i-Tree Hydro Executive Summary

Project Location: Syracuse, New York
Project Time Span: 01/01/2012 - 12/30/2012

Model Parameters

Watershed Area	Rainfall	Total Runoff	Stream Gage	Weather Station
square kilometers	*millimeters*	*cubic meters*		
26.24	813.05	6,006,586.24	04240100	725190-14771

Land Cover	Base	Alternative		Base	Alternative	LC beneath Tree Cover	Base	Alternative
Tree Cover %	39.2	42.0	Tree LAI	5.0	5.0	Soil Cover %	95.4	95.4
Shrub Cover %	33.5	33.5	Shrub LAI	2.0	2.0	Impervious Cover %	4.6	4.6
Herbaceous Cover %	15.0	15.0	Herbaceous LAI	2.0	2.0			
Water Cover %	2.0	2.0						
Impervious Cover %	10.3	7.5	Directly Connected Impervious Cover (%)	100.0	100.0			
Soil Cover %	0.0	0.0						

Streamflow Predictions

	Total Runoff		Baseflow		Pervious Flow		Impervious Flow	
	Base	*Alternative*	*Base*	*Alternative*	*Base*	*Alternative*	*Base*	*Alternative*
Total Flow (cubic meters)	6,006,586.2	5,783,460.5	4,172,666.0	4,304,124.9	10,053.5	10,459.8	1,823,866.8	1,468,875.9
Highest Flow (cubic meters / hour)	15,080.6	13,412.9	1,205.5	1,243.0	4,018.9	4,181.4	13,365.8	10,775.4
Lowest Flow (cubic meters / hour)	23.7	24.4	23.6	24.3	0.0	0.0	0.0	0.0
Highest Flow Date	01/13/12	01/13/12	01/01/12	01/01/12	01/13/12	01/13/12	08/10/12	08/10/12
Lowest Flow Date	09/18/12	09/18/12	09/18/12	09/18/12	01/01/12	01/01/12	01/01/12	01/01/12
Median Flow (cubic meters / hour)	503.8	511.0	436.1	449.9	0.0	0.0	0.2	0.2
Number of flow events ABOVE median flow	46.0	48.0	11.0	11.0	1.0	1.0	47.0	48.0
Average length of flow events with flow ABOVE median (hours)	83.7	80.1	376.6	376.6	78.0	78.0	94.4	92.4
High Flow: Number of flow events ABOVE 1 standard deviation	37.0	36.0	5.0	5.0	1.0	1.0	41.0	41.0
Average length of flow events ABOVE 1 standard deviation (hours)	103.8	106.7	887.5	887.5	78.0	78.0	100.0	99.0
Number of flow events BELOW median flow	45.0	47.0	10.0	10.0	0.0	0.0	47.0	48.0
Average length of events BELOW median (hours)	97.1	92.9	436.8	436.8	0.0	0.0	92.9	91.0

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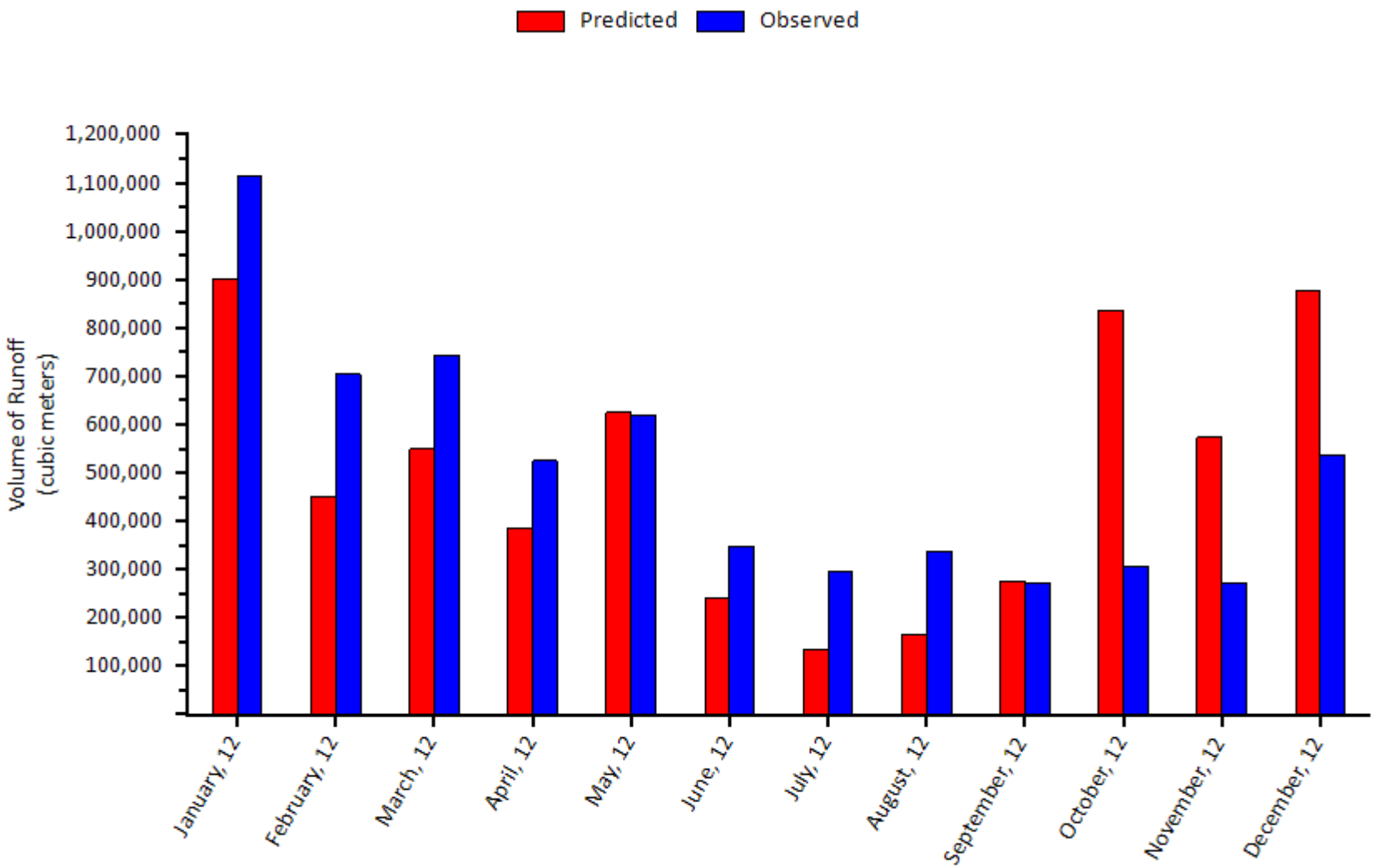
Water Volume: Observed Streamflow vs. Predicted Streamflow

(Predicted is 1% lower than Observed)



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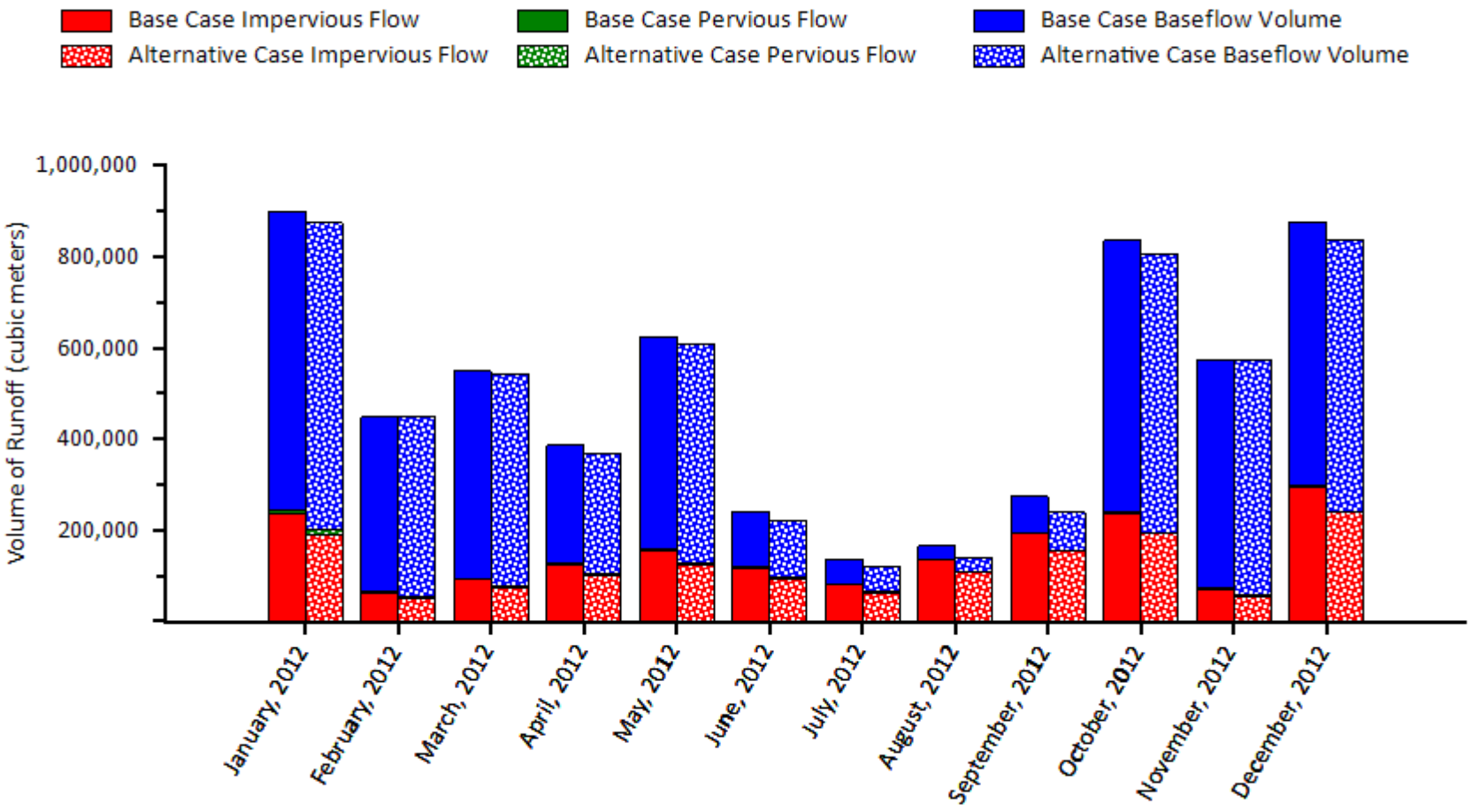
Base Case vs. Alternative Case Predicted Streamflow Components



Note: Solid colors represent Base Case values while the hatched pattern indicates Alternative Case values

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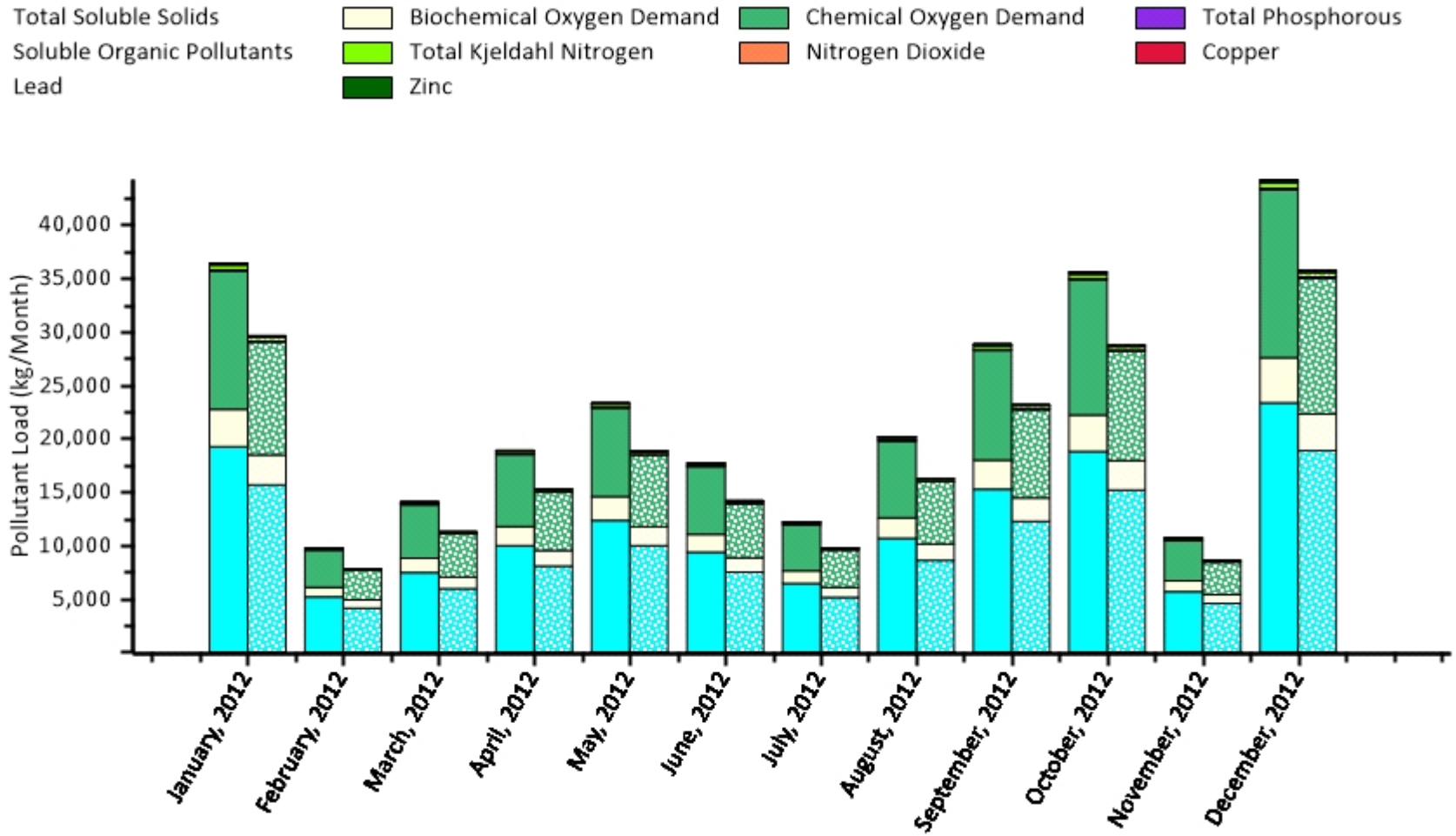
Pollutants: Base Case vs. Alternative Case Event Mean Concentration



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Glossary of Key Terms

Base Case – The original modeled scenario defined by the initial land cover values (e.g. tree cover, herbaceous cover, impervious cover, etc.).

Alternative Case – The modeled scenario contrasted with the base case. It is defined by changes in the initial land cover values representing an increase in development (e.g. increase in impervious cover or decrease in vegetative cover) or an increase in vegetative cover (e.g. increase in tree cover or herbaceous cover).

Baseflow – The stream flow from groundwater and no recent storm runoff. Baseflow is generated from the saturated soil zone within i-Tree Hydro.

Impervious Flow – The predicted overland surface runoff generated from impervious cover areas, which may be impervious cover with or without vegetative canopies. The model first checks that impervious cover specific depression storage is filled and evaporation from this storage is accounted for, before generating impervious flow. Impervious flow either passes directly to the outlet through directly connected impervious cover area (DCIA) or runs on to neighboring pervious cover areas where infiltration may occur.

Pervious Flow – The predicted overland surface runoff generated from pervious cover areas, which include bare soil and soil areas under herbaceous cover and vegetative canopies. The model uses first checks that pervious cover specific depression storage is filled and evaporation from this storage is accounted for, then uses saturation excess and infiltration excess routines to calculate the total amount of pervious flow. Pervious cover surface runoff generates run-on to neighboring impervious areas, where DCIA transports a portion of the runoff to the outlet, or onto neighboring pervious cover areas where infiltration may occur.

Total Flow volume (cubic meters) – This is the total amount of streamflow (baseflow plus pervious and impervious surface runoff) for the modeled time period. To arrive at this number, the predicted total streamflow rate for each timestep (typically m/hr) is multiplied by the watershed area represented by each landcover type and the total number of modeled timesteps (typically hr).

Highest Flow rate (cubic meters / hour) – The largest predicted peak streamflow rate during the modeled period.

Lowest Flow rate (cubic meters / hour) – The lowest predicted peak streamflow rate during the modeled period.

Highest Flow Date – The date of the largest predicted peak streamflow rate.

Lowest Flow Date – The date of the lowest predicted peak streamflow rate.

Average Flow rate (cubic meters/hour) – The average predicted streamflow rate during the modeled period.

Number of flow events ABOVE average flow – The number of continuous periods (timesteps) where the predicted streamflow rate is above the average streamflow rate.

Average length of flow events ABOVE average (hours) – The average length in hours of the continuous periods (timesteps) where the predicted streamflow rate is above the average streamflow rate.