Modeling Flooding Scenario in GSSHA

Hydrograph Boundary Condition Variable stage Boundary condition

- How does GSSHA decide to put water into the channel?
- Three options
 - Default
 - Overland_Backwater card
 - Overbank_Flow card

Default – "Everything goes in, nothing goes out"



Overland_Backwater



Overbank_Flow





- Regional to Local model
- Placed outlet at mouth of Rock Canyon
- Modeled basin using HMS



Input hydrograph



• Local model of Provo area from mouth of canyon to Utah Lake



- **Define Inflow Hydrograph** •
 - Define attributes for upstream node in the mouth of the canyon •
 - Toggle on "Use Input Data"
 - Click on "Define Input Data" then •
 - Click on "Define" •

Properties

ID.

41 35679 None

<

Help...

Feature type: Points/nodes

Flow BC Type

Copy and paste results •



- Enable Overbank Flow
 - Open Job Control
 - Set channel routing option to "Diffusive Wave"
 - Toggle on "Allow Overbank flow" option

Computation parameters	Outlet information	Infiltration	Channel routing computation scheme		
fotal time (min): 2880	Column. 1	Vo mindadon	No routing Diffusive wave	Edit Parameters.	
fime step (sec): 10	Row: 76	 Green + Ampt with soil moisture redistribution 	O MESH		
Verland flow		Sacramento Model	Groundwater	Edit parameter	Π
Computation method	Evapotranspiration		Soil erosion	Edit parameter	1
ADE 🛛 😽	Ne sussestion	O Richard's infiltration	Long term simul	Edit parameter	
	Will evaporation		Contaminant tra	Edit parameter	
	O Deardorff method	Edit Parameters	Nutrients	Edit parameter	I
Initial depth			Storm/tile drain	Edit parameter	
Retention depth	O Penman method	Soil depth (m)	Stochastic	Edit parameter	
	Seasonal resist	Top layer depth (m)	Calibrate	Edit parameter	
			Link CE-QUAL		

Minimum flow:	0.0	(cms)
Allow overbank flow		
Outlet head BC	0.0	(m)
Create hot start file		_
Hot start filename;	untitled.sta	
Start from hot start I	file	
Hot start filename:	untitled.sta	
Channel erosion		
Sediment porosity:	0.4	
Water temperature:	20.0	(C)
Sand size:	0.25	(mm)
Contaminant transport		
Compute contamina	ant transport	
Decay coefficient.	0.0	(per day)
Dispersion coefficient:	0.0	(m^2/s)
Initial concentration:	0.0	(mg/l)

Run and Visualize

- Run the model and view the results
- Export the depth contour to Google Earth
- Export Film loop to Google Earth

Variable stage Boundary condition

Galveston Island, Texas



Model Setup: Create boundary arcs



Boundary conditions parameters

Prop	erties						\mathbf{X}
Feature t	ype: Arcs 💌	Show: Selected	Filter usin	g: Column: None	*		
ID	Туре	Groundwater BC	Flow BC Type	Variable Depth BC	Constant BC	Solution Results	
All	•	-					
11786	Generic 🔹	Generic 🗾 💌	Variable depth 💌		0.0		
Help						10	Cancel

Model Setup: storm surge time series



View Results



View Results (Google Earth)

