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 **SONOMA COUNTY
WATER AGENCY**

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March 18, 1988 ✓

FILE: 1-4-25 Laguna Study Comm.

Melvin K. Davis
Sebastopol City Manager
7120 Bodega Avenue
Sebastopol, CA 95472

SUBJECT: LAGUNA ADVISORY COMMITTEE REPORT TO THE CITY OF
SEBASTOPOL, JANUARY 1988

Per your request by letter of March 18, 1988 we have reviewed the subject report in general and more specifically, the second paragraph under "Conclusions and recommendations" on page 32. That paragraph makes comment about loss of Laguna storage by filling, the 1986 flood, increased runoff due to land development, and future flood elevation.

With regard to filling, the paragraph is correct in stating that fill will reduce available storage for flood water. Local policy of agencies with territory in the Laguna generally requires no net loss of storage if fill is placed in the Laguna. That policy would require that a cubic foot of earth be excavated from the Laguna for each cubic foot placed in the Laguna. There is the implication that this policy will stop loss of storage space in the Laguna. There are other natural and man-made causes of storage loss. There is a certain amount of natural erosion in the upland watersheds that causes sedimentation and loss of storage in the Laguna. This natural erosion is added to by many land use activities in the watershed. Agricultural activities such as tilled orchards and vineyards, overgrazing and road building, increase erosion from the land with subsequent siltation downstream. However, the agricultural construction of ponds and reservoirs tends to reduce total downstream agriculture-caused siltation by trapping silt in the reservoirs.

With regard to increased runoff due to land development, a popular rule of thumb holds that runoff from land that is developed will double. As a generalization this can be used to evaluate the effect of land development at downstream points. Some land is developed to shopping centers with more than double runoff. Other land in urban area is used as school grounds, parks and other uses that leave pervious soil exposed for percolation of rain water.

Future flood elevations are almost certain to rise. The rate of change and the cause of change are not easily defined. One cause of change which has always been in action is the natural filling of the Laguna by erosion in the upper watershed which creates sediment that is carried to the Laguna by flood water. Additional sediment is added to the natural erosion by certain land uses described above. Some of the fine sediment remains in suspension and is carried through the Laguna to the Russian River. The heavier and larger sediment particles settle out of the water as it slowly makes its way to the Russian River. Because of these deposits in the bottom of the Laguna, flood storage will be lost gradually over time. If filling of the Laguna is allowed, the rate of storage loss will increase. There

In general the report expresses concern about matters which are not easily answered without more thorough analysis, taking into account all contributing factors in the watershed which affect Laguna flood storage, the 1986 flood, increased and decreased runoff due to all watershed activities, and future flood elevations in the Laguna.


W. R. STILLMAN, P.E.
Chief Engineer

wrs/as

corres:laguna.committ

In addition, Mr. Stillman explained to me that when very permeable soil (as in Sebastopol + west shores of Laguna) is covered over, it increases run-off MORE than when less permeable soils (as in Santa Rosa) are covered.

Heben Liben 4/16/88

THAT MAGICAL 100-YEAR FLOOD LEVEL--What it is, and is not .

Q. Who sets the 100-year flood elevation mark?

A. The U.S. Army Corps of Engineers. They have been doing a study for flood insurance and related purposes.

Q. And what IS the level now?

A. Has been 76 feet above sea level (for the Laguna basin) for some years, but will be lowered to 75 feet.

Q. Does that mean the 100-year flood will be lower than formerly?

A. Not at all.

Q. Why not?

A. The Corps has trained engineers, computers, etc.; they had done a calculation that the Warm Springs dam would reduce the 76-foot level by several feet--then nature confounded them by producing a higher flood in 1986. So they took the flood gauge reading at the Guerneville Road Bridge over the Laguna (74.6) and rounded it off to 75 feet. (Some persons think that level was inaccurate--too low).

Q. No big computer deal, factoring in all sorts of things?

A. Right.

Q. Well, why isn't that 75-foot figure good enough?

A. Because they SHOULD factor in all sorts of things, if the -- figure is to mean anything for planning purposes. They are for-bidden to do so; must use only existing conditions, interpreted to mean that bridge gauge reading.

Thus they could not consider:

- Continuing sedimentation (which Sonoma County Water Agency staff member Bob Morrison considers as big a threat to the Laguna's flood -holding capacity as anything)
- Continuing fill, legal and illegal
- Continuing development in the Laguna basin and in the Sonoma-Santa-Rosa-Rohnert Park area, which increases run-off and hence flood levels.

Q. What the heck use IS that 75-foot level for planning purposes, then?

A. It's a good starting point. Cities and the County should know that the 1986-type amount of rain would produce AT LEAST THAT level--but that as these other factors take effect, the same amount of rain would produce a HIGHER flood.

Q. Isn't there something about the 86 flood being so high because the rain arrived here earlier than up north, so the River couldn't use the Laguna as flood storage, just a one-time event?

A. That's one theory to account for the confoundingly high level, and one the experts didn't think of till 86. But the Corps is not all that certain, and no one can say that it wouldn't re-occur.

Q. So what does a poor city or county to do in planning where people can develop?

A. Be conservative. Try to get some calculations about the other factors' influence. Use 75 feet PLUS a safety factor of MORE feet!

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