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To: <Nancy\_Roulston@rjburnside.com>  
 cc:  
 Subject: Rain info from July 28 2002 storm

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Nancy:

Sorry for the delay on this. Here is the info IO sent Ray Nothdorft of the City of Stratford. Hopefully this helps you for determining tavistock stats...

Mark

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Ray:

As per your request, I have compiled all of the available rainfall information we have at the Conservation Authority for the city of Stratford for the July 28, 2002 event. We do not maintain a tipping bucket (ie. hourly recording) rain gauge in Stratford, but we do have volunteers in the city who monitor rain gauges which measure daily totals. The following table summarizes the locations and amounts measured.

*	Centre and Shrewsbury	146 mm
*	15 Shrewsbury	150 mm
*	7 Bay St.	130 mm
*	46 Matilda St.	120 mm
*	51 Sharman st	125 mm first rain + 25 mm second
	rain total	150 mm
*	McQueen and Freeland	114.3 mm first rain + 33 mm second rain
	total	147.3 mm

As the storm hit the Innerkip area with a similar intensity, and the Conservation Authority records hourly rain at our Innerkip Stream Gauge, Stratford hourly totals can be estimated from this record. The Innerkip hourly distribution is as follows:

*	2:00 AM - 3:00 AM	28.5 mm
*	3:00 AM - 4:00 AM	40.25 mm
*	4:00 AM - 5:00 AM	16.25 mm
*	8:00 AM - 9:00 AM	20.25 mm

Keep in mind that tipping bucket rain gauges tend to under-capture, particularly at higher rain rates. Generally we find that totalling gauges measure about 20% more than TBRG's.

Assuming a similar distribution in Stratford as in Innerkip, and looking at the range most to least rain, (totalling 150 mm - 120 mm) the Stratford Distribution is as follows:

*	2:00 AM - 3:00 AM	40.6 - 32.5 mm
*	3:00 AM - 4:00 AM	57.4 - 45.9 mm
*	4:00 AM - 5:00 AM	23.2 - 18.5 mm
*	8:00 AM - 9:00 AM	28.9 - 23.1 mm

Using the McQueen and Freeland distribution above for the two parts of the storm, the ranges are as follows:

*	2:00 AM - 5:00 AM	93.1 mm - 116.4 mm
*	8:00 AM - 9:00 AM	26.9 mm - 33.6 mm

Looking at the first 3 hour period, where the bulk of rain fell, and comparing this total (93.1 mm - 116.4 mm) to the Stratford Rainfall Distribution frequencies published by Environment Canada (Atmosphere Environment Service, 1984), we estimate this storm to be between the 1:75 and 1:250 year rainfall event (for a 3 hour duration storm). Looking at the entire storm from 2:00 AM to 9:00 AM (7 hour duration storm) the event falls between about the same range. In summary it looks like a fairly large area of Stratford received a 1:250 year rain event. Also attached is an annotated plot of the Stratford rain distribution for your records, along with the raw data which the plot was made from. If you send me an email address, I can forward you some radar images we have which show storm total amounts.

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