

Esri Southwest Conference
December 2-4, 2014 | Santa Fe, NM

WORK IN STREETS

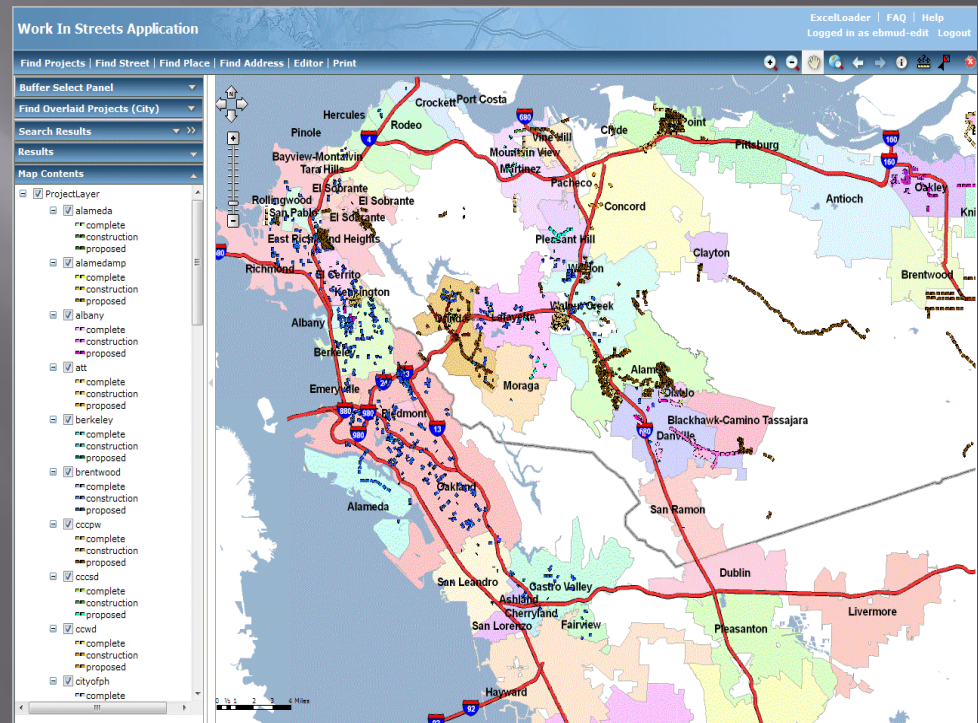
**A Web Application That Can
Save You Money**

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Topics

- ▣ Problem
- ▣ Background
- ▣ Applicable to Cities & Counties
- ▣ Architecture
- ▣ Application
- ▣ Training and Costs
- ▣ Benefits
- ▣ Conclusion

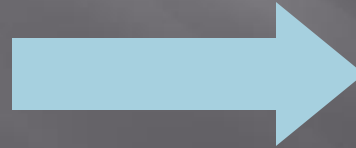


Problem

- ▣ Lack of coordination between Cities, Counties, and Utilities for work being done in the streets.
- ▣ Citizens have to deal with multiple road construction projects done over a long period of time on the same road.
- ▣ No sharing of costs amongst agencies and utilities

Problem

- ▣ First a City/County Paves a Street



This takes about 2 weeks

Problem

- ▣ Then a Water Utility comes in and installs a pipe in the street.



This takes about 3 more weeks

Problem

- Then an Electric or Gas Utility comes in and installs a pipe in the street.



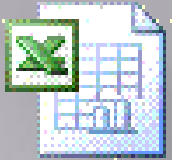
This takes about 3 more weeks

Problem

- ▣ So the Citizens dealt with approximately 8 weeks of construction and in the end the road pavement was patched up.



Background



- ▣ Utility Coalition Meeting
 - Individual Excel spreadsheets
 - Discussion with no visuals

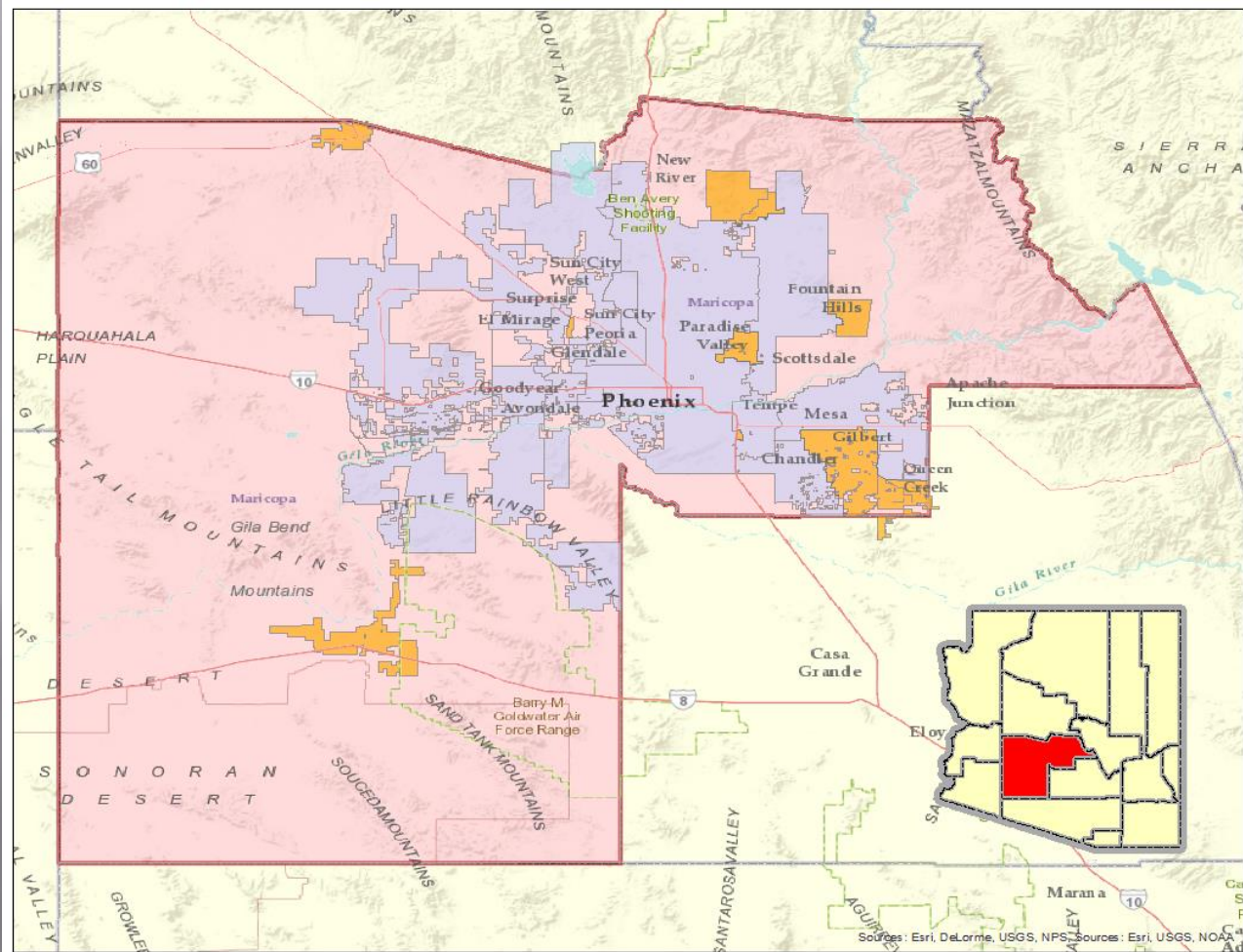


- ▣ Idea (EBMUD)
 - GIS Web Application (Visual)
 - Facilitate Coordination
 - Share Costs



- ▣ Pilot Project
 - -- CCCSD, Danville, and EBMUD with feedback from the Utility Coalition

Applicable for Cities and Counties



Applicable for Cities and Counties



City Public Works



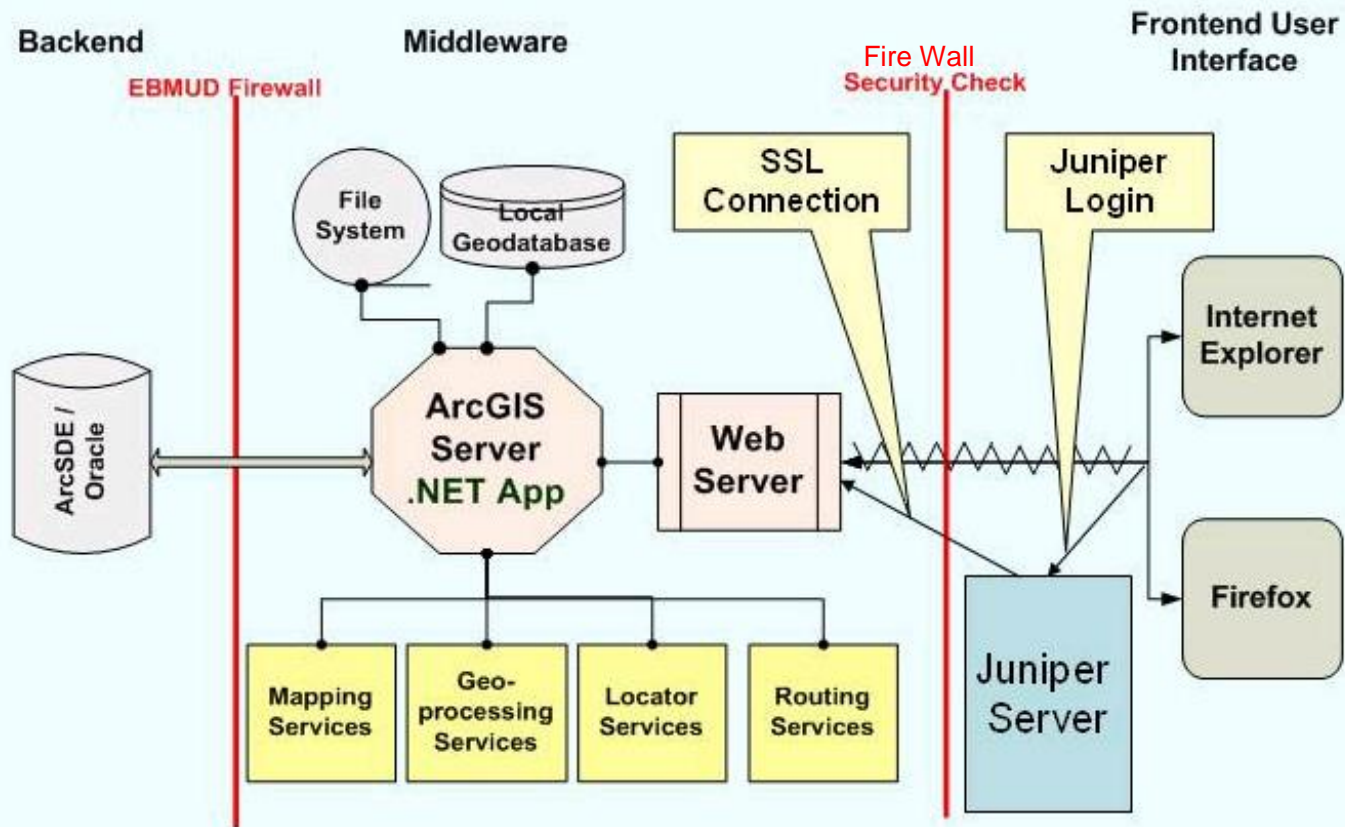
City Water Dept.



Application Introduction

- ▣ WIS is a GIS Web application developed by EBMUD in coordination with selected agencies
- ▣ It provides a map Web platform for agencies to coordinate street work and projects
- ▣ It enables the agencies to add, edit, and locate their internal projects
- ▣ It also allows agencies to view projects added by other agencies

WIS Architecture



WIS System Architecture

WIS Architecture


- ▣ Front End User Interface
 - It is a Web GIS application supporting different browsers
- ▣ Middle Tier
 - ArcGIS Server .NET ADF
 - ▣ Excel spreadsheet loader and project data editing
 - ▣ Overlaid projects searching and locating
 - ArcGIS Server Services
 - ▣ Mapping service
 - ▣ Geocoding service
 - ▣ Routing service
 - ▣ Geoprocessing service
- ▣ Back End
 - ArcSDE/Oracle GeoDatabase

WIS Application Components

- ▣ User Login - Security
- ▣ Mapping Navigation Tools
- ▣ Project Finding and Locating tools
- ▣ Project Data Loading and Editing Tools
- ▣ Overlaid (Conflict) Project Searching Tools
- ▣ WIS Online Help

User Login - Security

▣ Juniper Connection



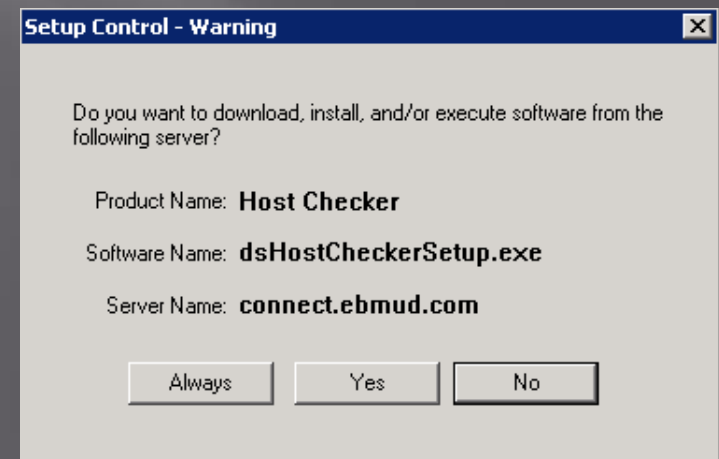
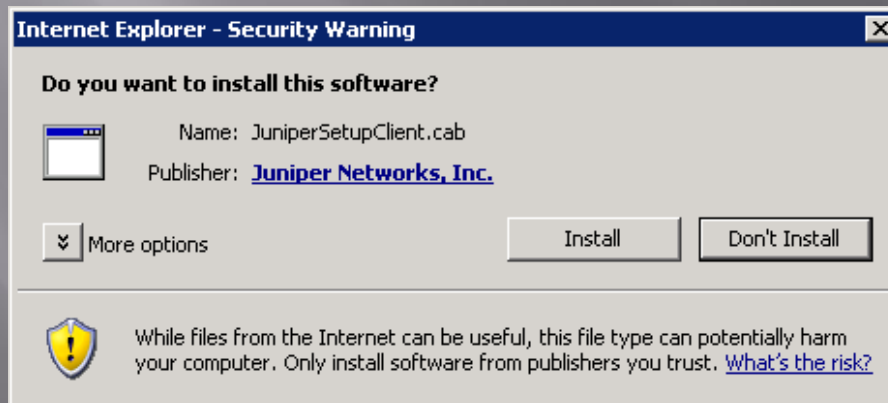
Welcome to Gis Applications

Secure Access SSL VPN for GIS Applications

Username

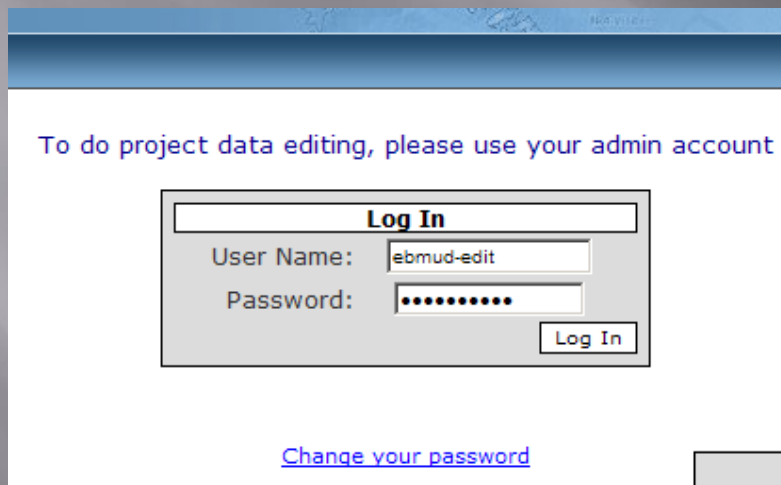
Password

Please sign in to begin your secure session.



Application Login

- There are two accounts; one Admin for editing and one for View only



The screenshot shows a web application interface with a blue header. Below the header, a message in blue text reads: "To do project data editing, please use your admin account". Centered below this message is a "Log In" form. The form has a title "Log In" in bold. It contains two input fields: "User Name:" with the text "ebmud-edit" and "Password:" with masked characters (dots). A "Log In" button is located at the bottom right of the form. Below the form, there is a blue underlined link that says "Change your password".

To do project data editing, please use your admin account

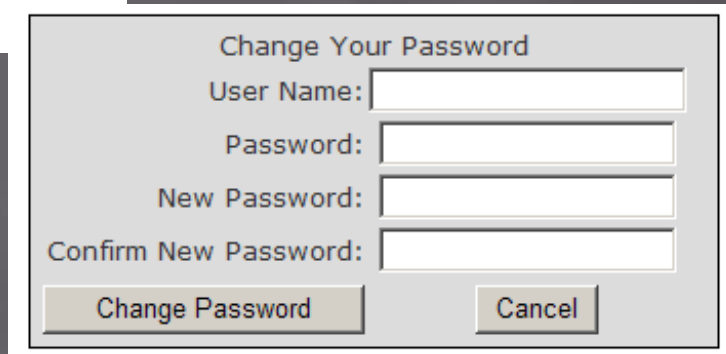
Log In

User Name: ebmud-edit

Password:

Log In

[Change your password](#)



The screenshot shows a "Change Your Password" dialog box. It has a title "Change Your Password". Inside, there are four input fields: "User Name:", "Password:", "New Password:", and "Confirm New Password:". At the bottom, there are two buttons: "Change Password" and "Cancel".

Change Your Password

User Name:

Password:

New Password:

Confirm New Password:

Change Password Cancel

Data Sharing Agreement

- ❑ With a signed Data Sharing agreement you go directly to the application
- ❑ Otherwise the users will need to accept the Online Agreement

USER AGREEMENT
FOR
EAST BAY MUNICIPAL UTILITY DISTRICT'S
GEOGRAPHIC INFORMATION SYSTEM
WORK IN STREETS APPLICATION

User Agreement

This User Agreement is made between the East Bay Municipal Utility District ("EBMUD"), a public entity, and any person ("User") who uses this application.

BY CLICKING THE ACCEPTANCE BUTTON OR ACCESSING, USING OR INSTALLING ANY PART OF THE SERVICE, USER EXPRESSLY AGREES TO AND CONSENTS TO BE BOUND BY ALL OF THE TERMS OF THIS AGREEMENT. IF USER DOES NOT AGREE TO ALL OF THE TERMS OF THIS AGREEMENT, THE BUTTON INDICATING NON-ACCEPTANCE MUST BE SELECTED, AND USER WILL NOT BE ABLE TO ACCESS, USE OR INSTALL ANY PART OF THIS SERVICE.

Overview

☒ I ACCEPT THE TERMS OF THIS USER AGREEMENT
☐ No, Thanks

WIS Graphic User Interface

Menu/Toolbar

Map (or Map Frame)

Links

The screenshot displays the 'Work In Streets Application' interface. At the top, a blue header bar contains the application title and a set of links: 'ExcelLoader', 'FAQ', 'Help', 'Logged in as ebmud-edit', and 'Logout'. Below this is a navigation menu with options like 'Find Projects', 'Find Street', 'Find Place Name', 'Find Address', 'Find APN', 'Editor', and 'Print'. A scale bar indicates '1:350,000'. The left sidebar, titled 'Map Contents', lists various project layers such as 'BufferLayer', 'ProjectLayer', and 'alameda', each with a checkbox and a legend. The main map area shows a detailed view of the San Francisco Bay Area, with cities like San Francisco, Oakland, and San Jose visible. A scale bar at the bottom left indicates distances in miles. The bottom status bar shows the coordinates '5950641.621, 2153396.077' and the 'Local intranet' connection.

Work In Streets Application

ExcelLoader | FAQ | Help
Logged in as ebmud-edit Logout

Find Projects | Find Street | Find Place Name | Find Address | Find APN | Editor | Print

1:350,000

Buffer Select Panel
Find Overlaid Projects (City)
Search Results
Results
Map Contents

☒ BufferLayer
☒ ProjectLayer

- ☒ alameda
 - Communication or CATV Conduits
 - Electric Lines
 - Gas or Petroleum Pipes
 - Other Roadway Project
 - Other Underground Utility
 - Paving Moratorium Street
 - Planned Paving Project
 - Planned Street Event (Road Closures)
 - Potable Water Pipes
 - Recycled Water Pipes
 - Sewer or Storm Drain Pipes
- ☒ alban
- ☒ brentwood
- ☒ cccsd
- ☒ cwwd
- ☒ clayton
- ☒ cvsd
- ☒ danville
- ☒ ebmud
- ☒ elcerrito
- ☒ hayward
- ☒ martinez
- ☒ moraga
- ☒ orinda
- ☒ richmond
- ☒ sanramon
- ☒ walnutcreek
- ☒ All WIS Projects
- ☒ Streets

Console

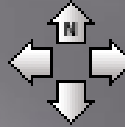
5950641.621, 2153396.077

Local intranet





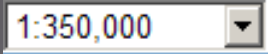
Mapping Navigation Tools

▣ Re-Center the Map

- Navigation element
- Pan tool 



▣ Zoom in / out

- Mouse wheel  Mouse wheel
- Zoom in tool 
- Zoom out tool 
- Zoom level 
- Zoom scale dropdown 

Mapping Navigation Tools

- ▣ Forward or Back Extent

- Forward extent



- Back extent



- ▣ Zoom out to full map




- ▣ Measure distance and area

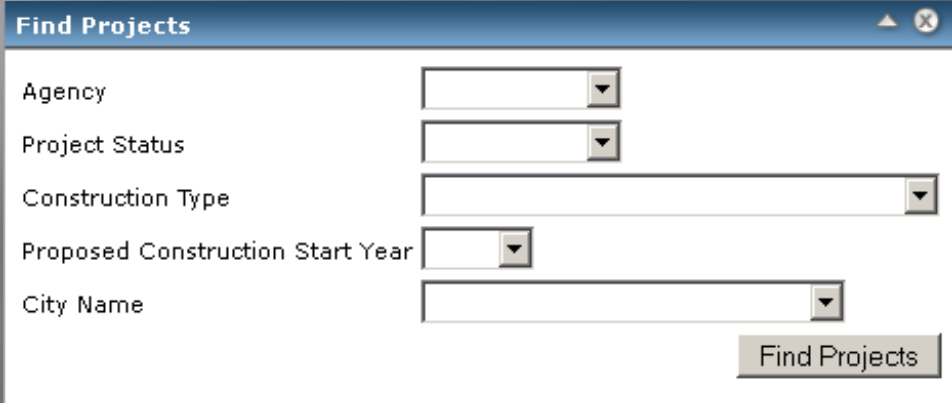


- Measure polyline

- Measure polygon

Project Finding and Locating Tools

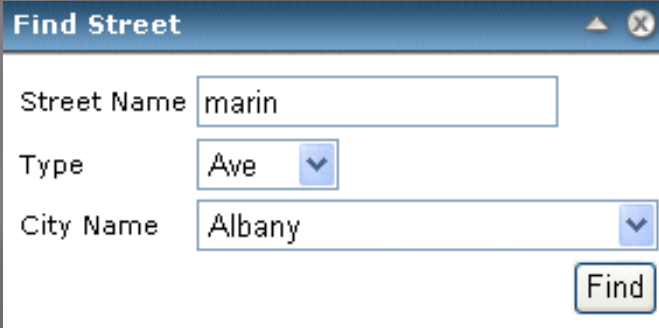
- ▣ Identify a WIS Project or a Feature 
- ▣ Find Projects



The 'Find Projects' dialog box contains the following fields and controls:

- Agency: Text input field with a dropdown arrow.
- Project Status: Text input field with a dropdown arrow.
- Construction Type: Text input field with a dropdown arrow.
- Proposed Construction Start Year: Text input field with a dropdown arrow.
- City Name: Text input field with a dropdown arrow.
- Find Projects: Button at the bottom right.

- ▣ Find Street

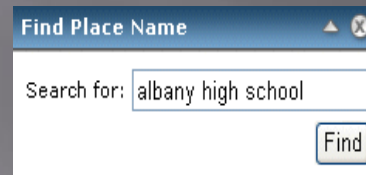


The 'Find Street' dialog box contains the following fields and controls:

- Street Name: Text input field containing 'marin'.
- Type: Text input field with a dropdown arrow, showing 'Ave'.
- City Name: Text input field with a dropdown arrow, showing 'Albany'.
- Find: Button at the bottom right.

Locating Tools

- Find Place Name



A small dialog box titled "Find Place Name" with a search input field containing "albany high school" and a "Find" button.

Find Place Name	
Search for:	<input type="text" value="albany high school"/>
<input type="button" value="Find"/>	

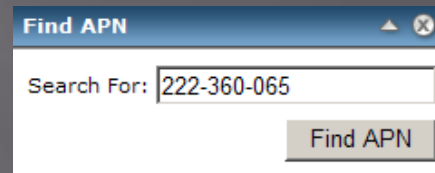
- Find Address or Street Intersection



A dialog box titled "Find Address" with four input fields: "Street or Intersection" (11th street@franklin), "City" (oakland), "State Abbreviation" (CA), and "ZIP" (empty). A "Find" button is at the bottom right.

Find Address	
Street or Intersection	<input type="text" value="11th street@franklin"/>
City	<input type="text" value="oakland"/>
State Abbreviation	<input type="text" value="CA"/>
ZIP	<input type="text"/>
<input type="button" value="Find"/>	

- Find Parcel APN



A dialog box titled "Find APN" with a search input field containing "222-360-065" and a "Find APN" button.

Find APN	
Search For:	<input type="text" value="222-360-065"/>
<input type="button" value="Find APN"/>	

The Panel of Search Results

- Search Results Panel is used to display the found records for the WIS project find and search tools

Export to an Excel spreadsheet

Export2Excel

Zoom in to Project



Pan to Project




Highlight Project on map



Search Results							
		Export2Excel , Select all , Unselect all , Zoom to all					
			Agency	Project Name	Construction Type	Project Status	Project Status
		<input checked="" type="checkbox"/>	ebmud	Jessen Ct	potable water pipes	proposed	design
		<input checked="" type="checkbox"/>	ebmud	Madeline Rd	potable water pipes	proposed	design
		<input checked="" type="checkbox"/>	ebmud	Milton Ave	potable water pipes	construction	constructionsc
		<input checked="" type="checkbox"/>	ebmud	Olive Ave	potable water pipes	proposed	design
		<input checked="" type="checkbox"/>	ebmud	Withers Ave	potable water pipes	proposed	design
		<input checked="" type="checkbox"/>	ebmud	Olympic Blvd/Newell Ave	potable water pipes	proposed	design

Editing Function

- ▣ Need to be logged in as Admin user for your organization
- ▣ Start and Stop editing by clicking **Editor** on the menu bar and clicking  on the Editor task Window.
 - Stop editing will automatically save all your newly created projects and edits on existing ones

Editing Tools

Select Feature

Clear Features

Show Vertices

Enter XY

Create Feature

Move Feature

Copy Feature

Split Feature

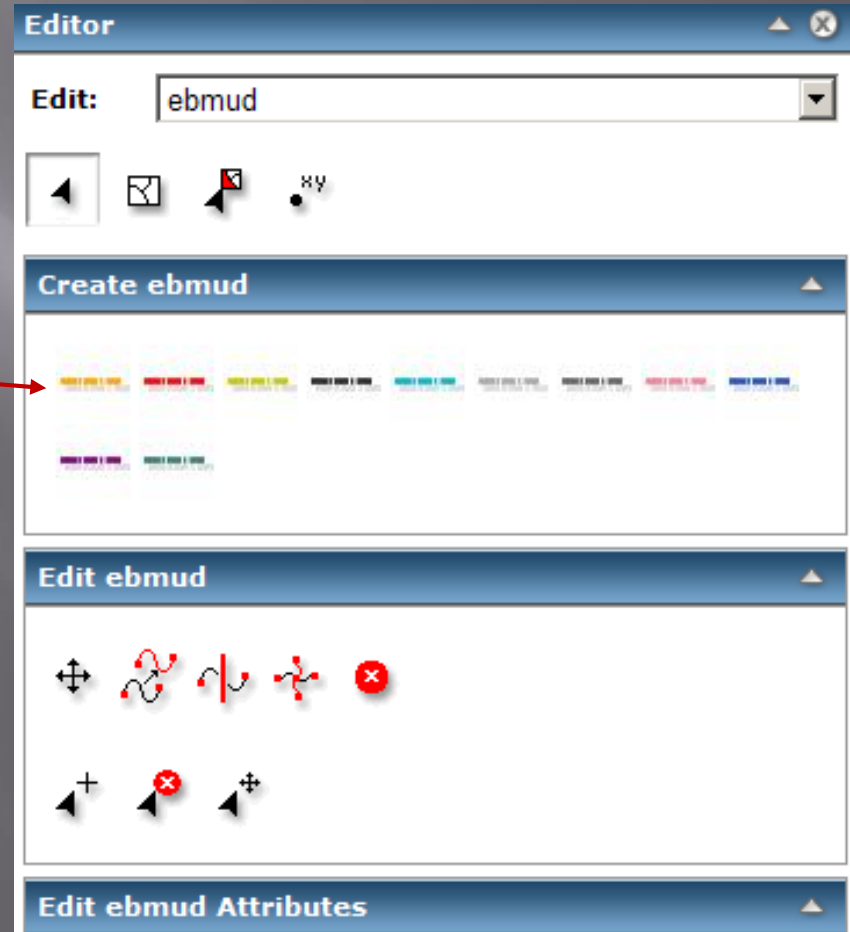
Merge Feature

Delete Feature

Add Vertex

Delete Vertex

Move Vertex



Attribute Information Tool

- ❑ After creating a Project (feature) by double clicking the end point, the Attribute Information Panel appears
- ❑ There are fields that need to be filled in prior to saving it
- ❑ You can later modify the attribute information by selecting the project (feature) for editing

The screenshot shows a software window titled "Editor". At the top, there is a dropdown menu labeled "Edit:" with "ebmud" selected. Below this are several icons: a left arrow, a checkmark, a red flag, and a small "xy" icon. A vertical stack of buttons follows: "Create ebmud", "Edit ebmud", and "Edit ebmud Attributes" (which is currently selected and highlighted). The main area of the window is titled "ebmud 3522" and contains several form fields:

- Agency: A dropdown menu with "EBMUD" selected.
- Project Name: A text box containing "xxxx".
- Construction Type: A dropdown menu with "Communication or CATV Conduits" selected.
- Project Status: A dropdown menu with "proposed" selected.
- Project Status Details: A text box.
- Project: A text box.

A vertical scrollbar is on the right side of the form area. At the bottom right corner of the window, there is a "Settings" link.

Data Loader

- ▣ A way to load in bulk data as projects in standard Excel spreadsheet into the database
- ▣ Uses the Routing Services to generate the project polylines
- ▣ The application provides an Excel spreadsheet template that can be down loaded onto a users PC

	A	B	C	D	E	F	G	H	
1	Agency	Project Name	Construction Type	Project Status	Project Status	Project Comment	Pipeline Length	Pipeline Diameter	Proposed Construction Date
2	ebmud	My project one	potable water pipes	construction	construction started	Proposed Comment1	300		6 Jan
3	ebmud	My project two	potable water pipes	proposed	design	Proposed Comment2	400		12 Feb
4	ebmud	My project three	potable water pipes	proposed	design	Proposed Comment3	200		6 Apr
5	ebmud	My project four	potable water pipes	construction	construction started	Proposed Comment4	300		12 May
6	ebmud	My project five	potable water pipes	proposed	design	Proposed Comment5	400		6 Jun
7	ebmud	My project six	potable water pipes	proposed	design	Proposed Comment5	200		12 Jul
8	ebmud	My project six	potable water pipes	proposed	design	Proposed Comment5	300		6 Dec
9	ebmud	My project four	potable water pipes	construction	construction started	Proposed Comment4	400		12 May

Excel Spreadsheet Template

WISemplate.xls						
	A	B	C	D	E	F
1	Column Name	AGN_NAME	PRJ_NAME	CONST_TYPE	PRJ_STAT	PRJ_STAT_DTL
2	Common Name	Agency	Project Name	Construction Type	Project Status	Project Status Detail
3	Requirement	Required	Required	Required	Required	Optional
4	Data Type	Text Field (50)	Text Field (100)	Text Field (50)	Text Field (50)	Text Field (50)
5	Comments	All participating agencies			proposed, construction, complete	planning, design, construction scheduled, permitting on hold
6	Old Column Head	Utility/Agency Performing the Project	Project Name			Status of Project (e.g., Planning Phase Permitting Phase, or Construction Phase)
7	Example1	ccwd	2012 surface treatment	potable water pipes	proposed	design
8	Example2	danville	Pin 459	Planned paving	construction	on hold

Excel Locational Information

WISemplate [Compatibility Mode] - Excel

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW ADD-INS Team

B2 : X ✓ fx Agency

	A	M	N	O	P	Q	R	S	T	U	V
1	Column Name	CITY_NAME	ST_NAME	START_PT	END_PT	LOC_CMNT	CNTAC_NAME	CNTAC_NUM			
2	Common Name	City Name	Street Name	Start Point	End Point	Location Comment	Contact Name	Contact Number			
3	Requirement	Optional	Required	Optional (Required for Excel Loader)	Optional (Required for Excel Loader)	Optional	Optional	Optional			
4	Data Type	Text Field (50)	Text Field (100)	Text Field (100)	Text Field (100)	Text Field (512)	Text Field (100)	Text Field (50)			
5	Comments	Primary city where work is located	Location of work	Street intersection or full address. For street intersection, use @ to separate the two streets	Street intersection or full address	Limits of Work	Project manager or contact	Phone number			
6	Old Column Head		Location of Work (i.e., Name of Street(s) work will be performed on			Limits of Work (e.g., between the intersection of Jones Street and Harris Drive)					
7	Example1	Walnut Creek	Willow Lake Road	Cornell Ave@Washington Ave, Albany, CA 94706	evelyn ave@washington ave, albanys ca94706	Willow Lake Road to 390 Discovery Bay Blvd	Jane Doe	(925) 555-1212			
8	Example2	Oakland	Marin Ave	1230 Garfield Ave, Albany, CA 94706	810 Adams St, Albany, CA 94706	between the intersection of Jones Street and Harris Drive	Tom Jones	(925) 555-1212			
9											
10											
11											

Sheet1 Sheet2 Sheet3

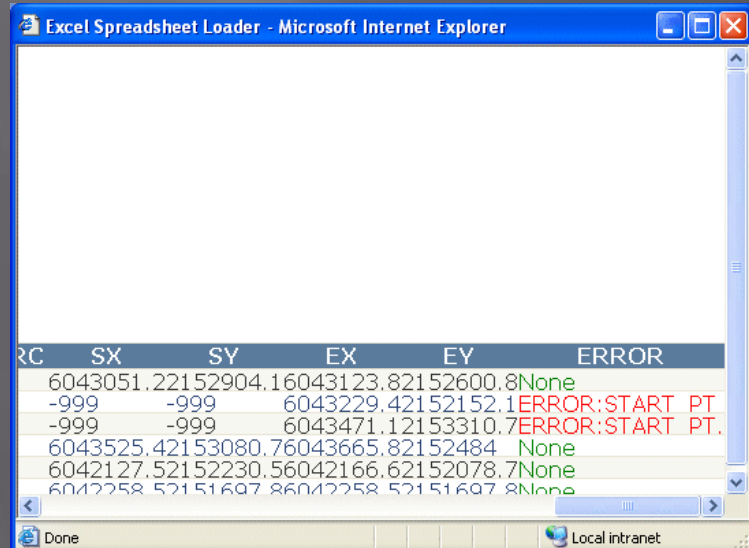
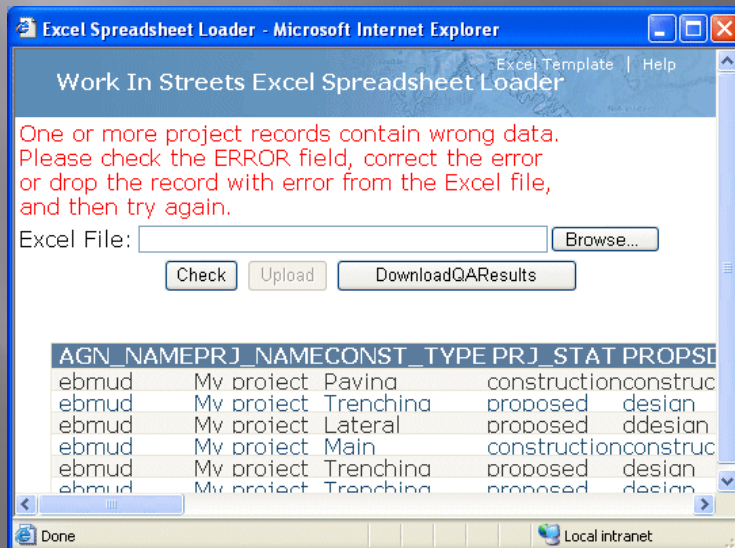
READY 100%

Checking Excel Spreadsheet for Errors

- First step is to check for any errors in spreadsheet

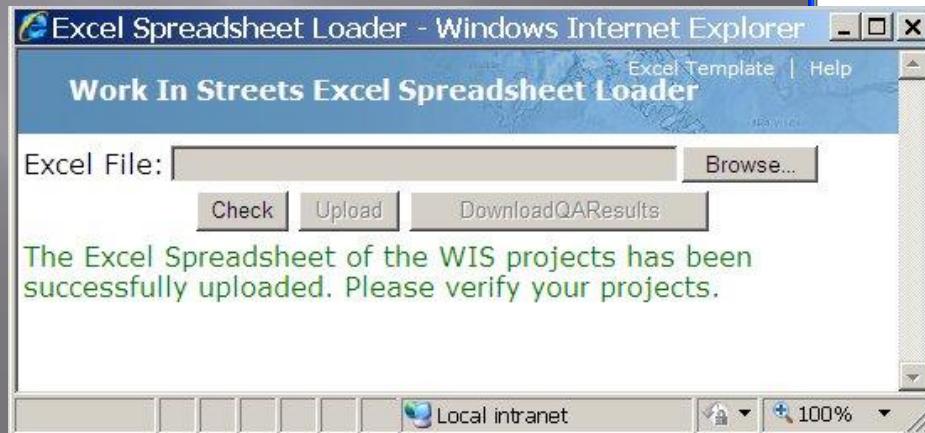
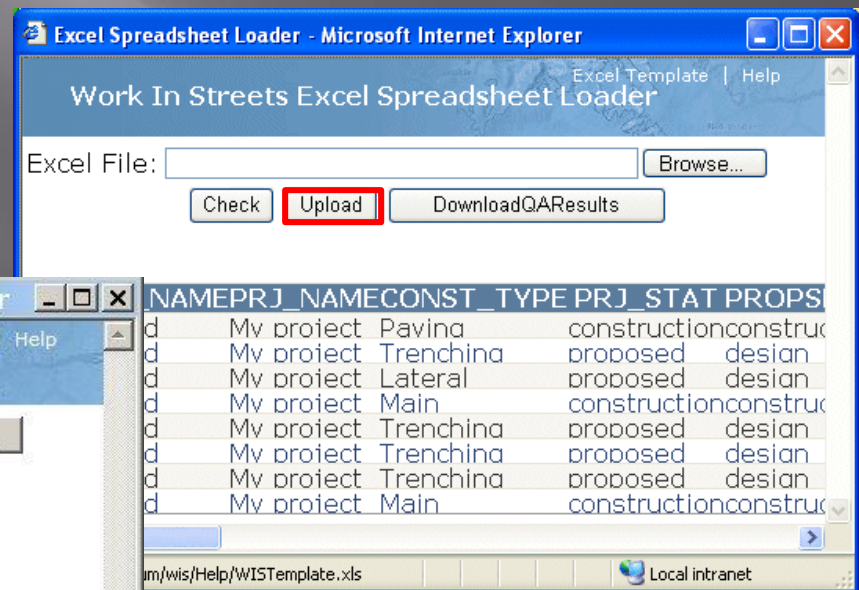


- Example of error message



Successful Load of Spreadsheet

- Once the errors have been corrected then the Upload Button will be enabled.
- When upload is complete you will see your projects on the map.



Overlaid Project Searching Tools

- Find all the overlaid projects from a selected project

The screenshot displays a GIS application interface. On the left is a 'Buffer Select Panel' with the following controls:

- Buffer Selection Mode:** Radio buttons for 'Mail Address' and 'Overlaid Projects' (selected).
- Buffer Distance:** A text box containing '200' and a dropdown menu set to 'Feet'.
- Buttons: 'Run Buffer Selection' and 'Clear Selection'.

Below the panel is a 'Find Overlaid Projects (City)' section with a 'Search Results' table. The table has columns for 'Selected', 'AGN', 'NAME', and 'PRJ'. The first two rows are visible:

Selected	AGN	NAME	PRJ
<input type="checkbox"/>	danville	Broo	
<input type="checkbox"/>	ebmud	El Ca	Dr

The map on the right shows a residential area with streets like 'Silver Cloud', 'El Capitan', and 'Zephyr'. A yellow buffer zone is highlighted around a specific area. A red line with a square marker indicates a selected project. A scale bar at the bottom left shows distances from 0 to 1072 feet.

Find All Mailing Addresses Within a Buffer Zone

Find Projects | Find Street | Find PlaceName | Find Address | Editor | Print

Buffer Select Panel

Buffer Selection Mode:

- ☒ Mail Address
- ☐ Overlaid Projects

Buffer Distance:

100 Feet

Run Buffer Selection Clear Selection

Find Overlaid Projects (City)

Search Results

Export2Excel

		<input type="checkbox"/>	Current Resident	812 C Bloss Way
		<input type="checkbox"/>	Current Resident	801 C Bloss Way

Results

Map Contents

0 67 134 268 402 536 Feet

Find All Overlaid Projects in a City

Buffer Select Panel

Find Overlaid Projects (City)

The Agency:
ebmud

In City:
Danville

Buffer Distance:
200 Feet

Find All Overlaid Projects In The City

Clear Selection

Search Results

Export2Excel

			ebmud	Meac
		<input type="checkbox"/>	ebmud	Cima
		<input type="checkbox"/>	ebmud	Coun Ct
		<input type="checkbox"/>	ebmud	Dana Highl

WIS Online Help

Work In Streets (WIS) Application Help

Many agencies and various utilities do work in streets requiring excavating and repaving city and county streets. To better coordinate various agencies and utilities street work, this application, Work in Streets (WIS), was developed by EBMUD in cooperation with selected agencies. The purpose of this Internet GIS Web application is to give agencies and utilities the capability to input street paving moratorium and street projects such as EBMUD pipeline projects into a centralized database. With this tool each agency and utility can see on a map or in a report which projects and moratoriums are going on in their jurisdiction.

Find

- [Identify features on the map](#)
- [Find Projects](#)
- [Find Street](#)
- [Find Place Name](#)
- [Find Address](#)
- [Search Results](#)
- [Measure distance and area](#)
- [Result Pad](#)

Find conflict (overlaid) WIS projects

- [Find projects overlaid with a selected project](#)
- [Find all overlaid projects in a city](#)

Other

- [Working with layers and map contents](#)
- [Frequently asked questions and troubleshooting](#)

Explore the map

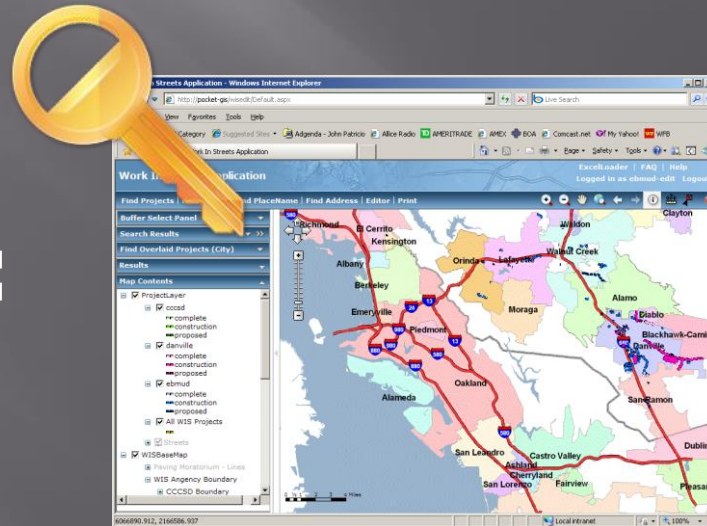
- [Using the mouse and toolbar](#)
- [Using the keyboard](#)

Modifying WIS project data

- [Editing data](#)
- [Excel Spreadsheet Loader](#)

Training

- ▣ Agencies can gain access to WIS by coming to a free 1/2 day class and either sign a data sharing agreement or using the online agreement
- ▣ Once training is provided than a username and temporary password will be given to the participant



WIS Access

Costs

- ▣ EBMUD provides the hardware and software
 - Cost for ArcGIS Server license and yearly maintenance
 - Cost for yearly license of NAVTEQ data
 - Initial cost for 1 GIS Programmer for 1 year development
 - Cost for training and maintenance on the application
- ▣ For participants the cost is **FREE**

Benefits

- ▣ Better coordination between Counties, Cities, and Utilities
- ▣ It is easier to find and see who is doing what projects around your project(s).
- ▣ Coordination of street closure(s) for an event
- ▣ Can save money by --
 - Sharing paving costs
 - Paving Moratorium costs
 - Savings on staff time



Conclusion

- ▣ 26 Agencies use the application
- ▣ Sharing of costs has occurred between cities and utilities
- ▣ Application has been in production for over 4 years
- ▣ Recently has been upgraded to 10.1
- ▣ Future – ArcGIS Online
- ▣ Questions

