

12. Dewatering

What policies should the City set regarding the discharge and loss of water (as well land settlement problems in neighboring properties) when basements are being built?

Stewart Carl:

Dewatering should not be allowed until the current drought ends. The water from dewatering should be captured and used to irrigate our city landscape.

Leonard Ely III:

I just built a house and was able to not dewater. The settlement issue is something I have not considered.

Adrian Fine:

The city should require basement projects to divert the water for re-use nearby, whether on public or private property. We should explore if there is an appropriate basement construction fee to support local water or green space initiatives.

John Fredrich:

We need comprehensive water assessment and management. No more basements until we do that; water use profiles for all new construction.

Arthur Keller:

Dewatering should be minimized through improved construction techniques.

Consideration of water table level, such as near flood zones, should be part of the evaluation of basements.

There should be a storm drain fee associated with dewatering, as recommended by the Storm Drain Blue Ribbon Committee.

A study is needed on the impact of dewatering on adjacent properties and on permanent changes to groundwater flow "downstream" of the basement. For example, I've seen a well going dry several hundred feet from a dewatering project.

Water is a critical resource. We need to manage it better.

Liz Kniss:

First, I would acknowledge the very smart members of our community who deserve tremendous credit for studying this issue carefully and bringing their concerns and suggestions to the City Council in a clear, consistent, and effective manner. This was not a major issue on our agenda a couple years ago, but, thanks to our community, we are now moving forward trying to address it.

There are several related concerns about dewatering. There is the concern about wasting water, especially in a drought. The underlying question here is whether we see groundwater as a waste

product, an inconvenience, or a potential resource, especially for emergencies, in droughts, etc. Another concern is the potential for dewatering to cause subsidence and damage to neighboring properties. Yet another concern is the potential harm to trees in our community which have already been stressed by the drought. And there are other concerns as well.

We need better data on Palo Alto's groundwater. In my understanding, the groundwater surveys are not adequate, particularly in mapping how our shallow and deep aquifers interact. We also should continue to explore whether different basement construction techniques can reduce the need for dewatering. In order to address the various concerns, we are trying to take them on in chunks. Our staff has responded well to community and Council concerns, and Policy & Services Committee has been working to move policy recommendations forward to the council in a prudent manner, neither rushing too hastily nor ignoring this critical issue.

Lydia Kou:

Dewatering is an issue of an individual property owner consuming a disproportionate amount of a community resource to the detriment of the larger community. For example, the dewatering for a basement at 736 Garland pumped out 38.8 million gallons (Staff report). That is as much as the average annual usage of 400 residences. Or about the average annual irrigation usage of 1300 residences. If you put that 119 acre-feet of water in a column over that 0.24 acre property, it would be almost 500 feet high. Or almost 400 years of rainfall on that property at our long-term average of roughly 15-inch annually (for visualization: not all rainfall goes into the aquifer).

Development has severely curtailed natural processes for recharging the groundwater: There is far less land where rain can soak in, and percolation from creeks has been greatly decreased (except for San Francisquito Creek, the creeks are in concrete channels from El Camino to the Bay). The Pulgas fault that runs roughly under Foothill Expressway and Junipero Sera Blvd has folds that divert groundwater from higher up into the deep aquifers. The shallow aquifer under the developed portion of Palo Alto is dependent on the rain that falls on it.

The oak trees that make up so much of our canopy have a dual root system: shallow roots to harvest rainfall and a long taproot that reaches into the shallow aquifer. Excessive pumping will lower the water table to the extent that it is out of reach of those trees and thus making them increasingly vulnerable to drought.

Local experience is that subsidence (settlement) from excessive pumping of water is often permanent—Alviso is infamous for having sunk 13 feet in the early 1900s.

How much pumping is too much? I don't know. I am not a geologist (but some of my friends are). The geology under Palo Alto is complex – there two (inactive) earthquake faults in the block I live on, and two more faults further along the street (Matadero). Water moves at different rates in the aquifer—in some places it may be only a few feet per year, in others much faster. Land settlement near pumping sites is not just a problem for those property owners, but a leading indicator of problems for the larger community.

What policies would I support? It is the moral obligation of the person wishing to have a basement to not adversely impact the immediate neighbors or the larger area. Since this hasn't been enough, the City needs to require and enforce this principle. This includes accounting for the risk of subsidence in the immediate vicinity and effect of lowering the water table on vegetation and the cumulative effect of excessive removal of water from the aquifer.

I would support impact/development fees for basement building and at high water table locations that the contractor is required to pump water into a cistern or container to then replenish the aquifers or to be used by the city to water city trees

Danielle Martell:

DID NOT RESPOND

Don McDougall:

The impact of the excavation and building of below grade basements continues to be a challenge. It is an important concern and we must review data on the adverse impact on tree health basement construction and examples of where adjacent properties suffer some structural impact. A complete study should consider environmental impacts of “de-watering” and how it impacts the stability of soils and ground water retention.

At a minimum basement construction practices could be improved by enforcement of two practices:

- i. Less water pumped out by careful measuring of water levels (not over drawing).
- ii. Better capture of the excess water to put to good use. There are private companies that can draw water away in their trucks and use them for irrigation but it is expensive and impossible to capture 100% of the water.

Greer Stone:

We should limit the amount of basement square footage because basements rely heavily on pumping ground water. This equates to thousands of gallons of ground water being pumped. In addition to the loss of ground water, basements in Palo Alto require a vast amount of concrete in order to prevent water incursion, because we are so close to sea level. Concrete is one of the worst pollutants for construction materials.

Greg Tanaka:

I would like to see the use of recaptured ground water during basements installations be expanded. I would support a staff examination of this issue with recommendations based on experiences from other communities and ideas from our own community members.