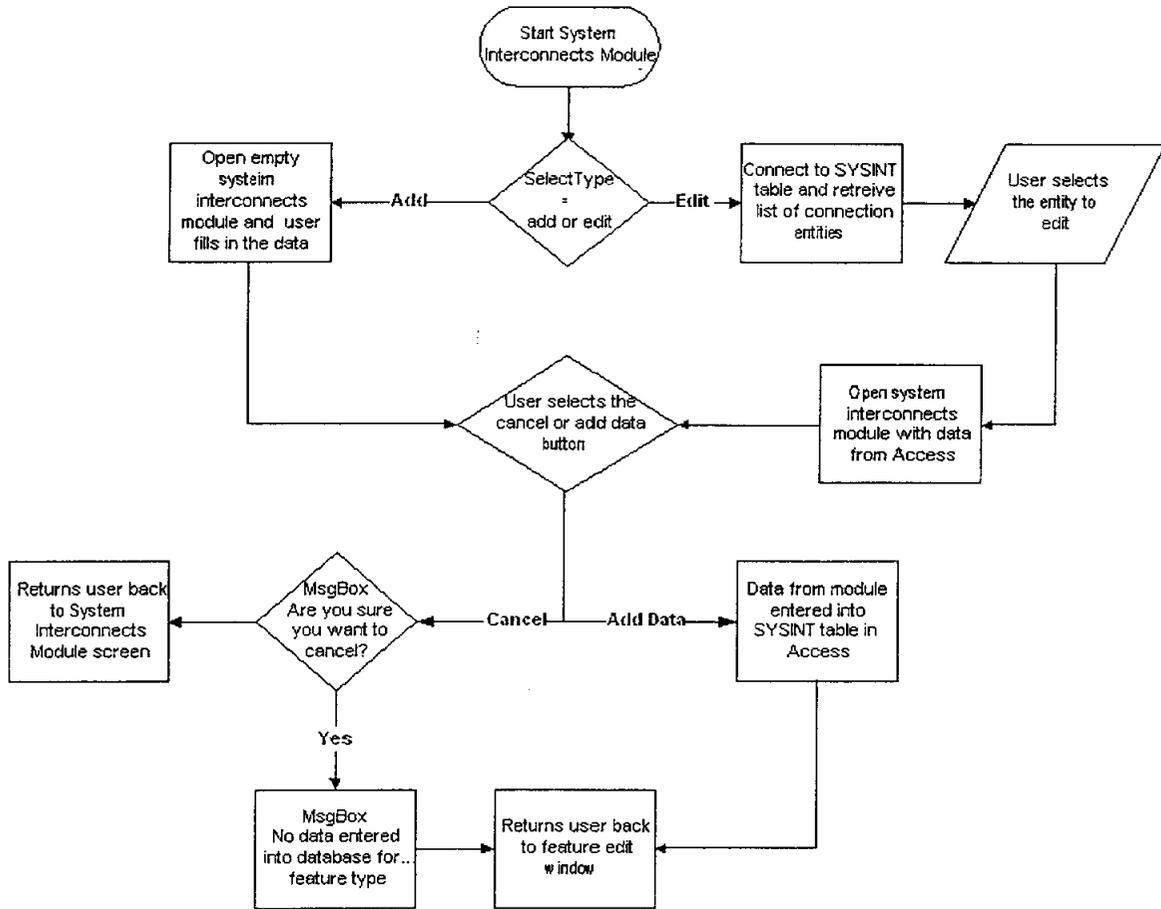


Exhibit IV-8 Wastewater Treatment Plants Module Work Flow Diagram

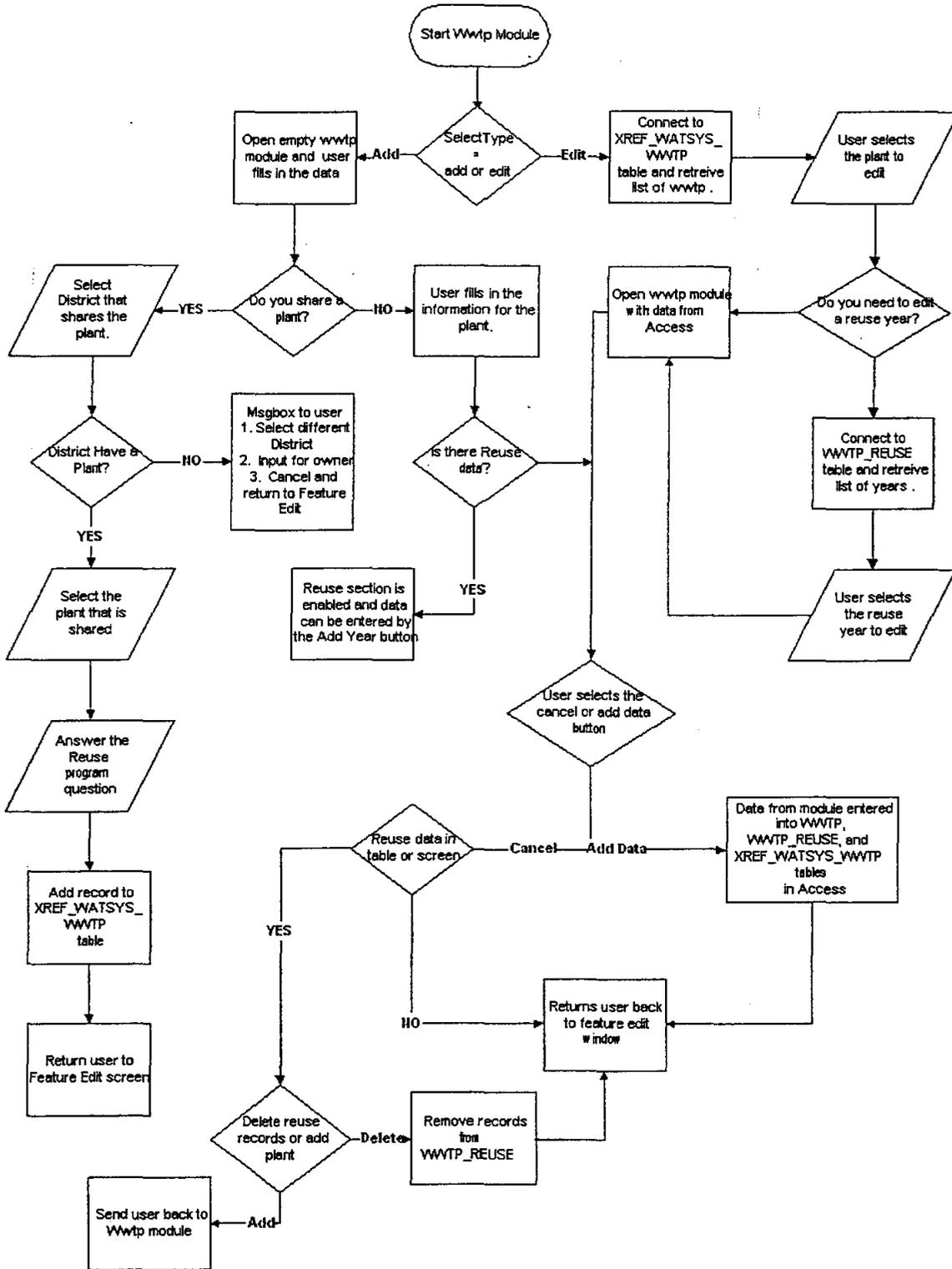


Exhibit IV-9 Non-Potable User Module Work Flow Diagram

