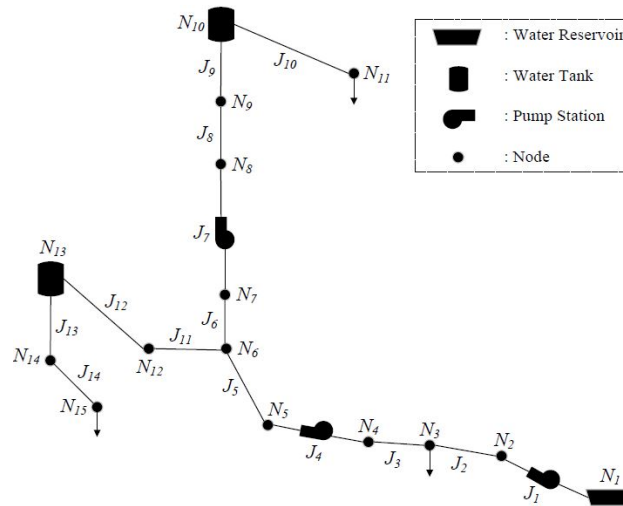


## 15-Node Water Distribution Test System



### Water Demand Data

Hour	Node N3 (m <sup>3</sup> /sec)	Node N11 (m <sup>3</sup> /sec)	Node N15 (m <sup>3</sup> /sec)
1	0.03996	0.03996	0.03996
2	0.02569	0.02569	0.02569
3	0.022833	0.022833	0.022833
4	0.02569	0.02569	0.02569
5	0.031397	0.031397	0.031397
6	0.071357	0.071357	0.071357
7	0.148423	0.148423	0.148423
8	0.191237	0.191237	0.191237
9	0.1998	0.1998	0.1998
10	0.19409	0.19409	0.19409
11	0.17982	0.17982	0.17982
12	0.15984	0.15984	0.15984
13	0.13986	0.13986	0.13986
14	0.128443	0.128443	0.128443
15	0.117027	0.117027	0.117027
16	0.11988	0.11988	0.11988
17	0.128443	0.128443	0.128443
18	0.14557	0.14557	0.14557
19	0.156987	0.156987	0.156987
20	0.156987	0.156987	0.156987
21	0.14557	0.14557	0.14557
22	0.13415	0.13415	0.13415
23	0.111317	0.111317	0.111317
24	0.077067	0.077067	0.077067

### Pump Performance Characteristic Function Data

Pumps	a	b	c	d	e
P1	178	95	2	295	134
P2	178	42	2	295	134
P3	178	30	2	295	134

### Water Storage Tank Characteristic Data

Tanks	Volume (m <sup>3</sup> )	Maximum Charge/Discharge Flow Rate (m <sup>3</sup> /hour)
T1	5000	720
T2	5000	720
T3	5000	720

### Water Node Data

Nodes	Elevation (m)	Minimum Pressure (m)	Maximum Pressure (m)
I1	10.6	0	1000
I2	9.7	20	1000
I3	0	20	1000
I4	5	20	1000
I5	55	20	1000
I6	126	20	1000
I7	121	20	1000
I8	126	20	1000
I9	157	20	1000
I10	156	20	1000
I11	156.65	20	1000
I12	128	20	1000
I13	124.13	20	1000
I14	123	20	1000
I15	106.42	20	1000

### Water Pipes Data

Pipes	Length (m)	Diameter (m)	Minimum Flow Rate (m <sup>3</sup> /s)	Maximum Flow Rate (m <sup>3</sup> /s)
P1	18	0.15	0	0.9
P2	401	0.15	0	0.9
P3	18	0.30	0	0.9
P4	1087	0.25	0	0.9
P5	1002	0.15	0	0.9
P6	846	0.10	0	0.9
P7	44	0.25	0	0.9
P8	18	0.25	0	0.9
P9	23	0.25	0	0.9
P10	16	0.10	0	0.9
P11	1003	0.20	0	0.9
P12	30	0.15	0	0.9
P13	6	0.23	0	0.9
P14	13	0.30	0	0.9