Model	Model Urban and Non-Urban Watersheds?		Scale	Specifically model Agricultural BMPs?	Show impact of field-scale BMPs?	Incorporate seasonality in parameterization?	Model snow melt?	Model road ditches and small hydraulics?	Incorporate dynamic wave equation (e.g., reverse flows)?	Incorporate in-stream treatment processes?	Provide event and continuous simulation?	Incorporate dynamic storm simulation	Flexibility to adjust drainage boundaries based on infrastructure?	Minimum Time Step
RSWMM: PCSWMM as enhanced by CHI & EOR firms	☑	☑	All – From micro scale (laboratory scale) to macro scale (several hundred square kilometres)	☑ Yes*	☑ Yes	☑ Yes*	☑ Yes	☑ Yes	☑ Yes	☑ Yes*	☑ Yes	☑ Yes* - It has the ability to acquire and process RADAR rainfall	Very high	Minutes
HSPF	☒ Only non-urban	☑	Does not model micro drainage	Partially (Cumbersome to do so)	Partially (Cumbersome to do so)	☑	☑ Yes	☒	☒ No (Only kinematic wave)	☑ Yes	Only continuous simulation	☒ No	Low	Hours
SWAT	☒ Only non-urban	☑	Does not model micro drainage	☑	☑	☑	☑ Yes	☒	☒ No (Only kinematic wave)	☒ No	Only continuous simulation	☒ No	Low	One day
SUSTAIN (EPA)	☑	☑	All	☒ No	Yes (Only for urban BMPs)	☒ No	☑ Yes	☑ Yes	☑ Yes	☒ No	☑ Yes	☒ No	High	Minutes

SOURCE: Adapted from presentation slide – EOR Water, Ecology, Community – Model Comparisons

Computer modelling applications are common in urban areas, and some existing models have some rural features, but no current model has all the features needed for rural areas. When finished, this could be a useful addition to the suite of tools your staff use.

What is different from current, largely urban modelling of stormwater and a new, rural understanding and application of stormwater modelling? No current model package has all the following features:

Urban modelling, plus:

- Tracking of key pollutants (sediment, phosphorous and nitrogen);
- Best management practices including agricultural BMPs, plus:
- Seasonality in parameterization (for example, changes in crop cover), plus:
- Modelling of roads, ditches, and small hydraulics (for example, under-the-road culverts), plus:
- In-stream treatment processes (such as erosion, deposition - is there an open channel? Pipe? What is slope? Is terrain rough?), plus:
- Dynamic-wave equation (capturing a range, from low to high - such as the ups and downs, highs and lows, rises and flows, of water travelling through a channel), plus:
- Ongoing technical support

An urban model might look at an area with roads and houses that may not change very much - a rural property may have many different things going on at one site and the way stormwater runoff acts may differ depending on the season or even with a season.