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King County Tabula: Task 5—Review and Test Tabula Program

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This memorandum pertains to the King County Wastewater Treatment Division's Work Order #3 for revisions and updates to its Tabula cost estimating program, and specifically discusses Task 5: review and test Tabula's cost estimating formulas to detect and correct errors. This memo outlines errors found and corrected within the Tabula program and also discusses the general methodology used to test the final results.

In conducting Task 1, revision of the unit costs within Tabula, and Task 2, identify and add additional unit costs, few errors within the existing program were found. Typically, any errors discovered were merely typographical in nature and did not produce incorrect values or parameters. These errors were catalogued and corrected during the course of Tasks 1 and 2 and hard copies of these outputs will be provided to King County in a separate three-ring binder. After Tasks 1 and 2 were completed, the program was run through a systematic testing process to check for errors.

To test the easement adjustment factor a series of inputs for each item was entered so that every pipe size and type was checked along with the different options for traffic control, dewatering, and utility conflict costs. In addition, quantities for the excavation and backfill were periodically spot-checked to ensure that the formula outputs were correct.

To check the pump station unit costs, parameters from 10 example pump stations were entered into the program and the output was checked by hand. After this process was completed, the variables for the different items were changed so that the extreme ranges of the program could be checked. A similar process was conducted for the storage unit costs. Storage facilities for 1, 2, 3, 4, 5, 10, 15, 20, 25, and 30 million gallons were tested.

The culvert model was tested by entering a range of pipe diameters and end treatments and verifying that the calculated values matched values generated by hand.