

1 Q. **Projects over \$200,000 but less than \$500,000**

2 Install Hydrometeorological Stations, page D-43:

3 Has Hydro investigated whether there are any steps or other measures that can be  
4 taken to reduce the incidents of missing or erroneous data points or  
5 communication interruptions with the current equipment?  
6  
7

8 A. Hydrometeorological data can be missing or erroneous for a variety of reasons,  
9 including physical damage to the measurement equipment, problems with the  
10 electronic or communications equipment, and failure of communications. The  
11 same types of issues are experienced with Hydro's hydrometeorological stations as  
12 with those that Environment Canada operates on Hydro's behalf, or for other  
13 clients or users. The same measures are used to resolve the issues.  
14

15 If data from Hydro's gauges are noted to be missing, erroneous communications are  
16 checked first. Sometimes it takes some time to identify problems with the gauges –  
17 missing temperature data is easily recognized, but when rainfall amounts of zero  
18 are recorded, it takes some time to know that the series of readings are not valid. If  
19 lack of communication is not the problem, contact is made with field personnel who  
20 will visit the gauges to investigate the problem. It can take some time to get the  
21 gauges repaired if they are remote and require helicopter access.  
22

23 Hydro uses a variety of measures to reduce the impact of missing or erroneous data  
24 on operations, regardless of the root cause of the problem. The most often used  
25 measure would be to use data from another gauge. Hydro's Vista DSS software, for  
26 instance, allows up to five gauge group definitions for each reservoir basin – if data  
27 is missing from the first set of gauges it uses the second, and so on. Both Hydro and

1 Environment Canada gauges in or near Hydro's watersheds are used for this  
2 purpose. Other measures would be to interpolate data or to use an average value  
3 from historic data.

4  
5 Hydro is an active member of CEATI International Inc.'s Hydropower Operations and  
6 Planning interest group, which includes Meteorology and Hydrology, and Data  
7 Acquisition, Validation and Dissemination on its key Topics and Issues list. In this  
8 way Hydro keeps current on industry practice and research in data quality  
9 assurance.

10  
11 The new hydrometeorological stations proposed in the 2015 Capital Budget are not  
12 required because of data quality problems with the existing stations. The additional  
13 gauges are required to provide information on meteorology over different areas of  
14 Hydro's watersheds.