



North State Consulting, PC

□ P. O. BOX 1058 □ 914 Lince Ave □ Winthrop, WA 98862 □ Phone: 509-996-9215 □ Fax: 509-996-9216
□ Cellular: 509-750-1569 □ Internet: melhart@methownet.com

NOTE: THE DOLLAR AMOUNTS SHOWN IN THIS DOCUMENT ARE DATED AND NO LONGER APPLY.

Date: August 23, 2006
To: Edelweiss Maintenance Commission
HCR 74 Box 88C
Winthrop, WA 98862
Attention: Mr. John Caesar
Subject: Water Model – Full Build-out
Revision #1
Reference: EMC Water System

Dear Mr. Caesar:

North State Consulting, PC has completed the "Full Build-out" water system analysis for the main Edelweiss domestic water system. The model utilized is EPANET 2, which is the latest version of the EPANET 1.1c model that was used to develop the recommendations as reported in the *EDELWEISS DOMESTIC WATER SYSTEM ENGINEERING & PROJECT REPORT* dated February 4, 1996. The engineering & project report has been received, reviewed, and accepted in 1996 by the Washington State Department of Health as the document to be utilized for full build-out of the Edelweiss Community domestic water systems.

The full build-out analysis indicates that the existing system is capable of providing water to the Edelweiss Community at full build-out. However, without the following recommended revisions, pressure and flow problems will exist during heavy use periods. These pressure and flow problems will not only be annoying to property owners, but the pressure and flow problems will add stress to the already stressed piping system. If the revisions are not implemented, Edelweiss can anticipate an increase in frequency of transmission line breaks and an increase in frequency of low pressure at delivery points and possibly loss of flow at some delivery points.

The recommended revisions to the water system piping are contained in the following table.

PIPE LINE BY ROAD NAME	EXISTING DIA. & LENGTH	DIA. REVISION RECOMMENDED	2006 BUDGET	COMMENT
Cassal Well Pump to Cassal Booster Pump still well.	6" dia x 990 ft	6" dia. x 990 ft	\$28,000.00	Replace line for reliability. Line is not installed properly and line breaks have occurred. Critical pipeline in system.
Cassal Booster Pump to Cassal storage tanks.	4" dia. x 300 ft	4" dia x 300 ft Length will depend on condition of existing pipe	\$11,000.00	Replace portion of pipeline that is under the intersection of East Fawn Creek Road and Mustard Mtn. Road. Line continually develops leaks due to improper installation. Critical pipeline in system.
Transmission line from East Fawn Creek at lot 442/443 Gate Valve GV-53 to Crab Apple Road at Gate Valve GV-6	4" dia. x 3650 ft	6" dia. x 3650 ft	\$76,500.00	Major pipeline to be increased in diameter to relieve pressure/flow restrictions for full build-out. Install a fire hydrant.
Cassal Road from intersection with Highland Road to Pool	1-1/2" dia. x 1150 ft	4" dia. x 1150 ft	\$28,000.00	Complete loop of 4" line. Will allow the installation of a fire hydrant at the Pool. The meadow at the Pool and along the bluff can be used as a fire safe zone.



North State Consulting, PC

□ P. O. BOX 1058 □ 914 Lince Ave □ Winthrop, WA 98862 □ Phone: 509-996-9215 □ Fax: 509-996-9216

□ Cellular: 509-750-1569 □ Internet: melhart@methownet.com

West Bitterbrush Road	1-1/2" dia. x 840 ft	4" dia. x 840 ft	\$19,500.00	Complete loop of 4" line. Will ease the flow/pressure demands on the west side of the Bitterbrush loop.
Fawn Road	1-1/2" dia x ???	4" dia. x 765 ft	\$16,000.00	Line was thought to exist but recent tie-ins have revealed that it does not. Installing 4" line will allow service to properties on Fawn Road and will serve as a redundant feed along part of Highland Road.
Winter Green Road & West Fawn Creek Road	2-1/2" dia. x 2250 ft	4" dia x 2250 ft	\$46,500.00	Ease flow/pressure on existing line and serve as a redundant feed to Lupin Road.
Lupin Road loop	2" dia x 1335 ft	4" dia x 1335 ft	\$32,000.00	Existing line not installed correctly and not tied together at creek so as to form a loop. Loop system is required for balanced flow and redundant feed.
Laney Lane	1-1/2" dia. x 800 ft	4" dia. x 800 ft	\$18,000.00	Replace only if flow/pressure issues arise in the future.

The above budgets are based on current costs for excavation, pipe, valves, concrete for thrust blocks, bedding materials, backfill, compaction, and replacement of 5/8" crushed rock road surfacing. The budget amount does not include asphalt or chip-seal road surfacing. The budget amount does not include any allowances for other utilities (electrical and phone) to share in the cost of the water line revisions.

The above budget amounts are intended to be used for current annual and 5 year budgeting. The amounts are not to be used as bid pricing or final installed costs. The budget amounts will require adjustment for future years. It is highly recommended that the budget amounts be revised for the "Current-time-period" in which the work is scheduled and/or if the budget is being used to make a special assessment to property owners.

If you have any questions or wish to discuss this, please call me at (509)-996-9215 (Office) or (509)-750-1569 (Cell).

Very truly yours,

Melvin E. Hartwig, P.E.