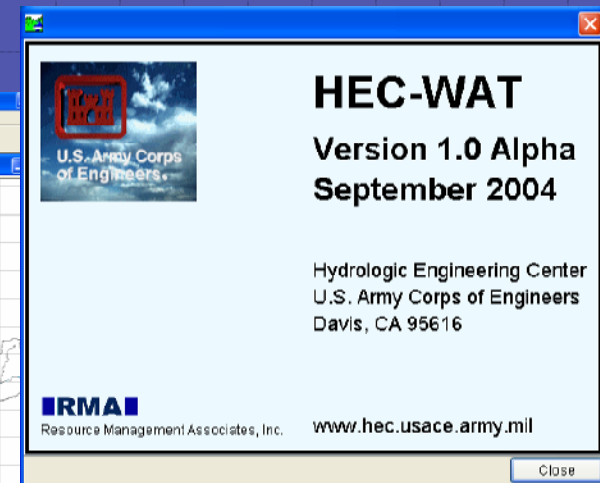
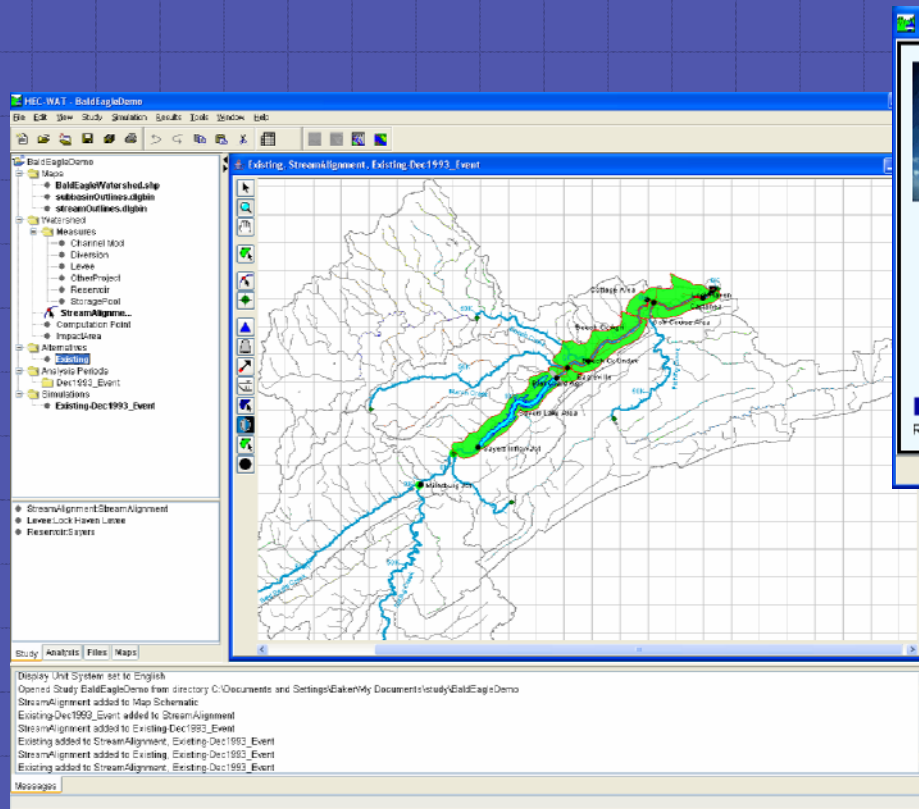


Watershed Analysis Tool

HEC-WAT Program



Watershed Analysis Tool (HEC-WAT)

- ◆ Corps watershed and water resources management studies identify problems and opportunities and perform analyses to address them.
- ◆ Studies require hydrologic, hydraulic, economic, environmental, and social impact assessments.
- ◆ Need to develop an interface that will streamline and integrate the analytical process using the tools commonly applied by the multi-disciplinary teams of the District offices.
- ◆ The goal is to help Districts perform watershed and/or system-wide studies.



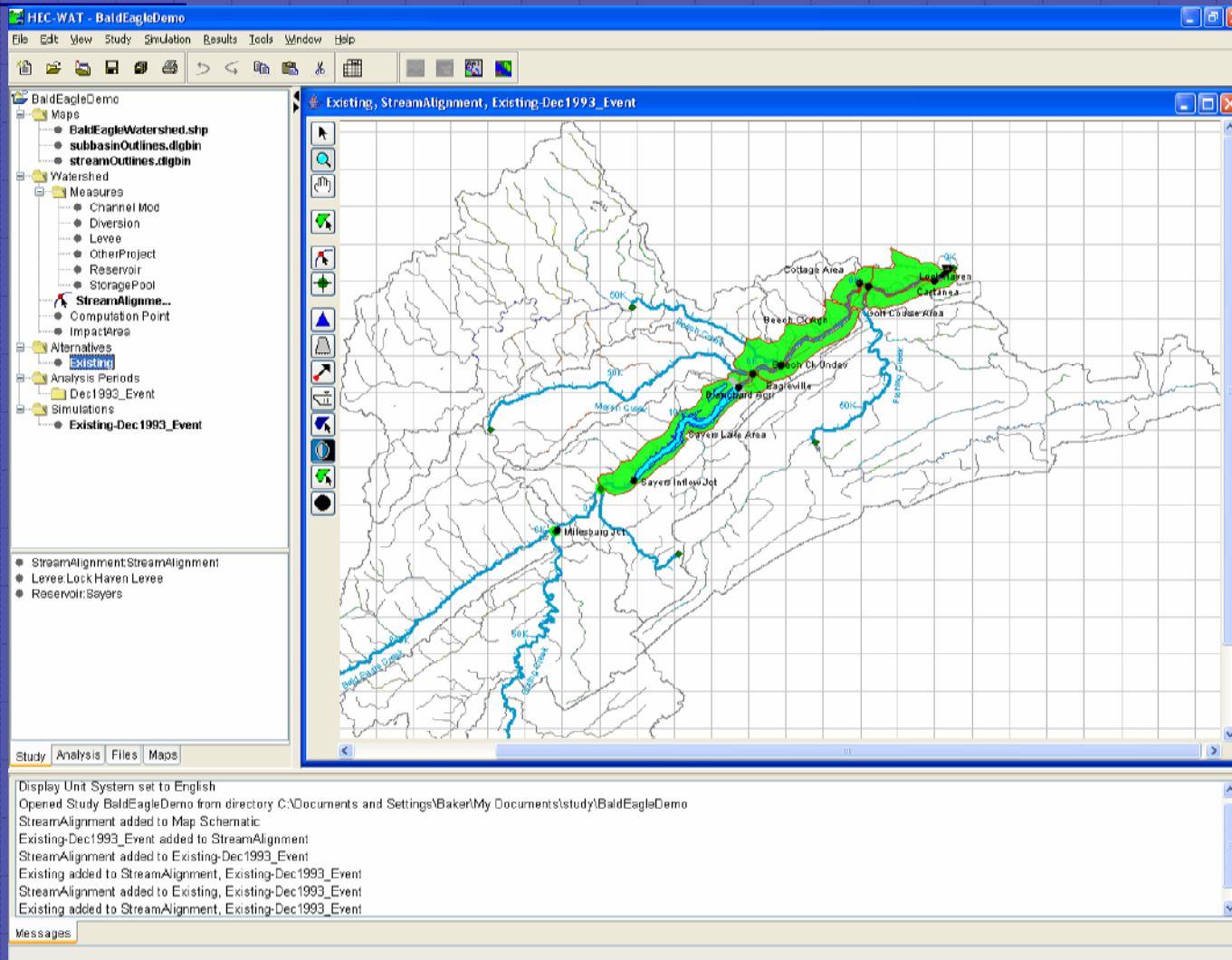
Watershed Analysis Tool (HEC-WAT)

- ◆ By developing the capabilities needed to integrate the tools used by the Districts during the analytical process (*HEC-HMS, HEC-ResSim, HEC-RAS, HEC-FIA, HEC-FDA, HEC-EFM, and other software*)
- ◆ The WAT will improve coordination and communication across Project Delivery Teams (PDT).
- ◆ Share data across models
- ◆ Involve modelers early in the study process
- ◆ Encourage a team approach

Design

- ◆ Will leverage past research and implementation:
 - Design
 - Software Coding
 - Historic Data
 - Watershed Models
 - Spatially reference maps and displays
 - Internet/Web-sight links

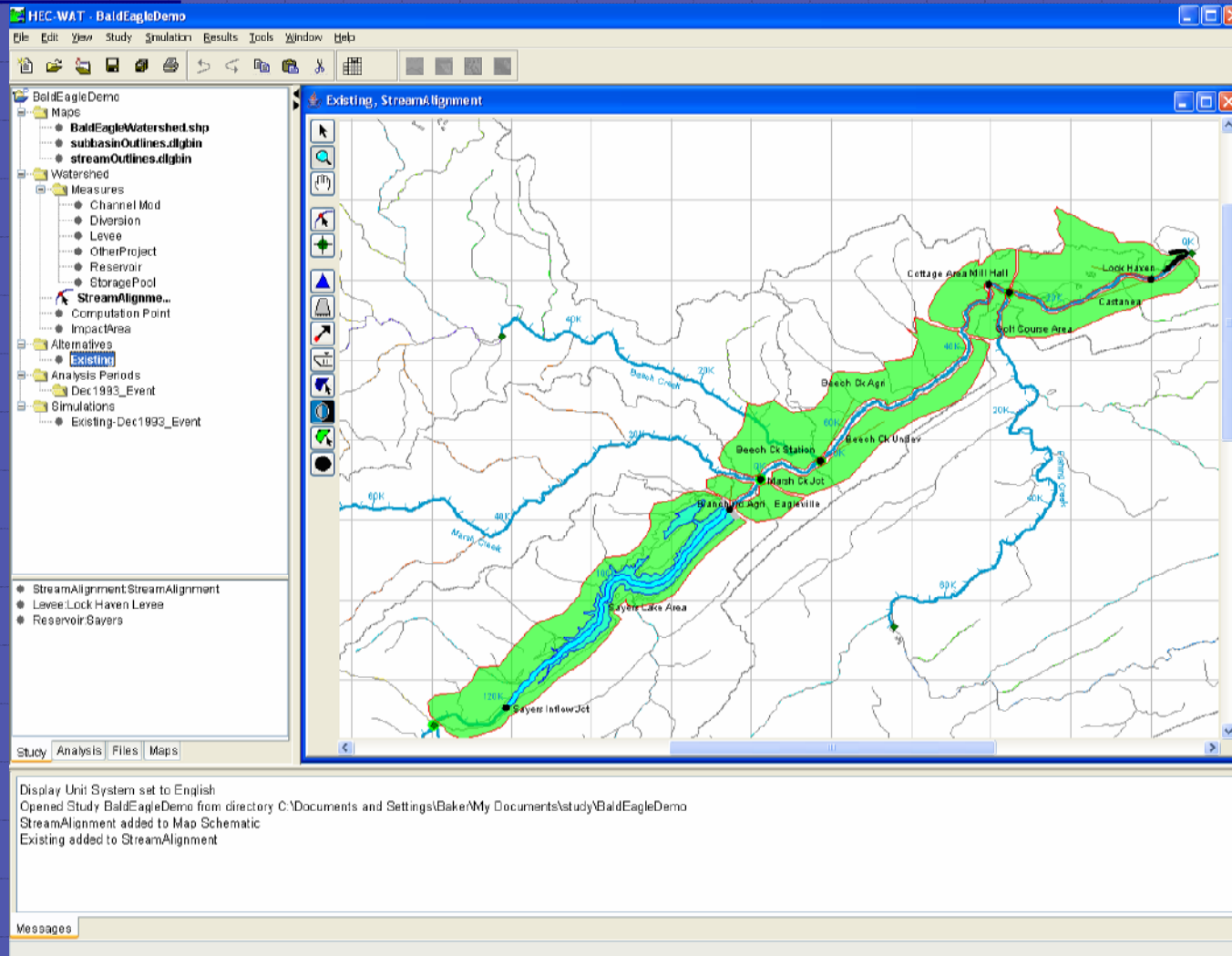
WAT Main Window



WAT Alternative Table

	Time Window 1				TW2	TW3	TW4	Time Window 5								
	Period of Record				Calibration (History)			Events								
		Historic	Global	Precp 3	Precp 4	1997	1986		2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	200-yr	500-yr
Alternative 1	HMS	X	X			Jan97X1	Jan86X2		Ex_2yr	Ex_5yr	Ex_10yr	Ex_25yr	Ex_50yr	Ex_100yr	Ex_200yr	Ex_500yr
Base	ResSim					Jan97Res	Jan86Res		1980 Rule Curve							
Existing	RAS					Jan1997.p03	Jan1986.p02		RAS1996.p03							
	FDA	FIA 1	FIA 2			FIA97	FIA86		FDA Existing							
Alternative 2	HMS															
2040	ResSim															
Existing	RAS															
	FDA								FDA Most Likely Future Year			X Eqiv Annual Damage				
Alternative 3	HMS															
Base	ResSim		OPT 1		OPT 2											
Existing w/	RAS															
Enlarged SW	FDA								FDA Prob							
Alternative 4	HMS															
2040	ResSim															
Existing w/	RAS															
Enlarged SW	FDA								FDA Prob							

Existing Alternative



FDR Measure Selector

FDR Measure Selector

Alternative:

Available FDR Measures:

- MH Storage Area
- BEC Channel Mod

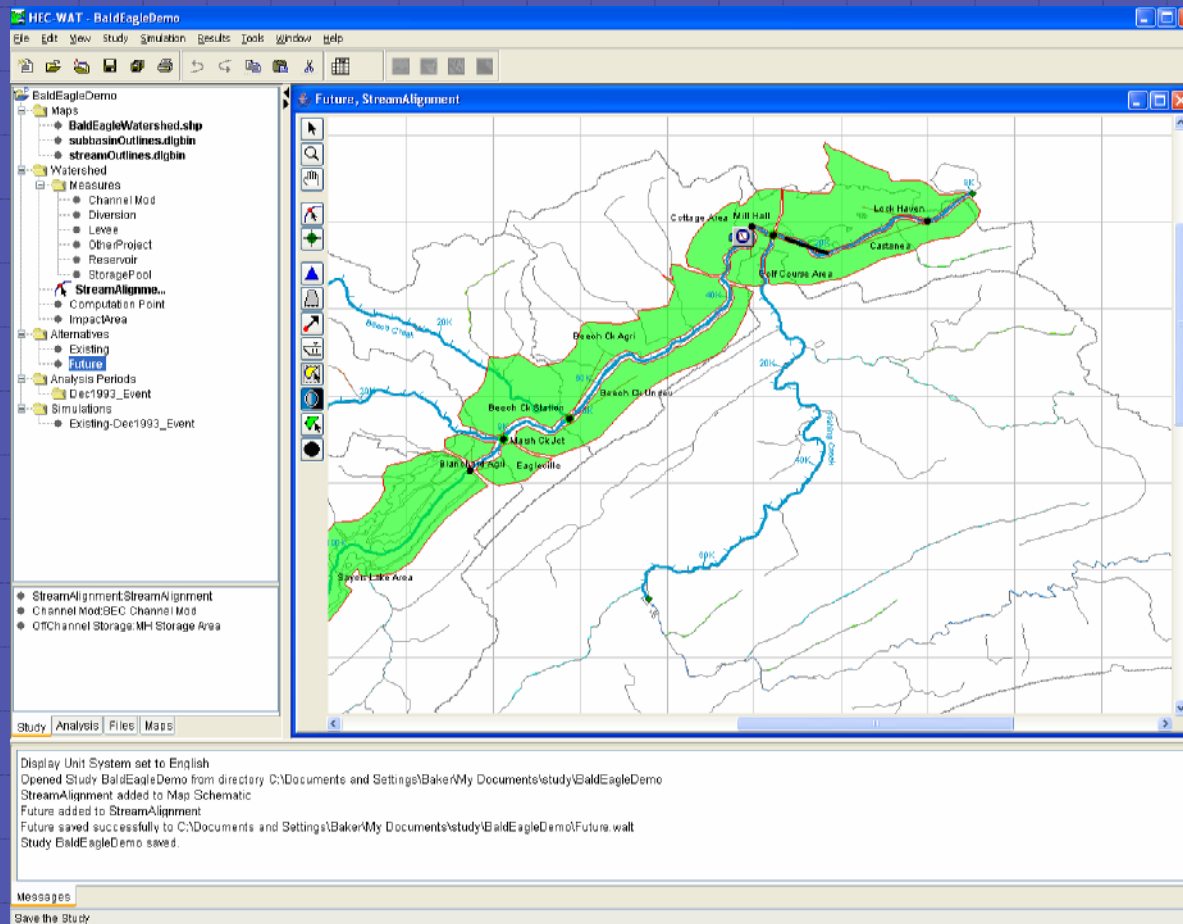
FDR Measures:

- Sayers
- Lock Haven Levee

Buttons: Add>>, <<Remove, Add All>>, <<Remove All, OK, Apply, Cancel

Future Alternative

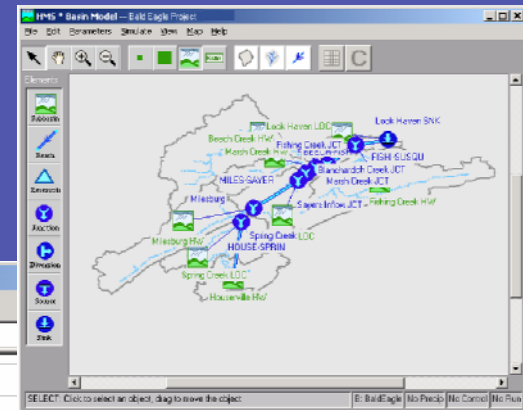
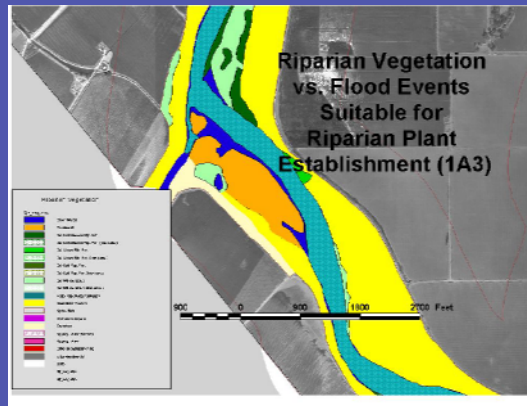
With Storage and Channel Modification



Data and Statistics

- ◆ Data Acquisition
 - Spatial Depiction
 - DSS
 - Corps Water Management System (CWMS) Database
- ◆ Data Visualization (HEC-DSSVue)
 - Anomalies
 - Breaks in record
 - Time Window
- ◆ Statistical Analysis
 - Frequency Analysis
 - Durational Analysis
 - Regression Analysis

Environmental



Hydrology

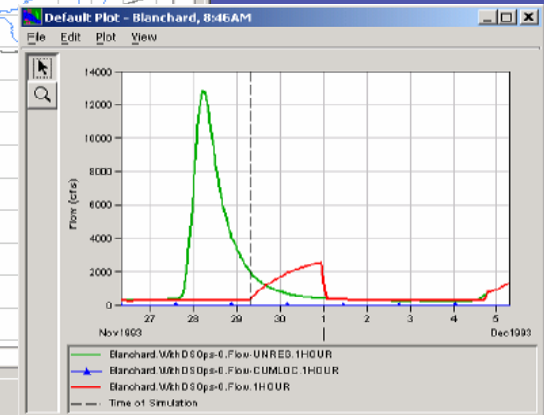
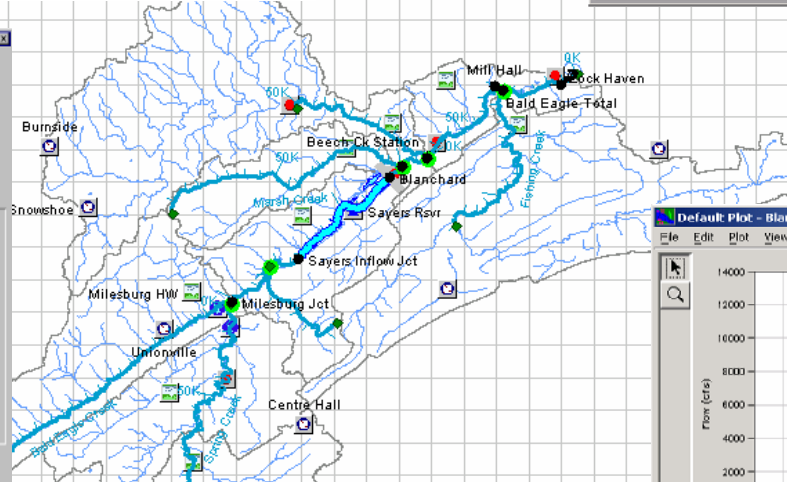
Damage by Analysis Year

Model
Expected Annual Damage Reduced and Distributed
for the Lanes R3-3 2003
and for Analysis Year 2000
(Damage in \$)

Plan was calculated with Uncertainty

Stream Name	Stream Description	Damage Name	Damage R...	Expected Annual Damage			Probability Damage Reduced Exceeds or Indicated Value		
				Total Without Project	Total With Project	Damage Reduced	75	50	25
Tackline	Stream 3 description	+T1R		268.11	268.11	0.00	0.00	0.00	0.00
		+T1L		49053.66	40653.66	0.00	0.00	0.00	0.00
		+T2R		153.16	122.31	30.84	23.19	41.17	33.21
		+T2L		277.97	156.34	122.63	106.32	137.83	128.89
		+T3R		127.97	118.99	9.27	2.59	3.20	11.27
		+T3L		1545.08	141.63	1383.45	1192.48	1233.97	1232.81
		+T4R		9.04	8.84	0.00	0.00	0.00	0.00
		+T4L		62.25	62.25	0.00	0.00	0.00	0.00
Total for stream: Tu...				42264.14	40527.84	1366.30	1311.72	1423.28	1405.99
Dry Creek: Stream 5 description				3460.43	3460.43	0.00	0.00	0.00	0.00
Total for stream: Dry...				3460.43	3460.43	0.00	0.00	0.00	0.00

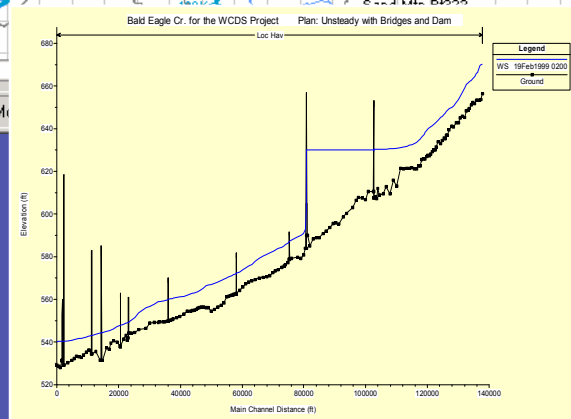
**** Computations have not been completed.
* Something has changed and computations need to be redone.



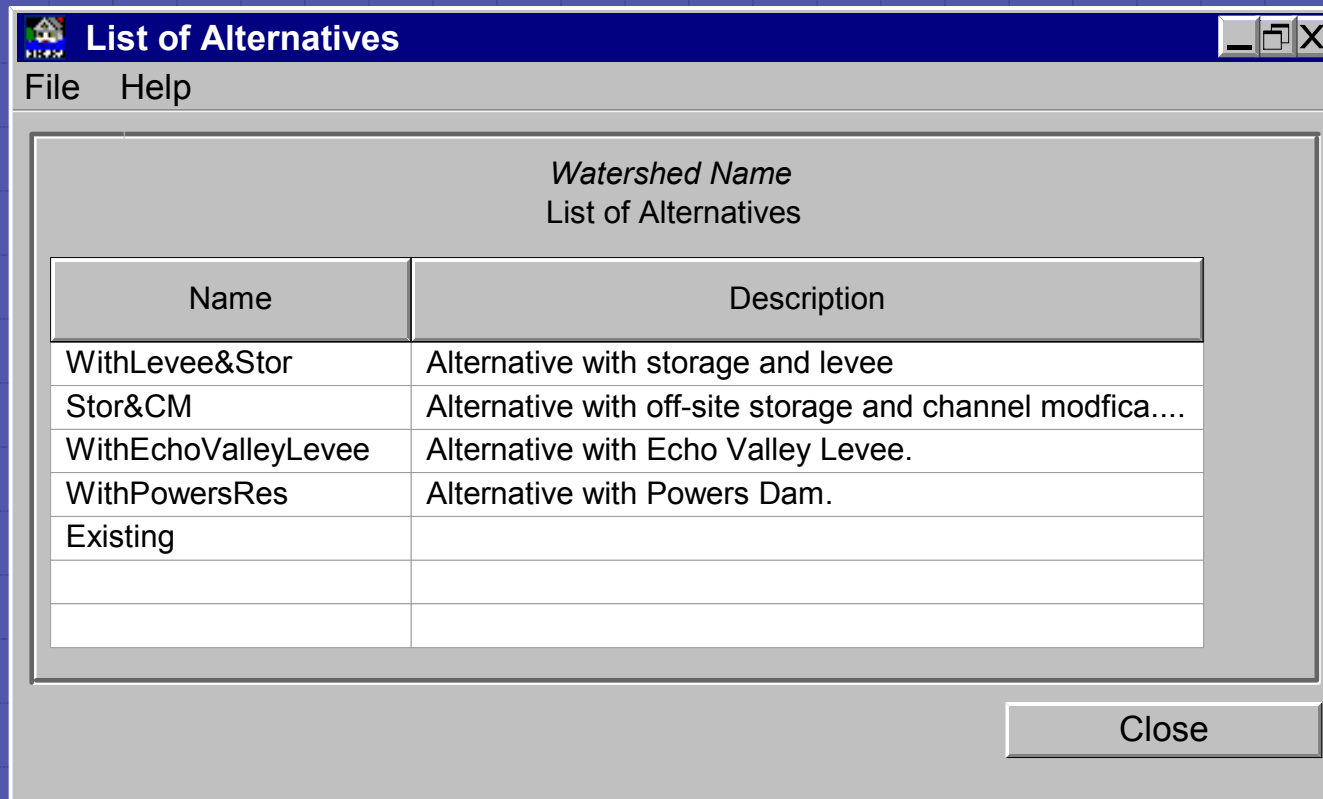
Reservoir

Flood Damage

Hydraulics



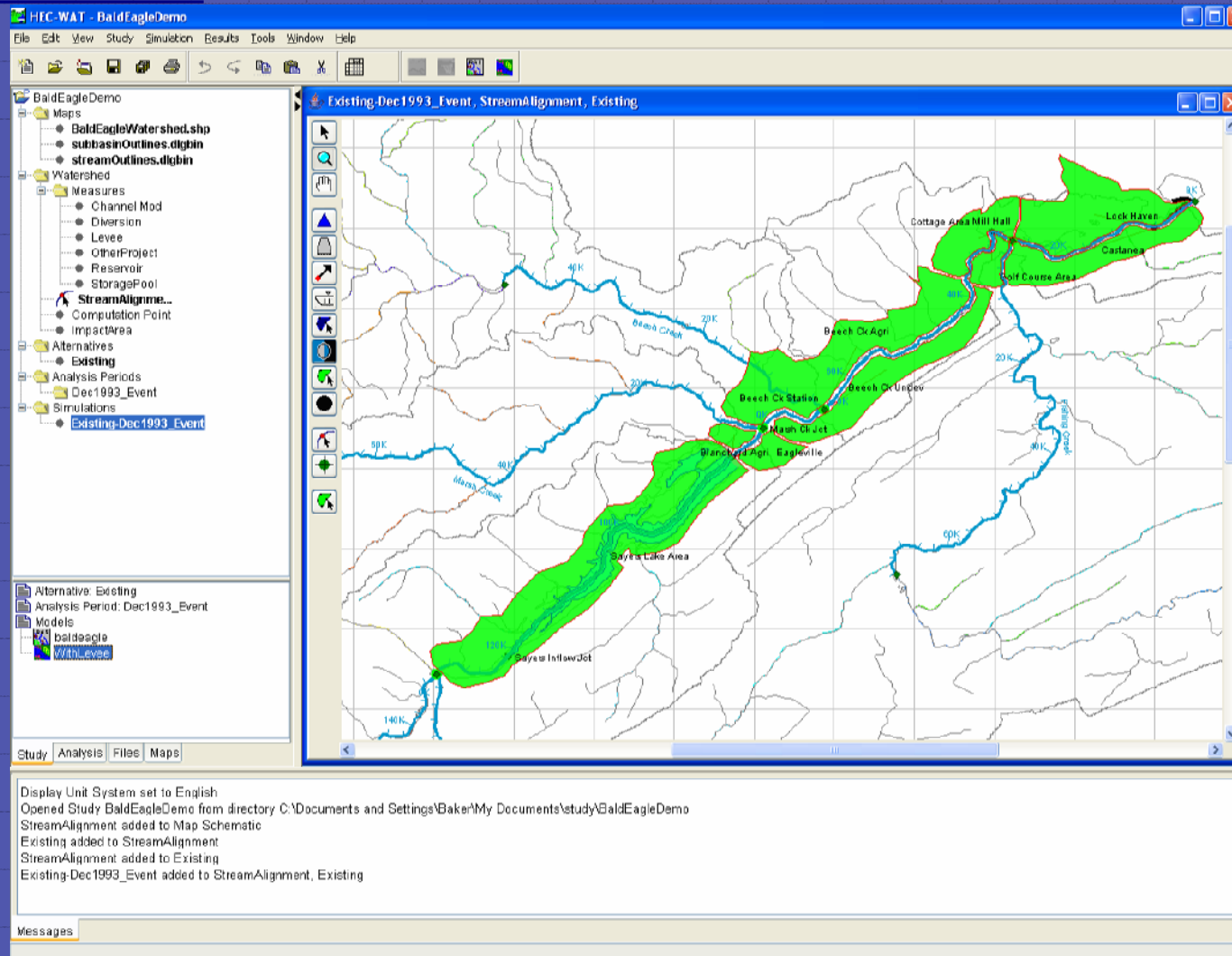
List of Alternatives



The screenshot shows a software window titled "List of Alternatives" with a menu bar containing "File" and "Help". The window displays a table with two columns: "Name" and "Description". The table lists five alternatives, with the last one being "Existing". A "Close" button is located at the bottom right of the window.

Name	Description
WithLevee&Stor	Alternative with storage and levee
Stor&CM	Alternative with off-site storage and channel modfica....
WithEchoValleyLevee	Alternative with Echo Valley Levee.
WithPowersRes	Alternative with Powers Dam.
Existing	

Watershed Analysis Output



Simulations - Output Reports and Graphs

- ◆ Flow frequency curves
- ◆ Statistical plots
- ◆ Flow/stage hydrographs
- ◆ Inflow, storage, stage, outflow from reservoirs
- ◆ Cross-section plots
- ◆ Flood inundation boundary maps/water surface profiles
- ◆ Plan comparisons
- ◆ Expected Annual Damage (EAD) with risk
- ◆ Cost (National Economic Development (NED) plan)
- ◆ Environmental displays (National Ecosystem Restoration (NER))

Future Goals

- ◆ Alpha Version (end of FY05)
- ◆ Peer Review
- ◆ Implement FDA and EFM
- ◆ Beta Version (end of FY06)
- ◆ First official release, (end of FY07)
- ◆ Documentation
- ◆ Training



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