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REPORT TO FULFORD WATER SERVICE COMMISSION
MEETING OF THURSDAY 25 NOVEMBER 2010

SUBJECT **COMPLETION OF DISTRIBUTION CONNECTIONS ON SUNNYSIDE DRIVE AND TAHOUNEY ROAD**

ISSUE

Although a new water treatment plant and storage tank have been commissioned to serve the Fulford Water Service Area, further work is required on Sunnyside Drive and Tahouney Road in order to supply treated water to the entire service area. The available funding to complete this work is $54,679. The existing 100mm (4 inch) watermains in Sunnyside Drive are inadequately sized to supply water to the low pressure zone for firefighting, and one of the mains is asbestos-cement pipe estimated to be at least thirty years old.

BACKGROUND

Staff have evaluated alternatives for providing connections to treated water for properties fronting Sunnyside Drive and Tahouney Road. The evaluation criteria include:

1. Provision of a treated water connection for every property that currently has an authorized connection to the water system (required by legislation)
2. Provision of a Fire Underwriters' Survey recognized hydrant at the south end of Sunnyside (desired by Commission)
3. Capacity to supply fire hydrants in the low pressure zone (desired by Commission)
4. Disruption of water service and traffic during the work
5. Relative life cycle cost
6. Estimated cost to complete the work

There are no record drawings of the existing infrastructure in the Fulford Water Service Area. Staff have measured the locations in the field of visible elements of the infrastructure in Sunnyside Drive and Tahouney Road including valve covers and a hydrant, an air relief valve, a pressure reducing station and a pumphouse on Sunnyside Drive. Based on these measurements and a review in the field and sketches provided from the time of construction of upgrades in 2006 by North Salt Spring Waterworks District staff, sketch plans and sections have been developed showing the approximate locations of watermains and services on Sunnyside Drive (Attachment 1).

There is only one practical means of providing treated water to the two authorized service connections on Tahouney Road. Treated water is available at the intersection with Morningside Road, and one of the properties to be connected is at the opposite end of Tahouney Road. It is proposed to install a 50mm high-density polyethylene (HDPE) main the full length of Tahouney Road to serve these two connections. The work is estimated to cost $22,600 including engineering and contingency, and construction will require approximately 2.5 days at ten hours per day.

Three design alternatives for completion of the service connections in Sunnyside Drive were developed in consultation with members of the Fulford Water Service Commission (FWSC). All alternatives would achieve the required outcome of providing water from the new treatment plant to all customers. Construction cost estimates for these alternatives have been prepared by staff, including allowances for

engineering and contingency (Attachment 2). The cost of the Tahouney work is included in all alternatives.

It is anticipated that the work would be completed early in 2011 if authorization to proceed is granted by the FWSC November 25, 2010. Before proceeding with construction, the following must be completed (dates are approximate):

- Select a design alternative and authorize staff to proceed with the work (FWSC – 25 November)
- Prepare engineering drawings and specifications (staff – 31 December)
- Obtain public health engineer's approval (staff – January 2011)
- Obtain Ministry of Transportation and Infrastructure approval (staff – January 2011)
- Schedule construction, order materials and notify residents (staff – February 2011)

The approved overall 2010 capital budget is $55,000, and an additional $1,812 is available in the capital fund but is currently unallocated. A total of $2,134 has been expended to date, leaving $54,679 available to complete connections on Sunnyside Drive and Tahouney Road to the treated water distribution system. The other work included in the approved 2010 capital plan (completion of service connection for the Fulford School and fencing the reservoir site) is proposed to be carried forward to the 2011 capital plan and funded through a new loan authorization.

ALTERNATIVES

1. That the Fulford Water Service Commission authorize the expenditure of up to $75,000 for the installation of a new 150mm PVC watermain and hydrant on Sunnyside Drive, 16 service connections to the new main, and two connections on Tahouney Road; with funding of $54,679 provided from the 2010 capital plan and the balance of up to $20,321 recovered through the 2011 user charge.

2. That the Fulford Water Service Commission authorize the expenditure of up to $85,000 to modify the configuration of the existing watermains in Sunnyside Drive to provide treated water to all service connections, and to install two connections to the treated water system on Tahouney Road; with funding of $54,679 provided from the 2010 capital plan and the balance of up to $30,321 recovered through the 2011 user charge.

3. That the Fulford Water Service Commission authorize the expenditure of up to $63,000 for the installation of 16 service connections to the existing 100mm PVC watermain on Sunnyside Drive and two service connections on Tahouney Road; with funding of $54,679 provided from the 2010 capital plan and the balance of up to $8,321 recovered through the 2011 user charge.

IMPLICATIONS

Alternative 1

This alternative, originally presented to the FWSC June 18, 2010, would achieve the desired outcome of adequate capacity to supply a new hydrant near the Sunnyside PRV Station and future hydrants in the low pressure zone (which would require replacement of certain PRV components and replacement of 100mm watermains in the low pressure zone; both outside the scope of this project).

Disruption of water service would be minor, since the existing infrastructure can remain in use while the new 150mm main is installed adjacent to the existing 100mm PVC main in the southwest shoulder of Sunnyside Drive. Local traffic would be disrupted by work in the cul-de-sac at the north end of Sunnyside Drive, in the southwest shoulder between the cul-de-sac and the PRV station, across Sunnyside Drive at the PRV station, and at the intersection of Sunnyside Drive and Hilltop Road. Construction in Sunnyside Drive would require approximately five days at ten hours per day.

Although the original 100mm asbestos-cement (AC) watermain would remain in use, it would serve strictly as a raw water pipeline. Since this alternative would otherwise avoid the need to replace water distribution mains Sunnyside Drive for several decades, it is estimated to represent the lowest life cycle cost among the three alternatives considered. Proceeding with Alternative 1 would require that the user charge for 2011 be increased by approximately $215 per single-family dwelling unit beyond what is included in the 2011 budget recommendation.

Alternative 2

This alternative would achieve the required outcome of providing water from the new treatment plant to all Fulford water service customers. Although it is estimated that adequate capacity would be available to supply a new hydrant near the Sunnyside PRV Station, Alternative 2 would not yield sufficient capacity for future hydrants in the low pressure zone.

Disruption of water service would be the least of the three alternatives since the connections would remain on the existing 100mm AC main. Traffic would be disrupted by work in the cul-de-sac at the north end of Sunnyside Drive, across Sunnyside Drive near the PRV station, and in the shoulders of Sunnyside Drive between the PRV Station and Hilltop Road. Construction in Sunnyside Drive would require approximately ten days at ten hours per day.

The original 100mm asbestos-cement (AC) watermain would remain in use as a water distribution main. It is likely that this main would need to be replaced within the next decade, including 12 corporation stops for active service lines connected to the main, which would likely require an open trench excavation in the northeast shoulder of Sunnyside Road (and removal of mature trees, hedges and fences). For this reason, this alternative is estimated to represent the highest life cycle cost among the three alternatives considered. Proceeding with Alternative 2 would require that the user charge for 2011 be increased by approximately $320 per single-family dwelling unit beyond what is included in the 2011 budget recommendation.

Alternative 3

This alternative would achieve the required outcome of providing water from the new treatment plant to all Fulford water service customers. Although it is estimated that adequate capacity would be available to supply a new hydrant near the Sunnyside PRV Station, Alternative 3 would not yield sufficient capacity for future hydrants in the low pressure zone.

Disruption of water service may be significant to the connections on Sunnyside Drive, but other customers would not likely be affected. Traffic would be disrupted by work in the cul-de-sac at the north end of Sunnyside Drive and in the shoulders of Sunnyside Drive between the cul-de-sac and Hilltop Road. Construction in Sunnyside Drive would require approximately 6.5 days at ten hours per day.

The original 100mm asbestos-cement (AC) watermain would remain in use as a water distribution main. It is likely that this main would need to be replaced within the next decade, including 12 corporation stops for active service lines connected to the main, which would likely require an open trench excavation in the northeast shoulder of Sunnyside Road (and removal of mature trees, hedges and fences). For this reason, this alternative is estimated to represent the highest life cycle cost among the three alternatives considered. Proceeding with Alternative 3 would require that the user charge for 2011 be increased approximately $90 per single-family dwelling unit beyond what is included in the 2011 budget recommendation.

The implications of the three alternatives are summarized as follows:

Criteria	Alternative 1	Alternative 2	Alternative 3
Provides treated water to all service participants	yes	yes	yes
Provides a recognized hydrant at Sunnyside PRV	yes	no	no
Capacity for future hydrants in low pressure zone	yes	no	no
Water service and traffic disruption during construction	moderate	low	moderate
Relative life cycle cost	low	moderate	high
Estimated cost of work	$75,000	$85,000	$63,000
Available funds	$54,679	$54,679	$54,679
New funding required (2011 revenue)	$20,321	$30,321	$8,321

CONCLUSION

The estimated cost to complete connections to the treated water distribution system on Sunnyside Drive and Tahouney Road exceeds the available funding by at least $8,000. Based on evaluation of the costs and benefits of alternatives for completing the connections on Sunnyside Drive, installing a new 150mm watermain and transferring service connections to the new main represents the best value to the community.

RECOMMENDATION

That the Fulford Water Service Commission authorize the expenditure of up to $75,000 for the installation of a new 150mm PVC watermain and hydrant on Sunnyside Drive, 16 service connections to the new main, and two connections on Tahouney Road; with funding of $54,679 provided from the 2010 capital plan and the balance of up to $20,321 recovered through the 2011 user charge.

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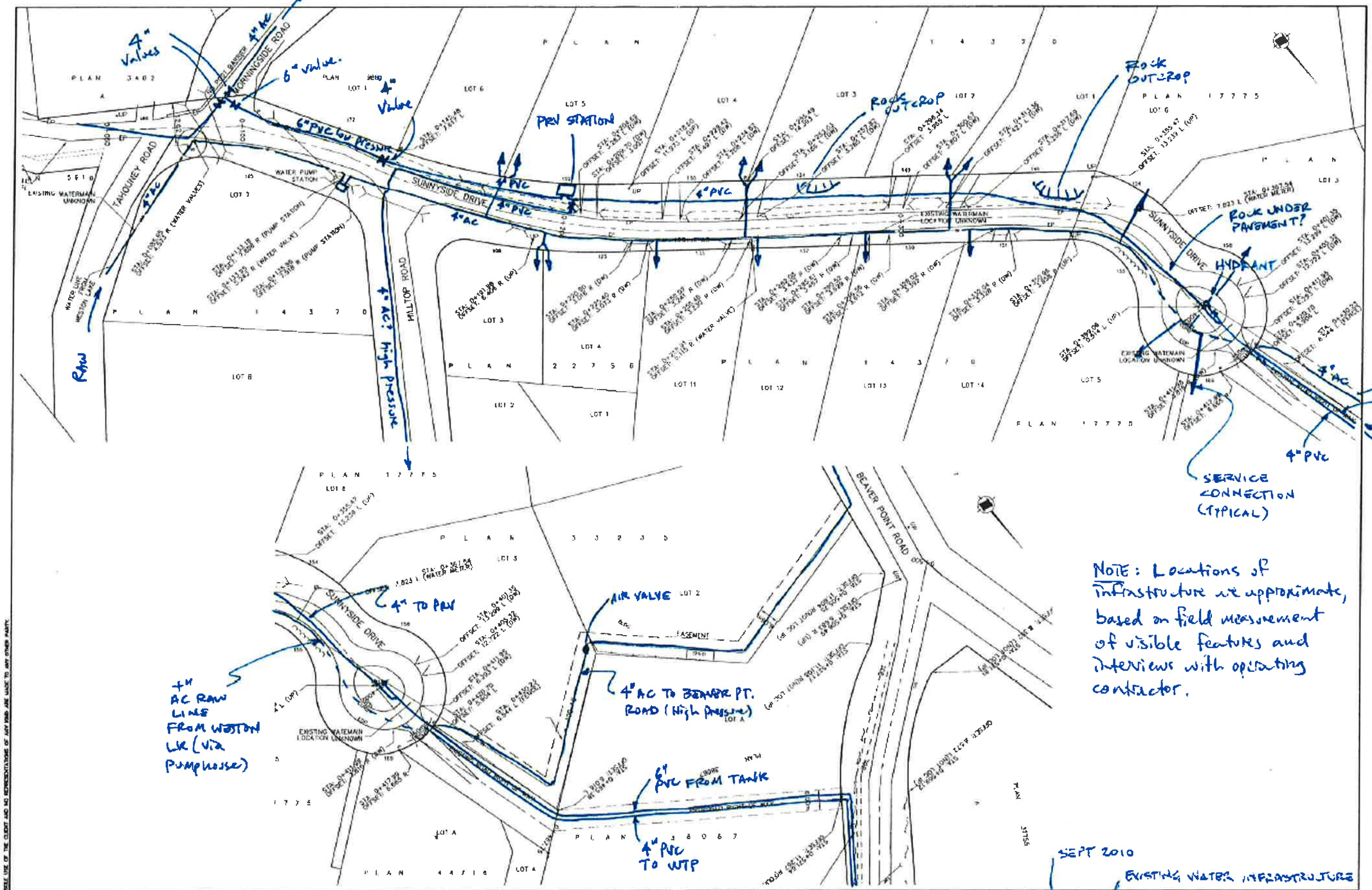
Concurrence

J.A. (Jack) Hull, MBA, PEng
General Manager, Integrated Water Services
Concurrence

CS:ls
Attachments: 2

ATTACHMENT 1



NOTE: Locations of infrastructure are approximate, based on field measurement of visible features and interviews with operating contractor.

bullock baur
File No. 1629-02
civil engineering
community infrastructure
project management

CAPITAL REGIONAL DISTRICT
Environmental Services

DESIGNED
DRAWN
SCALE HORIZONTAL
SCALE VERTICAL
SURVEYED D.A.
DATE 09/01/AUG
CHECKED
APPROVED

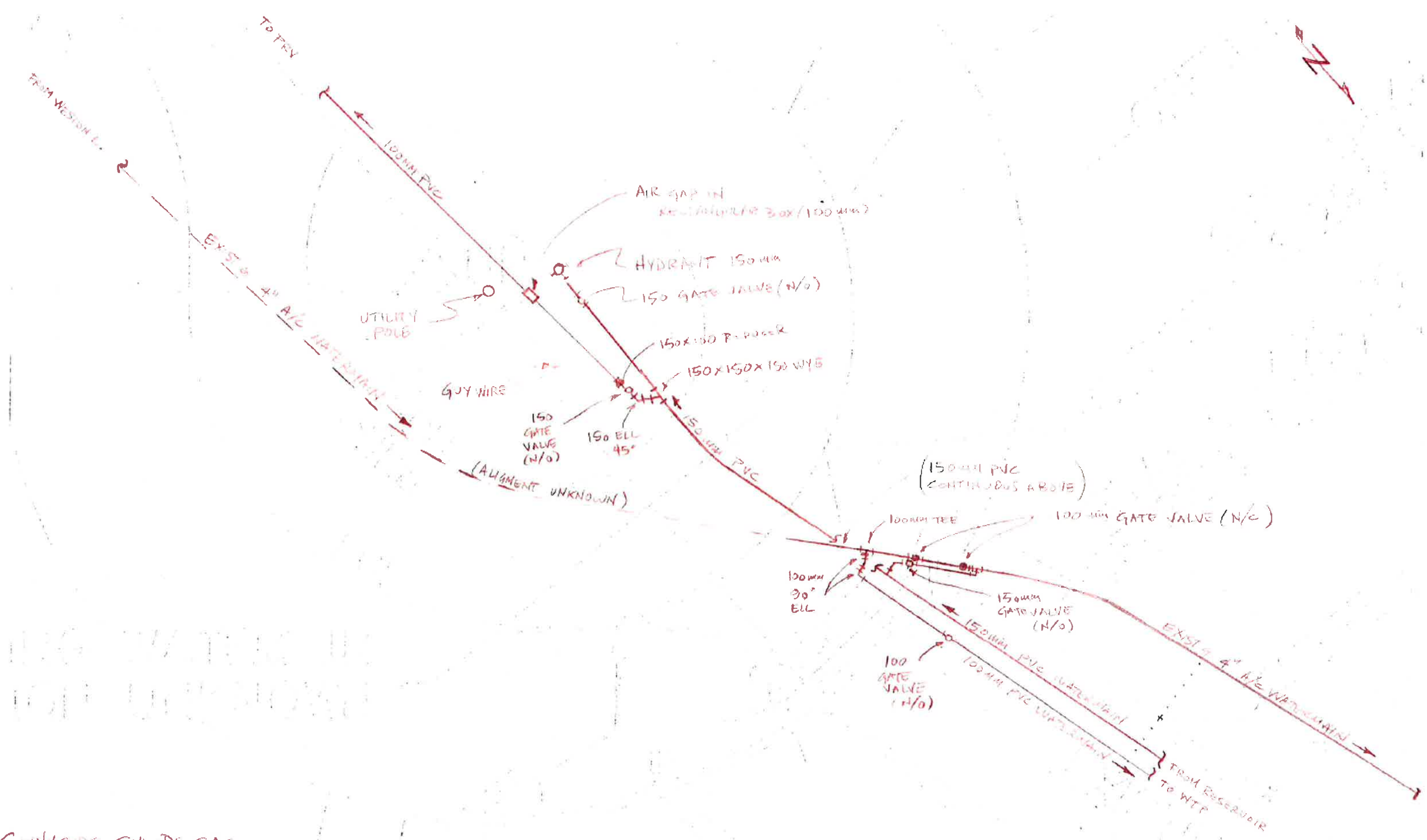
FULFORD WATER SYSTEM WATERMAIN & PUMP STATION
~~KEYING PLAN~~
SUNNYSIDE DRIVE AND
EASEMENT TO SOUTH RIDGE DRIVE
CONTRACT NUMBER 05-1547
DRAWING NUMBER 26-D189--
SHEET NO. 1 OF 3

1629-03-01 SUPERSEDES ALL ISSUES PRIOR TO- 13 JUN 2006

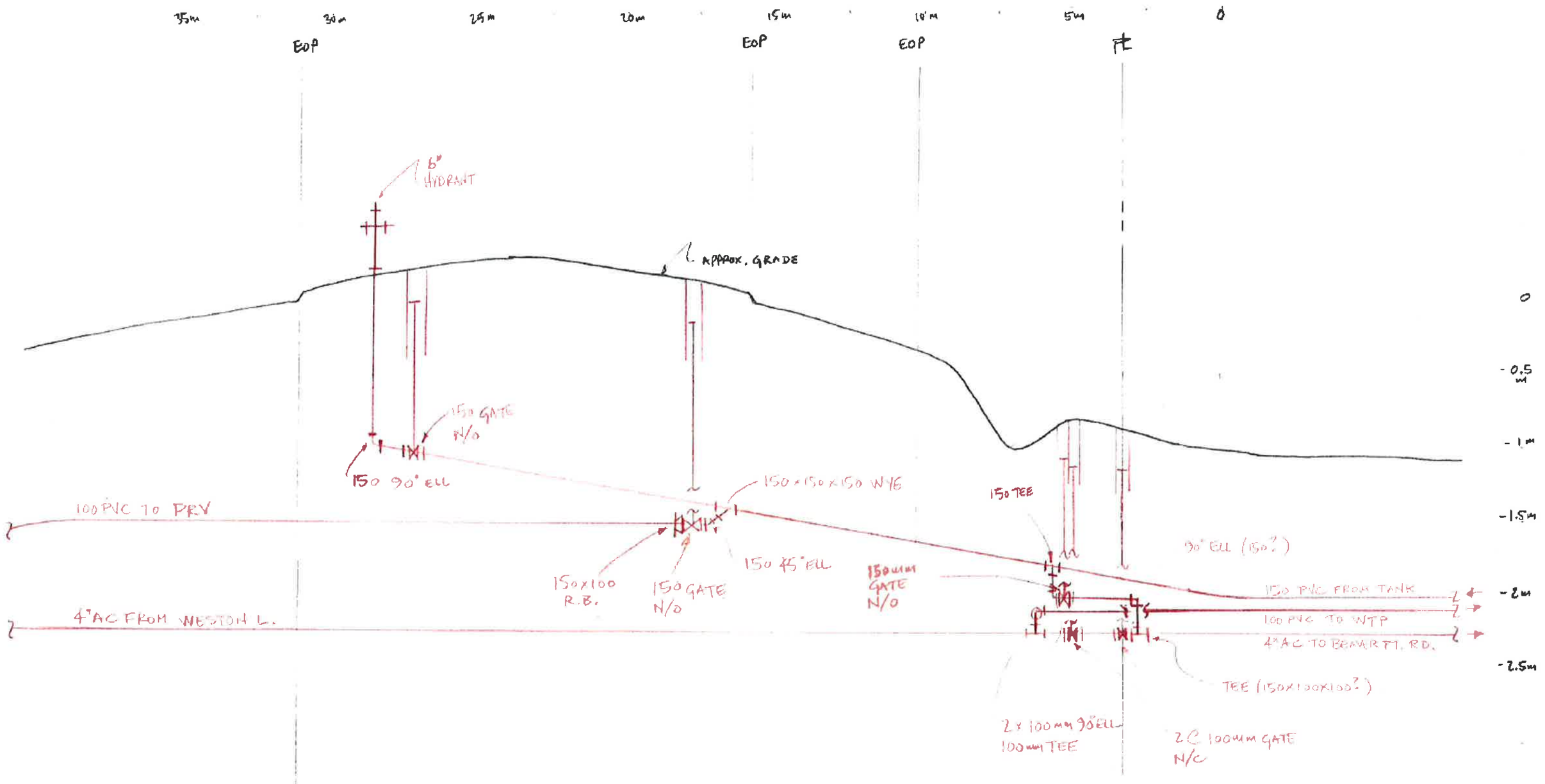
SEPT 2010

EXISTING WATER INFRASTRUCTURE

NOT TO SCALE



SUNNYSIDE CUL-DE-SAC
FULFORD WATER SERVICE
© SUNDERLAND SEPT 2011
1:125 APPROX



SUNNYSIDE CUL-DE-SAC
FULFORD WATER SERVICE
C. SUNDERLAND
1:125 HORIZONTAL, 1:25 VERTICAL APPROX.

Fulford Water System - Cost Estimates for Water Service Connection Work **ATTACHMENT 2**

Item		Estimated Cost
ALTERNATIVE 1. Install new 150mm distribution main from Sunnyside Drive cul-de-sac to PRV station, install new hydrant at PRV station, and reconnect service connections to new main		
Tahouney Road		
	Labour	$ 10,214.27
	Materials	$ 3,809.21
	Tools and Equipment	$ 1,910.40
	Services	$ 3,700.00
	Engineering and Contingency	$ 4,708.47
Subtotal - Tahouney Road		$ 24,342.35
Sunnyside Drive		
	Labour	$ 13,002.99
	Materials	$ 13,684.35
	Tools and Equipment	$ 4,496.40
	Services	$ 9,000.00
	Engineering and Contingency	$ 9,645.93
Subtotal - Sunnyside Drive		$ 49,829.67
TOTAL ESTIMATED COST - ALTERNATIVE 1		$ 74,172.02
ALTERNATIVE 2. Reconfigure Sunnyside Drive mains to use 100mm asbestos-cement pipe as distribution main and 100mm PVC pipe as raw water line between PRV station and cul-de-sac		
Tahouney Road (as above)		$ 24,342.35
Sunnyside Drive		
	Labour	$ 24,102.40
	Materials	$ 5,721.33
	Tools and Equipment	$ 6,910.40
	Services	$ 11,568.00
	Engineering and Contingency	$ 11,675.53
Subtotal - Sunnyside Drive		$ 59,977.67
TOTAL ESTIMATED COST - ALTERNATIVE 2		$ 84,320.02
ALTERNATIVE 3. Reconnect Sunnyside Drive service connections from existing 100mm asbestos-cement raw water line to existing 100mm PVC distribution main		
Tahouney Road (as above)		$ 24,342.35
Sunnyside Drive		
	Labour	$ 15,968.25
	Materials	$ 6,786.03
	Tools and Equipment	$ 1,892.00
	Services	$ 6,000.00
	Engineering and Contingency	$ 7,261.57
Subtotal - Sunnyside Drive		$ 37,907.86
TOTAL ESTIMATED COST - ALTERNATIVE 3		$ 62,250.21