Guidelines for Dewatering During Basement Or Below Ground Garage Construction

February 2016

Overview

On February 1, 2016, Palo Alto City Council strengthened requirements designed to minimize the pumping and discharge of groundwater from basement (or below ground garage) dewatering during construction. Pumping of groundwater after the completion of basement construction has not been permitted for over a decade. In recent years, concerns that construction dewatering may be wasting water, potentially damaging structures, trees and vegetation, and depleting or altering the flow of groundwater, have arisen. Therefore Palo Alto has added new requirements.

Public Works only allows drawdown well dewatering of groundwater. Open pit dewatering of groundwater is disallowed. Open pit dewatering is allowed for rainwater that may accumulate at the bottom of an excavation, if water quality limits are met.

Groundwater dewatering is only allowed from April through October due to inadequate capacity in the City's storm drain system. Open pit dewatering of rainwater is allowed throughout the year, but must meet water quality requirements.

A geotechnical report must be submitted for the site (separate from the Geotechnical Study described below), and must list the highest anticipated groundwater level. Public Works recommends a piezometer to be installed in the soil boring. The contractor must determine the depth to groundwater immediately prior to excavation by using the piezometer or by drilling an exploratory hole if the deepest excavation will be within 3 feet of the highest anticipated groundwater level. If groundwater is found to be within 2 feet of the deepest excavation, a drawdown well dewatering system must be installed, or, alternatively, the contractor can excavate for the basement without a dewatering system in place and hope not to hit groundwater. However, if groundwater is hit, the contractor must immediately stop all work and must meet all of the following requirements prior to resuming work.

Public Works may require water to be tested for contaminants prior to initial discharge and at interval during dewatering. If testing is required, the contractor must retain an independent testing firm to test the discharge water for the contaminants Public Works specifies and submit the results to Public Works.

Below is a summary of the pre-existing requirements, with the recently adopted requirements included. The overall goal is to minimize the discharge of groundwater from basement construction dewatering. The requirements fall into four categories: 1) Fill stations are required so that others may fill water trucks or connect garden hoses for irrigation; 2) Use plans are required to demonstrate that the applicant/builder is arranging for use of as much of the pumped water as possible and minimizing storm drain discharge; 3) A Geotechnical Study is required (unless the owner/builder received the Planning Conditions of Approval, or submitted a Building Permit Application before January 14, 2016) to determine any potential effects and

needed avoidance measures; and 4) Street Work/Dewatering permits are required (and are issued after requirements #1, #2 and #3 are completed).

1. Fill Station Requirements

   Fill Station requirements are explained in the attached "Fill Station Requirements" and are summarized in the check-list shown below:

   a) Locate the fill station box outside the fence to allow 24-hour per day access;
   b) Provide 2 ½" fire hose connection with a 25-foot (minimum) fire hose;
   c) Provide at least two hose bibs outside the fill station box for standard hose connections;
   d) Provide sufficient pressure to deliver 200 gallons per minute (gpm) in the fire hose and 10 gpm in the garden hose;
   e) Provide a "Water Filling Station" sign on the fill station box;
   f) Provide a "Non-Potable Discharge" sign on the discharge point;
   g) Supply log sheets, and a pen inside the box for truckers to show date and amount of filling;
   h) Provide a fill station box combination lock and give City the combination (617-3103);
   i) Provide sufficient flow meters and data loggers to determine both the water used through the fill station and the total water pumped from the ground;
   j) Protect against trip hazards with sidewalk bridges and appropriate signage as needed;
   k) Once water is in the tank, call Watershed Protection (650-329-2430/2122) for water quality testing;
   l) When Fill Station is ready, call Public Works Engineering Inspection (650-496-6929) for inspection; (Note: When the City determines that the site is too close to an area of ground water contamination, no fill station shall be provided.)

2. Use Plans

   A brief groundwater use plan must be prepared to show how the groundwater will be used to the extent practical. It shall be submitted with the Street Work/Dewatering Permit Application, and shall contain the following minimum provisions:

   a) Applicant distribution of City-provided door-hangers to advertise the availability of water; these are to be collected if still apparent after 24 hours.
   b) Applicant watering of on-site and neighboring vegetation, to the extent desired by owners;
   c) Applicant piping water to any nearby parks and schools as requested by City;
   d) Applicant trucking water one full-day per week to irrigation sites as directed by the City;
   e) Applicant using water on-site for dust suppression and other construction needs.

3. Geotechnical Study / Determination of Effects and Associated Avoidance Measures

   Conduct a Geotechnical Study to determine the radius of influence (i.e. extent of cone of depression) from each dewatering well as a function of time, based on local soil and groundwater conditions. All wells and other dewatering sites within a 400-foot radius (roughly one City block) of the property that may interact with dewatering activity, using information available from the City, shall be included in the

study. State or show the exact location of these dewatering sites. Prepare a map and cross sections of the cone(s) of depression. State whether it is reasonably likely that the proposed dewatering will cause effects (including settlement or movement) on off-site private or public structures or infrastructure, including the right or way, easements, and utilities within public utility easements. State whether it is reasonably likely that the proposed dewatering will reduce the amount of water taken up by any vegetation or trees to a level that will affect the health or viability of the vegetation or trees. Utilize an Urban Forestry Sub Consultant (certified arborist) to verify any such effects on trees.

To the extent that the qualified professional states that off-site effects are reasonably likely to occur, identify avoidance measures to be implemented that will minimize the type and severity of those effects. Avoidance measures are also to be employed to the extent practical to minimize the flow rate and duration of the pumping, even when off-site effects are not specifically identified. Avoidance measures may include, for example: optimizing well count, well depth, well location, pumping rate, and/or duration of pumping; supplemental irrigation of trees or vegetation, soil amendment, or other plant protection methods recommended by a certified arborist; alternative dewatering or construction methods. Develop a monitoring plan to assess any actual effects on vegetation, trees, structures and infrastructure. The Geotechnical Study and description and extent of the cone of depression must be stamped by a California licensed Geotechnical Engineer and submitted to the City, and will be made available for public review. A Geotechnical Study Worksheet is attached.

4. Street Work/Dewatering Permit Application

A Street Work /Dewatering Permit must be obtained before any discharge from the site occurs. Public Works reviews and approves Dewatering Plans as part of a Street Work Permit. The applicant can include a Dewatering Plan in the building permit plan set in order to obtain approval of the plan during the building permit review, but the contractor will still be required to obtain a Street Work Permit prior to dewatering. Dewatering discharge to the storm drain system cannot occur between October 31 and April 1 to ensure that that the full capacity of the storm drain system is available for storm flows. The Dewatering Permit will not be issued by Public Works Engineering (650-329-2151) until the requirements of items 1-3 above have been met. Item #3 is only required if the Planning Conditions of Approval were not obtained, or the Building Permit Application was not submitted before January 14, 2016. If item #3 is not required, the attached Street Work/Dewatering Permit Application Checklist becomes the operative worksheet (as opposed to the Geotechnical Study worksheet).

The Street Work/Dewatering Permit Application must include documentation that the dewatering system has been designed to include measures such that the flow rate and the duration of pumping are minimized to the extent practical. These measures are to include, for example: optimizing well count and well locations; minimizing well depth, pumping rate, and duration of pumping. A Residential Street Work/Dewatering Permit will be issued for a maximum period of 10 weeks to ensure that minimization of pumping duration occurs. Administrative penalties beginning at $ 500 per day (and subsequently escalating) shall accrue following the permit expiration date, if pumping and/or discharge continues.

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