



**Hillside District Plan
Workshop Series 2
Summary of Public Comment
Onsite Discussions
Larsen Consulting Group**

The onsite presentation and discussion saw a high level of public participation both nights. Onsite consultants began each session with an overview of results from the Phase I HDP effort and ended with a question and comments discussion. Discussion content is organized by topic, as follows:

Water Availability, Water Quality. It was emphasized that a basic understanding of water and wastewater issues along the Hillside requires knowledge of area hydrogeology. Water availability varies widely from well to well, but is generally adequate for household purposes throughout the Hillside.

The discussion included low-permeability confining layers that create artesian conditions and protect deep aquifers from near surface sources of contamination. Flow pathways (i.e. bedrock fractures, other permeable deposits, ungrouted well casings) whereby onsite wastewater system (OWS) effluent and other potential contaminants can access water supply aquifers were discussed.

Concerning groundwater quality, there were almost no questions about iron, manganese, or hardness. A few raised questions on arsenic. Almost all water quality questions and comments were regarding nitrates.

Scatter Plot of Nine Public Wells. The most common comment/suggestion was that the nine-well sampling is not a sufficient for the entire Hillside and all 39 public wells should be evaluated. Several wanted to know what a ‘statistically significant trend’ means. *Response: It describes the consistency of the data. A trend was identified for wells with 95% confidence that the increase was not a random occurrence. Statistically significant trends may be small and should not be construed as significant in terms of the size or importance of the trend.*

The consultants and others emphasized that the public well data indicated nitrate levels are below the 10.0 mg/L regulatory standard and with no evidence of a health threat. One individual asked that the single high data point for Valli Vue Subdivision be ‘thrown out’ since it is an outlier. *Response: As a scatter plot, the intent is to show all the data. Outliers and other irregularities are handled according to statistical norms as part of the analysis process.* Another asked how many data sets were represented by each ‘point’ on the plot. *Response: Each point represents a single nitrate reading with no averaging or other manipulation.* Several asked why this particular group of nine wells was selected.

Response: These nine wells were reviewed for possible trend analysis in the 1997 Bristol Environmental study. The 2007 scatter plot was done to see if there was a continuance of the trends found by Bristol.

Interpolated Nitrate Data from Individual Wells. The maps depicting interpolated levels of nitrates in individual wells received considerable attention and comment. It was noted that the two maps, created from different data sets over different time spans, indicate roughly the same distribution of nitrate concentrations. Several asked about the reason for the heavier concentrations in certain portions of the study area. *Response: We don't have enough information to make that determination, however, pattern similarity between the pre-1997 and post-1997 results suggest that the same parameters are influencing the wells over the period.* Two individuals asked if the increase in the percentage of samples above 3.0 mg/L (from 18% prior to 1997 to 26% since 1997) or the decrease in samples above 10 mg/L (from 0.4% prior 1997 to 0.1% since 1997) are 'statistically significant'. *Response: Statistical analysis of these data sets has not been performed. Data regarding the number of wells exceeding the 10.0 mg/L standard should be used with extra caution since property owners may have been less likely to report such results.*

The suggestion was made to label more streets on the post 1997 map. One individual suggested that all data below the 'natural background' level of 2.0 mg/L should not be shown on the interpolation maps. *Response: The 'natural background' of 2.0 mg/L is a nationwide average. Actual concentrations of nitrates from natural sources will vary throughout the Hillside.*

Several individuals asked about the relationship between horse wastes and groundwater nitrates. *Response: The literature indicates little potential impact from feces and urine distributed on unfrozen ground along trails or moderately used pastures due to high rates of volatilization in the atmosphere and uptake within the root zone. Runoff and/or leachate from areas of manure concentration, however, can affect surface water and groundwater where percolation and subsurface flow pathways exist.*

One individual asked whether lawn fertilization is a source of groundwater nitrates on the Hillside. *Response: It is a source, but not likely the dominant source considering the amount of nitrate uptake in the root zone and the relatively low ratio of lawn area to total Hillside acreage.*

Best management practices for horse husbandry, lawn fertilization, and OWS should be part of any comprehensive effort to minimize total nitrate reaching Hillside aquifers.

OWS Monitoring and Maintenance (M&M). A need for monitoring and maintenance was stressed by the consultants as a cost effective method to improve system performance and increase life expectancy. The comparison to changing the oil in one's car was made. It was noted that nation-wide awareness and utilization of M&M is increasing. A few commented that lack of M&M impacts neighbors.

Several individuals recounted how MOA required homeowners to provide and document M&M in the past, but has not followed up or enforced the requirements. One concluded, 'We don't do what we don't have to do.'

Approximately a dozen indicated that the importance of M&M be emphasized more and that information be conspicuously provided on how to better manage existing and future systems, particularly better water management in the home.

Neighborhood Wastewater Systems. The fundamental concepts and features of OWS serving a cluster of homes were presented. One disadvantage is the current lack of a regulatory framework for approving and overseeing neighborhood systems. A number of individuals asked about relative costs, compared to individual systems. *Response: The cost for designing, installing and maintaining neighborhood systems is typically the same or less.* Approximately a dozen individuals indicated that neighborhood systems seem to make sense for subdivisions with challenging soils.

Several stated a concern that neighborhood systems will be used as a ‘stepping stone’ for future piped water and sewer service beyond its existing boundary since it will allow higher densities. *Response: Neighborhood systems are not tied to lot size. They can be used for small lots as well as lots significantly larger than one acre. Net density is unchanged by introduction of a neighborhood system. Their main advantage has to do with best utilization of areas suitable for homes, wastewater treatment, and open space.*

Groundwater Protection Plan. The discussion addressed the present difficulty of accessing and using pertinent water quality data. There is no organization or individual charged with organizing and analyzing accumulated data nor having overall responsibility for monitoring and managing activities that can potentially affect water quality.

It was mentioned that the 1997 Bristol Report recommended a framework for an ongoing Groundwater Protection Plan (GPP) and that such an effort would require public and municipal support.

Each night, the informal question was posed to the group, ‘would you be willing to pay a nominal annual fee, of say \$20, in order to fund better water quality data collection and data analysis to help officials make informed decisions about nitrates and/or other pollutants?’ *Result: Nearly all raised their hand in the affirmative.* Several asked how much it costs to test for nitrates. *Response: Laboratory fee of \$18 to \$20 plus the cost to collect and handle samples.*

General. We were asked to incorporate 2020 Plan recommendations for water and wastewater design and implementation in the HDP. One individual directed us to move the piped water and wastewater boundary westward.

Advanced treatment systems were discussed at some length with the conclusions they: can significantly reduce drain field footprint, improve effluent quality, and effectively serve some lots not suited for conventional systems. It was also noted they have significant M&M requirements and cannot be used as a cure-all. The best OWS for highly challenging lots may be a holding tank. Several individuals asked about the number of Advantex Systems (proprietary advanced treatment with professional maintenance) on the Hillside. *Response: 155.*

The concern was raised by several individuals that there is insufficient MOA funding to monitor and enforce OWS regulations.