

Multi-Rate FFEC Logging  
Example Field Schedule (modified from Doughty et al., 2005)

Activity Time		Measurement Time		Description
Start	End	Start	End	
<b>21 August</b>				
8:00	8:30			site preparation
8:30	12:00			install EC logging tools and tubing (tubing bottom at 493.8 m <sup>a</sup> )
12:00	12:40			install pump and water level sensor (pump at 49.9 m, sensor at 45.9 m)
13:32	8:53 <sup>b</sup>			replace well bore water with deionized water (CIRCULATION 1)
<b>22 August</b>				
8:55	9:15			remove pump, tools, and tubing
		9:21	10:35	EC measurement (STATIC UP)
		10:49	11:25	EC measurement (STATIC DOWN)
11:40	12:00			install pump and water level sensor (pump at 50.2 m, sensor at 46.2 m)
<b>12:09</b>	<b>19:25</b>			<b>PUMPING at Q = 10 L/min</b>
		12:13	12:30	EC measurement (Q = 10 L/min, t = 0 hr DOWN)
		12:30	12:44	EC measurement (Q = 10 L/min, t = 0 hr UP)
		13:09	13:24	EC measurement (Q = 10 L/min, t = 1 hr DOWN)
		13:25	13:41	EC measurement (Q = 10 L/min, t = 1 hr UP)
		14:09	14:25	EC measurement (Q = 10 L/min, t = 2 hr DOWN)
		14:25	14:40	EC measurement (Q = 10 L/min, t = 2 hr UP)
		15:09	15:25	EC measurement (Q = 10 L/min, t = 3 hr DOWN)
		15:25	15:40	EC measurement (Q = 10 L/min, t = 3 hr UP)
		16:09	16:25	EC measurement (Q = 10 L/min, t = 4 hr DOWN)
		16:25	16:40	EC measurement (Q = 10 L/min, t = 4 hr UP)
		17:09	17:25	EC measurement (Q = 10 L/min, t = 5 hr DOWN)
		17:25	17:41	EC measurement (Q = 10 L/min, t = 5 hr UP)
		18:09	18:25	EC measurement (Q = 10 L/min, t = 6 hr DOWN)
		18:25	18:41	EC measurement (Q = 10 L/min, t = 6 hr UP)

19:25	19:45			remove pump
19:55	21:25			install EC logging tools and tubing (tubing bottom at 488.8 m)
21:25	22:00			install pump and water level sensor (pump at 50.2 m, sensor at 46.2 m)
22:17	8:34 <sup>b</sup>			replace well bore water with deionized water (CIRCULATION 2)
<b>23 August</b>				
8:35	9:08			remove pump, tools, and tubing
		9:09	9:56	EC measurement (STATIC UP)
		10:08	10:26	EC measurement (STATIC DOWN)
10:40	11:00			install pump and water level sensor (pump at 50.2 m, sensor at 46.2 m)
<b>11:02</b>	<b>17:56</b>			<b>PUMPING at Q = 20 L/min</b>
		11:09	11:25	EC measurement (Q = 20 L/min, t = 0 hr DOWN)
		11:25	11:42	EC measurement (Q = 20 L/min, t = 0 hr UP)
		12:02	17:35	<i>repeat down and up measurements at one hour intervals for 6 hours</i>
18:00	18:30			remove pump
18:30	19:30			install EC logging tools and tubing (tubing bottom at 488.8 m)
19:30	19:58			install pump and water level sensor (pump at 50.2 m, sensor at 46.2 m)
20:12	6:28 <sup>b</sup>			replace well bore water with deionized water (CIRCULATION 3)
<b>24 August</b>				
6:30	6:45			remove pump, tools, and tubing
		06:48	07:33	EC measurement (STATIC UP)
		07:43	08:00	EC measurement (STATIC DOWN)
8:17	8:32			install pump and water level sensor (pump at 50.2 m, sensor at 46.2 m)
<b>8:32</b>	<b>15:16</b>			<b>PUMPING at Q = 5 L/min</b>
		08:35	08:51	EC measurement (Q = 5 L/min, t = 0 hr DOWN)
		08:52	09:10	EC measurement (Q = 5 L/min, t = 0 hr UP)
		09:32	15:15	<i>repeat down and up measurements at one hour intervals for 6 hours</i>

<sup>a</sup>Numbers refer to depth below the ground surface; water level in the well bore varied between 24.4 and 25.6 m during field operations.

<sup>b</sup>The next morning.