Memorandum

To: City of Cloverdale
Attention: Mark Rincon, City Engineer/Public Works Director
124 N. Cloverdale Boulevard
Cloverdale, CA 95425

From: Kevin Doherty
Department of Conservation
California Geological Survey
135 Ridgway Avenue
Santa Rosa, CA 95401

DATE: July 23, 2021

SUBJECT: Review of Draft Program Environmental Impact Report for the Proposed City of Cloverdale Local Hazard Mitigation Plan and General Plan Public Health and Safety Element (SCH# 2021060710)

Dear Mr. Rincon,

The Department of Conservation, California Geological Survey (CGS) is pleased to provide you with this review of the Draft Program Environmental Impact Report (DEIR) for the Proposed Local Hazard Mitigation Plan (LHMP) and Public Health and Safety Element (Safety Element) (SCH# 2021060710). We understand that the City of Cloverdale (City) has developed both plans for the purpose of reducing impacts from natural and human-caused disasters while addressing overlapping requirements of federal and California state law. According to the submittal documents, the adoption and implementation of the LHMP and Safety Element would not involve any changes in land use or development entitlements and would not directly lead to any activities that would cause physical change to the environment. Any construction or improvements associated with this submittal that are designed to reduce the City's vulnerability to hazards would be subject to separate environmental review.

The DEIR area is located within the northern extent of the Alexander Valley in Sonoma County and covers the entire approximately 2.8-square miles within the City of Cloverdale, with an additional approximately 2-square miles included within the City's sphere of influence. The DEIR area is located within the Russian River Valley and extends from the main channel of the Russian River to the east, Oat Valley road to the north, Chrome Iron Road to the south, and the toe of moderately sloped (approximately 30 to 45-percent) hills to the west. The active trace of the Maacama Fault is located approximately 2-miles northeast of the DEIR area (Jennings and Bryant, 2010). The Maacama fault is capable of generating a Maximum Moment Magnitude 7.1 earthquake with a recurrence interval of 220 years (Petersen and others, 1996). Several other fault segments associated with the Maacama Fault Zone that exhibit quaternary-age fault movement are mapped within 1-mile of the northwest DEIR boundary (Jennings and Bryant, 2010).

Much of the DEIR area is located within the wildland-urban interface with a total population just below 10,000, Development and critical infrastructure is generally located within the City limits. Additionally, it appears that numerous public roads and highways are located within or near the project area. Project documents detail evaluation of six (6) potential hazards and associated mitigation measures, including Wildfire, Drought, Earthquake, Geo Hazards, Flood, and Pandemic. We reviewed the DEIR, focusing on Chapter 6. *Risk Assessment*, which includes a discussion on the methodology (Section 6.3.1) used to determine the level of potential risk and specific risk analysis (Section 6.5) of the six potential hazards. Based on maps and figures included in Section 6.5, local hazard mapping is based on mapping by federal and state agencies, including the United States Geological Survey (USGS) and California Geological Survey (CGS).

Based on CGS review of the DEIR, we have the following comments:

1. There does not appear to be a separate reference section within the proposed documents. Some of the data discussed in Chapter 6 of the DEIR partially references source material, for example *National Oceanic and Atmospheric Association, 2016*, but does not include the entire reference, making it difficult to determine the validity of the source. The DEIR should include a separate section with the collated complete references and links to enable reviewers to determine whether the most recent and complete data is included in the DEIR.
2. Many of the figures in Chapter 6 list data sources but do not have references. For example, Figures 6-20, 6-23, 6-24, and 6-28 list FEMA, CGS, USGS, Cal Fire and CPUC, respectively, as data sources, but do not include specific reference information or links. The lack of reference information makes it difficult to determine whether the cited data is the most recent and complete data. The DEIR should include complete references, and preferably links, for the cited data sources to enable reviewers to determine whether the most recent and complete data is included in the DEIR.
3. Section 6.5.4 *Geological Hazards* includes general landslide risk exposure mapping that is sourced to CGS. No specific reference for the mapping is included in the DEIR. Section 6.5.4 does not appear to include available regional landslide mapping (Huffman and Armstrong, 1980). Based on review of available landslide mapping (Huffman and Armstrong, 1980), areas of deep-seated landsliding are identified along the western DEIR boundary. The DEIR should include the available landslide mapping to disclose the mapped unstable areas and increase the potential for review of the unstable features to be part of the DEIR. The regional landslide mapping can be obtained at the following link: https://ngmdb.usgs.gov/Prodesc/proddesc_321.htm

We hope this information is helpful. Please call us with any questions.

original signed by
Kevin F. Doherty, CEG # 2666
Engineering Geologist

7/23/2021 original signed by
David Longstreth, CEG # 2068Senior Engineering Geologist

References:

Huffman, M.E., and Armstrong, C.F., 1980, Geology for Planning in Sonoma County: California Division of Mines and Geology, Special Report 120, Plates 2A and 3A, scale 1:62,500.

Jennings, C.W., Bryant, W.A., 2010, Fault Activity Map of California, Geological Data Map No.6, California Geological Survey, Scale 1:750,000. https://maps.conservation.ca.gov/cgs/fam/

Lagomarsino Planning and Management LLC., 2021, City of Cloverdale Background Report Chapter 10: Public Health and Safety, Draft Environmental Impact Report, SCH# 2021060710; dated May 2021, 94 pages.

Lagomarsino Planning and Management LLC., 2021, City of Cloverdale Local Hazard Mitigation Plan, Draft Environmental Impact Report, SCH# 2021060710; dated May 2021, 181 pages.

Petersen, M.D., Bryant, W.A., Cramer, C.H., Cao, T., Reichle, M.S., Frankel, A.D., Lienkaemper, J.J., McCory, P.A., and Schwartz, D.P., 1996, Probabilistic Seismic Hazard Assessment for the State of California: California Department of Conservations, Division of Mines and geology Open File Report 96-08; U.S. Geological Survey, Open File Report 96-706.