



## Regulations for Groundwater Dewatering during Construction of Below Ground Structures

A How-to Guide to Meeting City of Palo Alto Dewatering Requirements

### I. BACKGROUND

In recent years, concerns that temporary construction-related groundwater dewatering may be wasting water, potentially damaging structures, trees and vegetation, and depleting or altering the flow of groundwater, have arisen. In response, the City of Palo Alto (City) established new requirements in February 2016 designed to minimize and standardize the process of pumping and discharge of groundwater from dewatering of below ground structures (e.g., basement or parking garage) during construction.

After the results of new groundwater dewatering regulations from the 2016 and 2017 Construction Seasons, the City Council approved several enhancements to the dewatering policy that were codified in the Palo Alto Municipal Code and went into effect in May 2017, and again in December 2017 (Attachment 1). The 2017 changes included improving Fill Station performance, monitoring actual groundwater elevation changes during assessing impacts on nearby structures, clarifying reporting requirements, and a Hydrogeological Study (Study). This guide provides further explanation regarding the most recent code changes (which became effective on February 21, 2018) and is intended to assist project applicants in meeting code requirements.

### II. GENERAL GROUNDWATER DEWATERING REQUIREMENTS

Note that this document is in reference to *temporary groundwater dewatering during construction of below ground structures*. This document does not contain information regarding dewatering of *existing* below ground structures in the City of Palo Alto. Temporary construction-related groundwater dewatering (dewatering) may be conducted using 1) groundwater exclusionary techniques (e.g., secant or cut-off walls), or 2) controlled groundwater pumping, also known as draw-down well dewatering. The City's Public Works Department (Public Works) does not allow open pit dewatering of groundwater during construction; however, it may be allowed, if water quality limits are met, for removal of rainwater if it has accumulated at the bottom of an excavation site. If rainwater dewatering is required, the project manager/applicant must contact the City's Watershed Protection Group at (650) 329-2122 before discharging to the City's storm drain system.

Attachment 2 provides applicants a basic flow chart to understand the City's compliance process regarding the two types of allowed construction dewatering. To assist the City in determining whether dewatering will likely be required in the construction of below ground structures, the project applicant must submit a Geotechnical Report, also known as a soils report, (separate from the Hydrogeological Study described below) prior to the Building Permit application. In addition, if the deepest excavation will be within five feet of the anticipated groundwater level stated in the Geotechnical Report, the contractor must determine the depth to groundwater immediately prior to submittal of the [Excavation and Grading Permit](#). It is recommended that the boring hole for this depth measurement be protected and maintained and used as the monitoring well for the dewatering operations.

As discussed later in this document, all dewatering sites are required to install a monitoring well onsite at the farthest feasible point from the underground structure. Placing this boring correctly and protecting it may avoid future work.

If groundwater is found to be within two feet of the deepest excavation, a drawdown well dewatering system or cutoff wall must be installed. Regardless of this testing, if groundwater is actually encountered during construction (and the applicant does not have a dewatering permit), the contractor must immediately stop all work and must meet all of the following requirements prior to resuming work.

The City's dewatering season is April 1 through October 31 due to the capacity of the City's storm drain system. Dewatering to the sanitary sewer system is prohibited, exceptions may be allowed only under special circumstances and with a discharge permit obtained through Public Works' Watershed Protection Group. During the dewatering season, sites will be allowed to dewater for a 12-week time period, including a two-week start-up period. The two-week start-up period is intended to provide adequate time for the contractor to meet the City's dewatering requirements as well as City staff to inspect and monitor the dewatering start-up operation. At the end of the two-week start-up period, compliance with all performance standards and water quality standards, the hydrogeological study data, shall be demonstrated in order to continue dewatering.

Residential sites are expected to complete dewatering within the allotted time period. Dewatering beyond 12 weeks is allowed only under special circumstances and if approved by the City Engineer. The City will consider allowing groundwater discharges to occur (to the storm drain system) from November 1 to March 31 if the applicant can provide sufficient evidence that the receiving storm drain line and water body has sufficient capacity to accommodate a 10-year, 6-hour storm event in addition to the dewatering discharge (a pipe capacity calculation).

Where dewatering is required, applicants shall conduct dewatering in full compliance with the provisions of Chapter [16.28](#) (Excavation, Grading and Fills) as well as Chapter [9.10](#) (Noise) of the [City's Municipal Code](#), the regulations in this guide, and other permit conditions established by City staff. Due to the complexity of dewatering projects, City staff may impose and enforce additional requirements when or after a permit is issued in order to ensure public safety, ensure the condition of its infrastructure, or to protect the water quality of downstream water bodies. During the period of construction and dewatering discharge, project applicants/permittees are expected to promptly implement actions identified and required by City staff, including, but not limited to, notices of non-compliance and directives requiring immediate cessation of discharge. Administrative penalties may be put into effect for sites not in compliance with any of the City requirements and will accrue if the applicant does not comply as requested by the City. A cessation order may be issued for reasons including, but not limited to: capacity issues in the storm drain or sanitary sewer systems; storm drain or sanitary sewer system failures; excess flow entering the Palo Alto Regional Water Quality Control Plant, including exceptional storm events; emergency or routine maintenance of City infrastructure; protection of the environment, public health, safety and welfare; and failure to follow the terms/conditions/requirements of any permit.

**NOTE: All information contained in the dewatering permit application, dewatering permit, supporting documents, and the associated street work permit will be made available to the public upon request.**

### III. GROUNDWATER EXCLUSIONARY TECHNIQUE REQUIREMENTS

*If the rate of groundwater discharge is greater than thirty gallons per minute for residential sites, groundwater exclusionary techniques cannot be used, and the requirements of Subsections IV (below) shall be followed.*

When groundwater exclusionary techniques are utilized, applicants must submit to the City a Dewatering Permit – Groundwater Exclusionary Technique packet with a Grading and Excavation Permit application (after Planning entitlement is approved). The Grading and Excavation Permit for a project will not be issued until all required submittals related to dewatering have been submitted, reviewed and approved by Public Works Engineering staff. The (Exclusionary Techniques) Dewatering Packet (Attachment 3) shall include the following: 1) Exclusionary Technique Permit form, 2) Exclusionary Technique plan, and 3) Inspection Checklist. Groundwater exclusionary techniques shall be conducted in compliance with the following:

- A. The rate of discharge of groundwater shall be limited to thirty GPM or less for residential dewatering projects.
- B. The Dewatering Plan shall be followed at all times and shall consist of a plan view of the project site and include all required features of the dewatering operation such as but not limited to: metered settling tank and it's safely accessible location onsite, monitoring well at the farthest feasible onsite point from the excavation, location and size of percolation pits, pump location/s, associated piping, and stabilized construction entrance.
- C. Groundwater Use Plan shall illustrate how the groundwater will be used to the maximum extent practicable and without discharge to the storm drain system. When feasible, the primary focus of discharge shall be to percolate the discharge onto the construction property, usually into percolation pits. A secondary method of discharge should be to percolate the groundwater onto adjacent neighbor properties upon their permission (this should be handled between the project applicant and the property owners without facilitation or further approval from the City). Finally, the groundwater may be trucked offsite and, in coordination with the City's Urban Forestry and/or Parks and Recreation staff, distributed throughout the City to locations that can use the water.
- D. The applicant shall install a groundwater monitoring well at the site. It shall be located at the farthest feasible onsite point from the underground structure. Initial groundwater level results must be included in the dewatering plan (same data point as the one required prior to grading and excavation permit application).
- E. Project status reporting: During the construction period of the underground structure, the applicant must submit periodic groundwater level reports and have the data available per request. At minimum, monitoring well data shall be collected daily for the first two weeks beginning with the start of the excavation

activity and weekly thereafter. A final report shall be submitted two weeks after pumping of residual water ceases. All status reports should be submitted to Public Works Engineering (PWE) staff at the Development Center, email to the PWE staff person reviewing the project is preferred. Questions should be directed to [pwecips@CityofPaloAlto.org](mailto:pwecips@CityofPaloAlto.org). **NOTE: Administrative Penalties may be imposed upon failure to follow the required reporting frequency.**

#### **IV. CONTROLLED GROUNDWATER PUMPING (WITHOUT A SECANT OR CUT-OFF WALL) REQUIREMENTS**

When controlled groundwater pumping techniques are utilized, applicants must submit to the City, a Dewatering Permit – Controlled Groundwater Pumping Packet with the Excavation and Grading Permit, and Street Work Permit applications (after Planning entitlement is approved). The Excavation and Grading permit for a project will not be issued until all required submittals have been received, reviewed, and approved by PWE staff. A Dewatering Permit must be obtained before any discharge from the site occurs. Note that for residential projects, the Excavation and Grading Permit is only issued concurrently with the Building Permit.

While discharging to the storm drain system, **construction work** on the underground structure **shall be continuous and occur daily** (in accordance with approved work hours). The contractor shall make progress towards completion of the underground structure without delay and following the detailed construction schedule provided in the Excavation and Grading Permit and/or the Dewatering Permit packet.

In addition to what is required for exclusionary techniques (aside from the cut-off wall itself and the 30 GPM limitation), a Hydrogeological Study and an in-depth Groundwater Use Plan must also be submitted. Refer to the Controlled Groundwater Pumping Dewatering Permit Packet in Attachment 4 for more information. The following provides additional details regarding the City's controlled groundwater pumping requirements:

#### **HYDROGEOLOGICAL STUDY REQUIREMENTS HAVE CHANGED:**

**Public Works will no longer accept the use of “single layer models” to analyze subsurface soil condition of a particular parcel or project site where an underground structure is proposed and where dewatering is required. A “single layer model” is defined as any calculation, computer program or other method, which models the composition and/or properties of subsurface soils as a single, homogeneous layer of material. Site specific tests shall be performed to generate data in order to model the subsurface soil properties and produce a more accurate, site-specific, model. Additional information is detailed below.**

As with exclusionary techniques, the applicant shall install a groundwater monitoring well on the construction site at the farthest feasible point from the underground structure. Initial groundwater level results must be included in the Hydrogeological Study. During the construction period of the underground structure, the applicant must submit frequent groundwater level reports and have the data available per request. At minimum, monitoring well data shall be conducted daily for the first two weeks of the 12-week period and weekly

thereafter. At the end of the two week start-up period, or thereafter, if drawdown results are greater than anticipated, the applicant shall submit a revised Dewatering Hydrogeological Study and any revised conclusions on impacts of the groundwater drawdown.

- A. Dewatering Hydrogeological Study - The purpose of this Study is to determine the initial, pre-construction groundwater levels as well as the impacts of groundwater pumping on the site and surrounding area. The Study should include the radius of influence (i.e. extent of cone of depression) from each dewatering well (if more than one is installed on-site) **as a function of time**, based on local soil and groundwater conditions. The Hydrogeological Study shall demonstrate that the dewatering plan has been designed to the maximum extent practicable to minimize the volume of water pumped during the dewatering operation, the flow rate, and the duration of the pumping. The Study shall be stamped by a California licensed Hydrogeologist or California licensed Geotechnical Engineer and submitted to the City as part of the Dewatering Packet. The Study should also include the following items:
- i. A *minimum* of 4 borings or other subsurface tests (Cone Penetrometer Tests, CPTs, are preferred) shall be performed across the project site/excavation area by a California licensed Geotechnical Engineer in order to develop a multilayer model of the subsurface soil conditions and properties. The tests should be performed to a depth of no less than 30 feet below existing grade (for residential projects). The test data shall be used to create a multi-layer model of subsurface conditions; **single-layer models which model site conditions as a homogenous layer will not be accepted.**
    1. The data shall be used to design a dewatering plan based on the subsurface conditions/strata which results in the minimization of pumped water to the maximum extent practicable.
    2. Well depth shall be specified based upon the subsurface conditions.
    3. The pump depth within the dewatering well shall be specified based on the subsurface conditions and required drawdown.
  - ii. A description and cross section(s) of the cone(s) of depression of any on-site monitoring well(s) as well as any nearby dewatering sites within a 400-foot radius of the property that may interact with or be influenced by the dewatering activity at the site. The location of the monitoring well(s) and nearby sites should also be shown on a map.
  - iii. Anticipated drawdown curve and pumping flow rate. A description and cross section(s) of the cones of depression of the dewatering wells shall be calculated and graphed. The predicted drawdown level (depth to groundwater) at the onsite monitoring well shall be shown **as a function of time**; accurately graphed cross sections with data points or tabular data format shall be provided. The anticipated pumping flow rate shall be calculated for the dewatering system as well as the total volume due to be pumped for the 12 week dewatering period and daily totals.

1. **NOTE: The depth of each dewatering well pump will be verified in the field once installed and prior to any dewatering operations.**
    - iv. Using extrapolated data from the drawdown curves, determine the pumping rates needed to achieve the following drawdown performance: Prior to pouring a basement slab, groundwater may be pumped no deeper than three feet below the depth of the slab, measured at the center. After the slab is poured, groundwater may be pumped no deeper than one foot below the center. These values can be extrapolated using the (verified) drawdown curves and the on-site monitoring well data points.
- B. Groundwater Use Plan (Plan) shall demonstrate how the pumped groundwater will be used to the maximum extent practicable. Two required components of this plan are the 1) groundwater flow meter and sediment settling tank system and 2) the Fill Station. Both components must be inspected and approved by City staff before obtaining a Controlled Groundwater Pumping Dewatering Permit. Inspections and approvals are documented via the Inspection Checklist (Attachment 4), which **must** be signed by a Public Works Inspector prior to issuing the Grading Permit, Dewatering Permit, Street Work permit, and associated Building Permit; no Dewatering Permit will be issued without a Public Works Inspector–signed Checklist. At a minimum, the Plan should include the items below; however, the applicant should be creative in their plan to use the pumped groundwater and shall adhere to the Plan throughout the dewatering period:
- i. Groundwater flow meter and sediment settling tank system:
    1. Provide an accurate, **non-mechanical** flow meter with a data logger in good working condition at the inlet of the tank. The flow meter shall be positioned in a location which is safely accessible by City inspectors on a regular basis. Both flow rate and total flow measurements shall be easily readable and **set to gallons**. Before any water is pumped, the initial flow meter reading shall be checked and verified by the Watershed Protection Inspector (WP Inspector) as part of the initial dewatering Inspection Checklist approval process. The WP Inspector will collect meter readings on a daily basis during the two-week start-up period and weekly thereafter; the contractor is required to also monitor and record the meter readings using the same frequency.
      - a. The area surrounding the tank should be kept clear at all times, with a **safe pathway** to the meter and tank.
      - b. The edge of the tank should not be at the edge of the excavation area, as it may lead to unsafe conditions.
      - c. **The contractor shall contact PW Inspection prior to changing or replacing any meter.**
      - d. The point of outlet on the settling tank cannot be at the bottom of the settling tank.
      - e. The settling tank must have a discharge valve which can be locked in a closed position. PW or WP Inspectors will

lock the discharge valve to ensure that the erroneous discharge does not occur and that the City is notified and aware of exactly when discharge begins. Further sections below explain this process in greater detail.

2. Design the tank system so that the storage tank is always at minimum one-half full during the entire dewatering period to facilitate water truck usage.
  3. Prior to the start-up period and as part of the Inspection Checklist process, once the tank is at least half-full and before any discharge of groundwater occurs, contact Watershed Protection at (650) 329-2122 for an initial inspection and for water quality testing. For non-(contaminated) plume areas, basic measurements will generally include pH, conductivity and turbidity.
  4. After the WP Inspector collects water quality samples and provides a clearance that the sample is within acceptable limits, the contractor will contact the WP Inspector to temporarily unlock the tank discharge valve to allow the tank to be drained to the property while waiting to obtain the Dewatering Permit Packet from Public Works Engineering. Consult the WP Inspector for assistance. Provide a screen or other covering over the tank for mosquito management. City staff may require the use of *Bacillus thuringiensis israelensis* (Bti), a naturally occurring soil bacterium that effectively kills mosquito larvae, if necessary.
- ii. A Fill Station shall be constructed to provide the City and nearby residents and business owners the opportunity to use the pumped groundwater and to minimize the amount discharged to the storm drain system. The Fill Station should include two methods for water distribution: a truck-filling outlet for water truck distribution to sites in the City and a fill-up outlet, or hose bibbs, for neighboring properties. Detailed information about the fill station and its components is listed below. When the Fill Station is ready, contact Public Works Engineering Inspection staff (PWE Inspector) at (650) 496-6929 for an inspection of both the Fill Station and settling tank system and contact Building Inspection staff at (650) 444-6173 for an Electrical Safety Check. (Inspectors must check off these items on the Inspection Checklist.) The following is required for the Fill Station:
1. Location and set-up:
    - Locate the Fill Station outside the site construction fence to allow 24-hour access. The construction site should be locked outside of normal construction hours.
    - A lock is not required at the Fill Station, but if the applicant deems it necessary, a combination lock should be used with the combination of 2, 4, 6, 8 (or other easily

remembered combination and shared with City Inspectors).

- Truck fill outlet: provide a 2.5-inch hydrant fitting hose connection with a 50-foot traffic-rated hose.
  - Neighboring properties fill outlet: provide at least two 100-foot (minimum) hoses arranged on reels and connected to standard hose bibs. Hose bibs shall produce a minimum of 10gpm at the end of each 100 foot hose simultaneously. The applicant shall allow adjacent properties to use hoses connected to the fill station(s). Hoses shall be placed in a manner that is safe to the public and does not cause damage to neighboring or City property. Hoses shall not cross the street. The City may modify these requirements as circumstances require.
  - As with the tank system, the fill station shall include accurate and safely accessible, **non-mechanical** flow meters with data loggers in good working condition at the outlet point of the Fill Station to log water reuse. Both flow rate and total flow measurements shall be easily readable and **set to gallons**. The initial flow meter reading should be noted before any water is pumped. Flow meter reading shall be checked and verified by the PWE or WP Inspector as part of the initial dewatering approval process, Inspection Checklist. The WP Inspector will collect Fill Station meter readings on a daily basis during the two-week start-up period and weekly thereafter; the contractor is required to also monitor and record the meter readings using the same frequency.
  - Supply log sheets and a pen for truck drivers to log the truck company, date, and amount of each fill-up.
  - The temporary power source needed for the Fill Station should be placed inside the construction site (and NOT in the Fill Station), if possible. If needed, a switch with an in-use cover to power on the Fill Station pump may be placed inside the fill station cabinet. An additional switch with an in-use cover for the truck-fill hose pump should be provided. Both switches should be clearly labeled.
  - Provide easy-to-read signage for the Fill Station (including "Do not Drink") and directions explaining how to use it.
  - For the hose bibs, provide signage that reads "No Hoses Crossing Street, Sidewalk, or Private Properties."
2. The applicant must demonstrate maximum 10-minute fill time for a ~2700 gallon water truck as part of the Inspection Checklist signoff.
  3. Prior to the commencement of dewatering activities, the applicant shall notify occupants of neighboring properties of the temporary availability of water. Contact Public Works Engineering



staff (650 329-2496, Option 8) for copies of door hangers to be used for notification. Door hangers not collected/received by the residents must be removed after 24 hours.

- iii. Irrigation of sites: The applicant is responsible for having the pumped groundwater delivered to nearby sites as directed by the City. The applicant shall contract with or otherwise provide water truck service; the water truck operator/company shall contact the City's Urban Forestry staff should be contacted by the truck service company at (650) 496-5986 to determine the location of sites to be irrigated. During the first six weeks of dewatering activities (not including the two-week start-up period), water should be trucked one full day (8 hours) per week from the project site to the irrigation sites. This shall increase to five days per week (8 hours per day) during the remaining 4 weeks of the dewatering period.
- iv. On-site Use of Groundwater: Pumped groundwater should be used on the construction site as needed and whenever possible. This includes controlled infiltration, irrigation of existing landscaping, dust suppression and other construction needs.

C. A Pre-construction Building Condition Survey and Report of structures located on adjacent parcels prepared by a licensed surveyor and meeting City standards must be submitted, reviewed, and approved prior to obtaining a dewatering permit. The survey must be prepared by a California licensed surveyor whereas the photographic and narrative report may be prepared by the applicant. Both documents shall be submitted at the same time as one report. The applicant is responsible for obtaining permission from neighboring property owners to enter their property to take survey points of the building interior. If permission is not granted, City staff should be notified; however, interior survey points are not required in order to obtain a Dewatering Permit. The survey shall include a photographic and narrative report on the external condition of each structure as well as surveyed and marked elevations of adjacent parcels, with particular attention to the condition of concrete foundations, structural connections, brickwork, plasterwork and other architectural finishes that are susceptible to cracking. The report shall assess the likelihood that the proposed dewatering would cause effects (including but not limited to settlement or movement) on off-site private or public structures or infrastructure, including the right-of-way, easements, and utilities within public utility easements, and the health or viability of vegetation or trees. To the extent that the report concludes that off-site effects are reasonably likely to occur, the applicant shall identify avoidance measures to be implemented that will minimize the type and severity of those effects and shall develop a monitoring plan to assess any actual effects on vegetation, trees, structures and infrastructure.

D. A pipe capacity calculation is required. This calculation shall show that the storm drain inlet to which the dewatering water is proposed to be discharged to can accommodate the anticipated dewatering discharge in addition to a 10-year, 6 hour storm event. PW Engineering can assist in providing the appropriate storm

drain staff for assistance. **NOTE: If the pipe capacity analysis determines that the storm drain discharge point cannot accommodate the dewatering flow in addition to the 10 year, 6 hour, storm event, a Dewatering permit CANNOT be issued the day-of or after the date which is 12 weeks prior to October 31<sup>st</sup>. In other words, dewatering cannot begin within 12 weeks of October 31<sup>st</sup>.**

- E. A detailed construction schedule must be included in the dewatering permit application packet. This schedule shall detail construction phases such as, but not limited to:
- a. Equipment mobilization
  - b. Shoring installation
  - c. Dewatering plan setup
  - d. Excavation activity
  - e. Dewatering start
  - f. Finished excavation
  - g. Basement construction – base rock, rebar, forms, plumbing, concrete, waterproofing, etc.
  - h. Backfill
  - i. Dewatering end

The construction schedule shall list the duration of each step in days/weeks and total the number of weeks between Dewatering start and Dewatering end.

- F. A Dewatering Regulation Acknowledgement Statement must be signed by the property owner/s and licensed contractor and shall accompany the dewatering application.
- G. Contractor is required to begin shoring installation and excavation once the Excavation and Grading permit is issued and PRIOR to any dewatering operations. In order to minimize the volume of groundwater discharged to the storm drain and to maximize the 12 week allowable dewatering period, the dewatering system may ONLY be turned on once the excavation has encountered water or reached a depth within 2 feet of where groundwater is located based on the current monitoring well measurement at that time. The contractor is required to contact PW Inspection or WP Inspection prior to dewatering operation startup to unlock the settling tank discharge valve. Once the discharge valve is unlocked, the contractor must IMMEDIATELY obtain the dewatering permit from PW staff at the Development Center. If the dewatering permit is not immediately obtained on the same day the discharge valve is unlocked, PW will revoke the Excavation and Grading permit and daily administrative penalties may apply.**
- H. STARTUP of dewatering operations is limited to Monday through Thursday ONLY.**

**Dewatering may NOT start Friday through Sunday.**

- I. **Upon dewatering shutdown, the settling tank meter shall remain in place until City staff have recorded the final meter reading; PW or WP inspection should be contacted to record the meter reading.**
  
- J. Verify the anticipated drawdown curve with a pump test performed on monitoring well(s) installed on the project site. Though the City is not currently requiring a particular type of pump test, the type used should be authorized and approved by a California licensed Hydrogeologist or CA licensed Geotechnical Engineer. Using the pump test and any other relevant data, the report shall state the anticipated pumping flow rate as well as the total amount of water due to be pumped for the 12 week dewatering period; daily pumped totals shall also be included. Following the two-week start-up period, the dewatering, pumping rates and maximum amount of water pumped on a daily basis shall be limited to the values calculated in the verification study.
  
- F. Project status reporting: During the construction period of the underground structure, the applicant must submit periodic reports and have the data available per request. Report contents and submittal frequency requirements are listed below. All status reports should be submitted via email to the Public Works Engineering staff who has been working on your project and who issued the Excavation and Grading permit. Questions should be directed to [pwcips@CityofPaloAlto.org](mailto:pwcips@CityofPaloAlto.org).
  - 1) Monitoring well levels: At minimum, monitoring well data shall be collected daily for the first two weeks (start-up period) of the 12-week period and weekly thereafter. Status reports should be submitted weekly during start-up period and monthly thereafter. A final report shall be submitted two weeks after pumping ceases.
  
  - 2) Flow meter readings: At minimum, flow meter data shall be collected daily for the first two weeks (start-up period) of the 12-week period and weekly thereafter. Status reports should be submitted weekly during start-up period and monthly thereafter. A final report shall be submitted two weeks after pumping ceases.
  
  - 3) Survey data (see subsection IV.C. above): Once dewatering commences, survey data should be collected and reported weekly during the two-week start-up period and monthly thereafter. Note that the information will be made available to the public upon request.
  
- G. The Contractor and/or Applicant is required to **contact PW Inspection** to obtain the final meter readings once groundwater discharge has finished and **prior to dismantling any dewatering system components.**

## **V. ADDITIONAL REQUIREMENTS FOR TEMPORARY CONSTRUCTION-RELATED GROUNDWATER DEWATERING IN GROUNDWATER (CONTAMINATED) PLUME AREAS**

Certain areas in the City have contaminated groundwater plumes due to previous land use. To determine if a site is in or nearby one of these areas, refer to the Attachment 5 figure. Dewatering sites in these areas must be carefully managed to ensure pumped groundwater does not enter the City's storm drain system nor that it is used by members of the public without being treated. Therefore, Fill Stations are not required at these sites. However, the same flow meter/data logger requirements described in Section IV (B.i.) shall still be followed in order to account for the amount of groundwater pumped from the site.

Construction of below ground structures in these areas triggers treatment requirements (in addition to sediment settlement) before discharging to the City's storm drain system in order to protect the water quality of downstream creeks and the SF Bay. Because of site complexities, specific requirements may vary site by site. Therefore, for any site in or within 500 feet of the edge of a plume, contact the City's Watershed Protection Group at (650) 329-2122 for guidance and requirements on sampling, treatment and disposal of temporary construction-related groundwater. Sampling groundwater for contaminants prior to initial discharge will be required, and potentially at intervals during dewatering. For all required sampling, the contractor must retain an independent testing firm to collect and process samples. Finally, the applicant should contact the Regional Water Quality Control Board (Water Board) to ensure additional state agency requirements are met. Note that compliance with the City does not imply compliance with the Water Board.