

Northeast Area Well Field Update

PAST STEPS COMPLETED

- **Well Siting Study**
 - Completed in December, 2012
 - Indicated northeast well field has potential for significant impacts on surface waters based on Metro Model 2 regional groundwater model which lacked the fine detail and did not account for a continuous clay layer thought to be present between surface waters and the aquifers.
 - Recommendation was to do a three phase study to build data for a more refined model and attempt to confirm the presence of a continuous clay layer.
- **Phase 1 - Detailed Paper Study**
 - A more detailed local groundwater model was created using well boring logs and the new Metro Model 3 regional groundwater model, which is currently under development and includes more fine detail and information on the clay layer.
 - Paper study was presented to the DNR by Barr on November 27, 2013
 - Updated local groundwater model predicted very little interaction between surface waters and proposed well field due to a continuous clay layer that separates surface waters from the aquifers.
 - DNR had several natural areas of concern that should be monitored during pumping test.
 - Wetland bank south of 125th Ave and east of Lexington Ave
 - Scientific and Natural Area (SNA) near well 15 on north and south sides of 95th Ave.
 - SNA on airport property east of Radisson Road.
 - Blaine wetland bank
 - Pioneer Park wetlands
 - DNR did not identify what level of surface water drawdown on the above areas of concern would be acceptable, but did indicate that a monitoring well pumping test should focus on confirming the presence of a continuous clay layer and verifying its effect in the groundwater model.
 - DNR would expect a pumping test will be conducted in the well field and that they would like to review the pumping test plan prior to it being implemented.

CURRENT STEP

- **Phase 2 – Existing Well Pumping Test**
 - Pumping test plan was completed the week of Feb 3 and submitted to the DNR for review.
 - DNR has reviewed and commented on plan.
 - Pumping test plan will consist of
 - Installing 9 various shallow (surface water) and deep (aquifer) monitoring wells on 6 sites at an estimated cost of approximately \$150,000.
 - Running all existing wells (except well 7) at full capacity for 7 days during hydrant flushing time.

- Monitoring wells will be monitored from 2 weeks before to 2 weeks after the pumping test.
 - Model will then be reevaluated with new monitoring well data
- Barr Engineering has completed plans and specs and the monitoring well installation project is out for bid until 3/24/14.
- Drilling of monitoring wells to be done over 3-4 weeks beginning in April.
- Pumping test to begin when hydrant flushing occurs (late May).
- Well pumping rates will be adjusted as needed during pumping test if too much water is being produced.

NEXT STEP

- **Phase 3 – Site Specific Pumping Test**
 - Several pilot holes will be drilled into the bedrock surrounding the proposed northeast area well field. This data along with the data from Phase 2 will be used to select an aquifer for well #18 to be installed in.
 - Barr will prepare a work plan for the design of the proposed well #18, any additional monitoring well locations needed and test procedures. Cost for well is around \$100,000 not including any additional monitoring wells.
 - DNR and City will review and approve work plan.
 - Well #18 will be drilled (as a test well) and prepared and an aquifer pumping test will be run. The test will evaluate impacts to environmental features of concern, evaluate well interference and determine well and well field capacity.
 - Following the aquifer test, the test results will be integrated into the model for further refinement and preparation of a detailed report.
 - Report will be reviewed by DNR and will include a final recommended configuration for the northeast well field.
 - Pumping test will hopefully occur late summer/early fall of 2014, but could slip to spring 2015.
 - Well 18 infrastructure (pump, motor, piping, etc.) would be finished and brought online after pumping test is complete and DNR receives report if all goes well.
 - Once Phase 3 is completed the City will have a plan for development of the remainder of the well field (well location, spacing, potential capacities).