City of North Bonneville
P.O. B ox 7
North Bonneville, WA 98012

Ronald A. Bush
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**RE: Engineering Contract Modification**

Additional computer programming is needed at the Wastewater Treatment Plant to facilitate the operation of the Air Blowers to modulate their operating rate based on the dissolved Oxygen level in the aeration basins. This function was not included in the original design package.

The programming will include additions to the existing computer programming necessary to allow the Wastewater Treatment Plant Computer (Programmable Logic Controller, PLC) to receive "input" signals from the Dissolved Oxygen probes located in the aeration basins. That signal will be calibrated so that the computer can relate the DO level to the speed that the air blower is operating at. The calibrated signal is then analyzed and converted into an "output" signal that is then applied to the run signal going to the aeration blowers.

The programming is initially completed it is allowed to operate the blowers with the programmer watching the blower operation while DO level signal is modified and the speed of the blowers is observed. The programming is modified as necessary to make the blowers function as intended.

R&W Engineers will be performing the programming for this modification. The amount of time needed to make the modifications is not known for certain. The process of programming these functions is not as predictable as one would expect. The programming process includes some "trial and error" process when calibrating the input signal from the DO probe and the output signal to the blowers. Once the programming is set to allow the system to function based on the input and output signals from the PLC then the Human-Machine Interface (HMI) device is programmed to allow operator modification of the set-points controlling the equipment if and when there is a change in the wastewater influent characteristics.

R&W has agreed to perform the work on a "Time and Materials" basis with a "Not to Exceed" amount. This will allow you to realize the savings if the process goes well but will also allow them to be covered if the programming has some time consuming aspects to it.

The amount of time needed to perform the work ranges form 3 days to 5 days. The amount below is adequate to allow this level of effort.

**R& W ENGINEERING CONTRACT INCREASE - $5,500.00**

If you have any questions please call me at (503) 668-8265 (office) or (503) 329-8017 (cell).

Ronald A. Bush, P.E.
06-09