

Greater Sacramento Area Mineral Designation Draft Regulations

DRAFT Economic Impact Assessment

1. SUMMARY OF ECONOMIC IMPACT ASSESSMENT

The Greater Sacramento Area (GSA) mineral designation draft regulations would have minimal economic impact on California's mining industry and no noticeable consequences to the state economy. The economic impact is summarized as follows:

- Total direct costs to lead agencies would be an estimated range of \$70,000 to \$130,000 in the first year after the proposed regulations were effective ("Year 1") and a range of \$0 to \$60,000 in the second year ("Year 2"). This analysis is explained in Section 3.
- Given California's Gross State Product (GSP) of over \$3 trillion, the direct costs to lead agencies is negligible to California's economy.¹
- There would be virtually no impact on the creation or elimination of jobs within California, no impact on the expansion of businesses within the state, no impact on the creation of new businesses or the elimination of existing businesses within the state, and no impact on the ability of businesses within the state to compete with businesses in other states.
- Although not quantified in this analysis, there are potential qualitative costs and benefits from the proposed regulations. These impacts are addressed in Section 4.
- The proposed regulations would not have significant economic impacts on individuals, businesses, or the government.

2. GENERAL PURPOSE AND CONDITION ADDRESSED

Article 6 of the Surface Mining and Reclamation Act of 1975 (SMARA), commencing with Public Resources Code (PRC) section 2790, provides for the State Mining and Geology Board (Board), based upon mineral information from the State Geologist pursuant to subdivision (b) of PRC section 2761, to adopt in regulation specific geographic areas of the state as areas of statewide or regional mineral resource significance and specify the boundaries of those areas.

Aggregate, which is a collection of sand, gravel, and crushed rock, is used to provide bulk and strength to Portland cement concrete (PCC), asphaltic concrete (AC), Class II Base, and other aggregate commodities such as subbase, drain, and fill. The material specifications for PCC and AC aggregates

¹ State of California Department of Finance, "Gross State Product," <https://dof.ca.gov/forecasting/economics/economic-indicators/gross-state-product/>

are more restrictive than specifications for the other commodities. Given these restrictions, deposits acceptable for use as PCC or AC aggregate are the scarcest and most valuable aggregate resources. Because aggregate is a low unit-value, high bulk-weight commodity, it must be obtained from nearby sources to minimize economic and environmental costs associated with transportation.

To ensure that mineral resources will be available when needed and do not become inaccessible because of inadequate information during the land-use decision making process, the State Geologist identifies and classifies lands containing significant mineral deposits. The classification of these lands is published by the California Geological Survey (CGS) in Mineral Land Classification reports. These reports identify resources areas that fall under:

- PRC 2761(b)(1) - An area that contains mineral deposits and is not of regional or statewide significance.
- PRC 2761(b)(2) – An area that contains mineral deposits and is of regional or statewide significance.
- PRC 2761(b)(3) – An area that contains mineral deposits, the significance of which requires further evaluation.

To be considered significant for the purpose of classification, a mineral deposit, or group of mineral deposits that can be mined as a unit, must meet marketability and threshold value criteria adopted by the Board. Threshold values are intended to indicate the approximate minimum size of a mineral deposit that will be considered for classification and designation. The value criteria vary for different mineral deposits depending on their uniqueness and commodity-type category. The threshold value of construction materials in 2017 and 2020 was \$20.25 million and \$22 million, respectively, and the price of concrete-grade aggregate in the GSA P-C region ranged from \$9 to \$22 per ton, so to be considered significant, a deposit of construction materials must contain at least 1.22 million tons of aggregate material.

In 2018, CGS produced a mineral land classification report (Special Report 245) on a newly denoted Greater Sacramento Area (GSA) Production-Consumption (P-C) Region. This report combined the Sacramento-Fairfield and Yuba City-Marysville P-C Regions, the Sacramento County study area, and the western portions of the Nevada, Placer, and El Dorado study areas into a single P-C region along with newly classified lands within Yuba, Sutter, Solano, and Yolo counties. As a result, about 2,580 square miles of classified land was combined with about 3,500 square miles of unclassified land to form a single approximately 6,080 square mile P-C Region.

Nine previous mineral land classification studies conducted between 1988 and 2010 evaluated portions of the GSA P-C region and identified a total of 85 sectors to be of regional or statewide significance. Special Report 245 incorporated and updated information from these previous studies to evaluate the mineral resource potential for PCC and AC grade aggregate within the GSA P-C region and showed that only some of the sectors are of significance presently: Sectors 1 through 43, 45, 46, 48, 49, 50, 52, 54 through 70, 72, 73, 75, 77, 78, 79, 81, 82, and 83 (Plate 1A, Plate 1B). Sectors 44, 47, 51, 53, 71, 74, 76, 80, 84, and 85 were either depleted by mining, lost to incompatible land uses, or determined to no longer be significant upon re-evaluation. Additionally, Special Report 245 identifies nine new sectors (Sectors 86 through 94) of significance.

On January 19, 2022, the acting State Geologist recommended for designation select mineral resource lands in the GSA P-C Region. This decision was largely guided by Special Report 245. In Special Report 245, the State Geologist identified several candidates, or areas, which meet or exceed the Board's threshold economic value, thus qualifying each area to be considered for designation as an area of regional or statewide significance.

Additionally, Teichert Material submitted a petition for a reclassification of a project area as MRZ-2 for PCC aggregate under 2761(b)(2). This petition was for a 277-acre project area on the Shifler Property, which is located approximately 3 miles west of the town of Woodland in Yolo County. Special Report 245 had initially classified approximately 90 acres of the northern portion of the project area as MRZ-2 (2761(b)(2)), classified about 1.5 acres of the eastern portion of the project area as MRZ-1 (2761(b)(1)), and classified the majority of the remaining project area as MRZ-3 (2761(b)(3)). The petition requested that the entire area be classified as regionally significant under 2761(b)(2).

The petition included drill logs that showed the presence of construction aggregate at mineable depths throughout the project area. In 2021, CGS produced a mineral land classification report (Special Report 255) for the Shifler property and subsequently re-classified the entire proposed mining project area within the property as regionally significant due to the presence of PCC grade aggregate. On January 4, 2021, the State Geologist recommended the Board accept the Shifler Property petition and at its January 21, 2021 regular business meeting, the Board accepted the request for petition. On May 20, 2021, the Board accepted Special Report 255.

As urban expansion continues in the GSA P-C region, areas containing mineral resource deposits are threatened to be developed with alternative land uses. Consequently, it is important that land-use decisions be made with consideration to the presence and importance of local aggregate resources. The proposed new regulations, California Code of Regulations, article 2, section

3550.18, are intended to establish mineral lands that are to be designated by the Board as having regional significance within the GSA P-C Region and reflect the findings in Special Reports 245 and 255.

3. DIRECT COSTS TO LEAD AGENCIES

There are various economic costs associated with the proposed regulations in both Years 1 and 2. The direct costs to lead agencies can be seen in Figure 1 and will be discussed in Section 3.

Figure 1 - Direct Costs to Lead Agencies

Cost	Year 1	Year 2
Direct Costs to Lead Agency	\$70,000 - \$130,000	\$0 - \$60,000

The following direct costs have been estimated after collecting responses to a survey created by the Board to quantify economic impacts associated with the proposed regulations. The survey was responded to by several representatives of various lead agencies in the GSA. The analysis acknowledges that the survey responses may not be representative of the population of lead agencies in the GSA due to the small sample size.² In addition to the survey, the Board informally interviewed several subject matter experts to discuss economic impacts of mineral designation. Along with these informal interviews, the Board held a lead agency meeting which gave attendees an opportunity to opine about the potential economic impacts of mineral designation in their jurisdiction. The comments from this hearing were also considered.

PRC section 2762 requires lead agencies who have received a new or updated mineral classification or designation in their area to update their Mineral Resource Management Policies in the General Plan within 12 months of the classification or designation. Therefore, lead agencies under the jurisdiction of any of the areas to be affected by the proposed regulations may need to update the mineral resource management policy in Year 1 if they did not act when the classification report was released. Updating a mineral resource management policy in the general plan costs a lead agency about \$8,750 in staff and consultant time.³ There are eight lead agencies in the GSA to be

² Only four of the eight lead agencies to be affected by the regulations responded to the survey (50%).

³ \$8,750 is the sample mean from the four responses that were collected from the Department's survey. This sample mean may be subject to nonresponse bias as only four out of the eight lead agencies of interest in the GSA responded. However, the sample mean was chosen as the best

affected by the proposed regulations. Multiplying the \$8,750 figure by the number of lead agencies to be affected amounts to \$70,000 in Year 1 with no costs in Year 2.

PRC section 2763 requires lead agencies to release a statement specifying the reason for permitting a proposed use that may affect minerals designated by the Board as significant. The lead agency must also hold a public hearing on the issue. As a result of the additional designation and classifications from the proposed regulations, PRC section 2763 would therefore require the lead agencies to prepare a statement specifying the reasons for permitting an incompatible activity and hold a public hearing. This would cost a lead agency about \$7,500 in staff and consultant time.⁴ However, three out of the four respondents indicated that they do not anticipate the need for preparing a statement while one respondent answered “unknown”. This was a challenging decision for the analysis considering the small sample size and inevitable uncertainty from the other lead agencies. Without survey responses from other lead agencies, the analysis took the three responses indicating no need for such statement at face value and calculated a lower bound range of \$0 for all lead agencies with this assumption. Then, the analysis attempted to mitigate the “unknown” by assuming that each lead agency will prepare one such statement in both Years 1 & 2. Considering both the lower and upper bound range, the estimated costs associated with PRC section 2763 amount to a range of \$0 to \$60,000 in Years 1 and 2.

In total, direct costs to lead agencies are \$70,000 to \$130,000 in Year 1 and \$0 to \$60,000 in Year 2.

4. OTHER POTENTIAL COSTS AND BENEFITS

Section 3 discussed the direct costs to lead agencies that are quantifiable and within the scope of the analysis. Section 4 will address costs and benefits related

statistic to represent the population as it better captures the min and max variation than the sample median. Utilizing the max value to create an estimate for the eight lead agencies was considered but ultimately determined to be unnecessarily conservative. Another method that was considered was to calculate a 95% confidence interval of the sample mean and then display the cost estimate intervals in a lower and upper bound format. However, this method was determined to be problematic with an unknown population standard deviation, unknown population distribution, and a significantly small sample.

It is also worth noting that two out of the four responses reported a cost of \$0. It is plausible that a lead agency may not have any costs associated with PRC section 2762. Therefore, the values of \$0 were not excluded from the sample mean to best replicate the population mean.

⁴ Again, the sample mean from the four survey responses is utilized for this estimate and the analysis acknowledges the potential of nonresponse bias.

to the regulation that were considered but were not within the scope to quantify for this economic impact assessment.

4.1. Property Values

Without substantial academic literature to understand how mineral designations and classifications affect property values in California, it is difficult to produce an estimate on such dollar amount. Responses from the Board's survey and discussion with various subject matter experts (SMEs) within the industry suggest that there is likely no significant impact on property values (both residential and commercial) after an area has been designated or classified. Despite the potential impact that mining has on property values, simply designating or classifying an area likely does not affect housing prices.⁵⁶ Without sufficient data to determine a causal impact, the analysis will not quantify such effect with any degree of certainty.

However, it is worth noting that there have been several historical examples of mineral designations in California that the analysis used to compare if a similar impact would occur in the GSA. Of the eight mineral designations that have occurred in California since 2011, the analysis determined the county most akin to Sacramento in terms of population, location, and median home prices is the San Joaquin County.^{7,8} Figure 2 illustrates this similarity in terms of median home values from 2010 to 2023.⁹

⁵ Literature on the mining's impact on property values suggests differing conclusions. For example, one paper suggests that mining does not negatively impact housing prices. Ford, George S., What is the Effect of Rock Quarries on Home Prices? An Empirical Analysis of Three Cities (May 2022). Phoenix Center Policy Paper No. 57 (2022), Available at SSRN: <https://ssrn.com/abstract=4159781> or <http://dx.doi.org/10.2139/ssrn.4159781>

⁶Another paper uses data in Australia and focuses on lead and copper mining, but a case can be made that the findings are applicable to aggregate mining in California. Neelawala, Prasad et. al. "The impact of mining and smelting activities on property values: a study of Mount Isa city, Queensland, Australia". The Australian Journal of Agricultural and Resource Economics, 57, pp. 60–78. 2012. doi: 10.1111/j.1467-8489.2012.00604.x

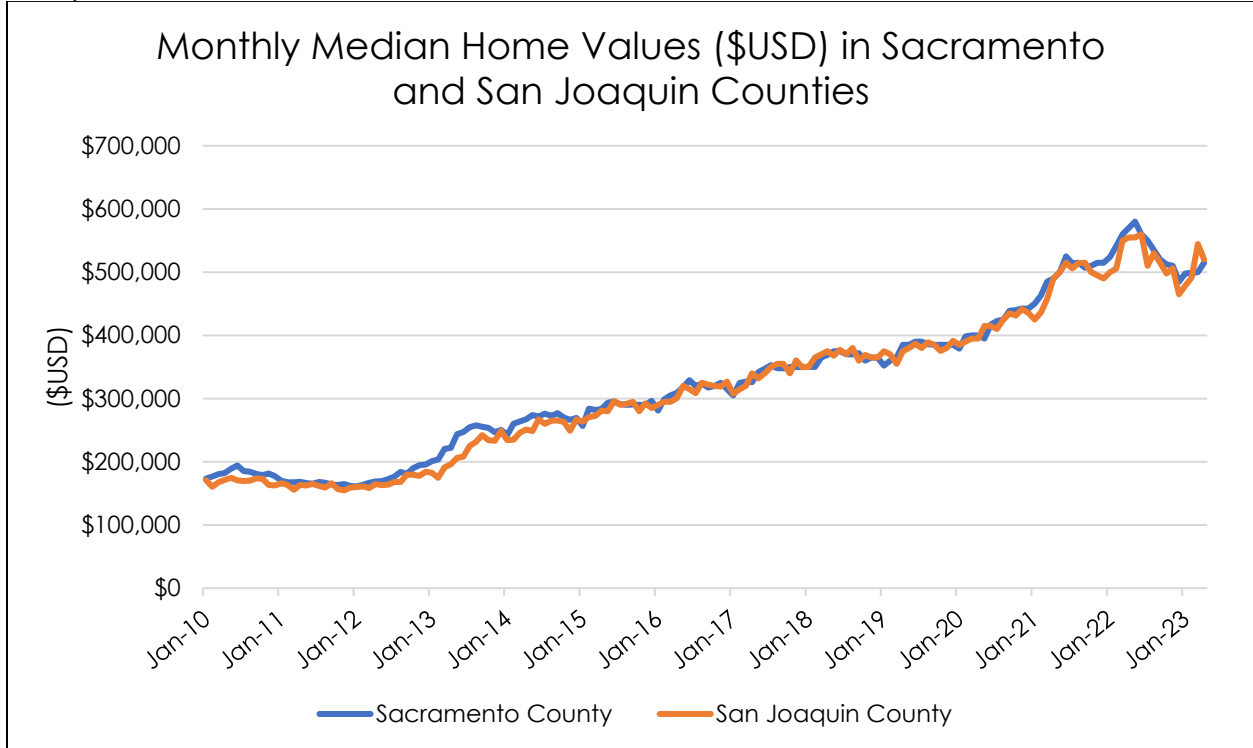
The paper by Neelawala may be relevant because of aggregate mining's reported environmental externalities associated such as, noise, dust, and visual disamenity in the production of minerals- [https://doi.org/10.1016/S0301-4207\(99\)00012-4](https://doi.org/10.1016/S0301-4207(99)00012-4). Although the literature suggests varying conclusions, the economic impact assessment will focus on the impact of designations in the GSA, not mining activities.

⁷ The other seven counties that received a mineral designation since 2011 were Bakersfield (2011), Riverside (2014), San Bernadino (2014), Los Angeles (2014), Napa (2016), Marin (2016), and Sonoma (2016).

⁸ The proposed regulations will affect multiple counties within the GSA. However, Sacramento County was utilized to analyze property value impacts.

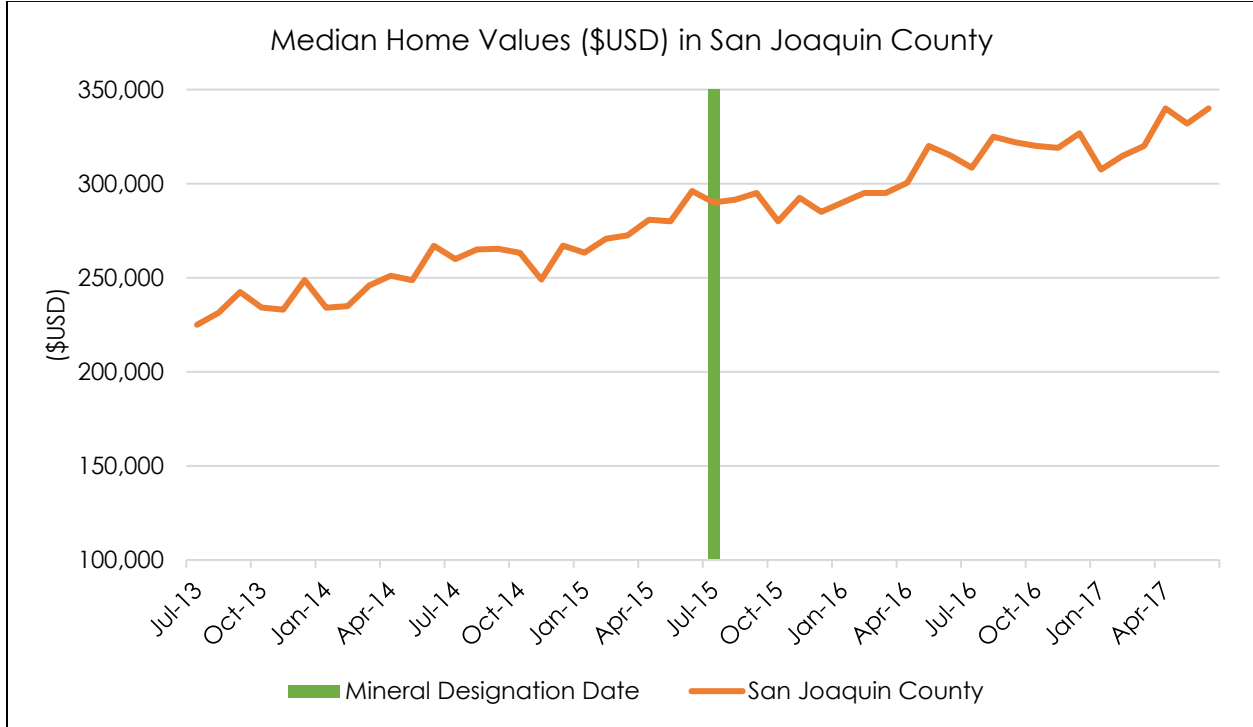
⁹ Data was obtained from the California Association of Realtors (CAR) and consists of monthly median prices for single family detached homes only.

Figure 2 - Median home values (\$USD) in Sacramento and San Joaquin counties (2010-2023).



San Joaquin County received a mineral designation in July of 2015 and the analysis uses time series housing price data for both 24 months before and after the designation to visualize if there is any significant impact. This is depicted in Figure 3. The analysis utilized a 24-month window before and after the designation. Although the data from the California Association of Realtors (CAR) uses seasonally adjusted data, it is important to observe two calendar years before and after the designation to account for any potential seasonality. It is plausible that housing markets fluctuate in a calendar year due to weather or summer vacations for schools. Also, the total observed time frame is a substantial sample size and provides the analysis enough time after the designation to discern any significant impact.

Figure 3 - Median home values (\$USD) in San Joaquin County with Mineral Designation Reference line.



To observe the potential impact from a mineral designation, the analysis used a statistical method called the standardized difference which quantifies if there is a statistically significant difference between the means of treated and untreated groups.¹⁰ The analysis calculated the standardized difference for both a 12- and 24-month window before and after the Mineral Designation in San Joaquin County in July of 2015. The standardized differences can be seen in Figure 4. There are various thresholds of determining statistical significance, for example, 0.2, 0.5, and 0.8.¹¹

Using a more conservative 0.2, the analysis determines that the means from 12 months before the mineral designation are not statistically different than the means from 12 months after the mineral designation in July of 2015. This is because the standardized difference of 0.18 is less than the 0.2 threshold. However, when increasing the sample size and comparing the means from 24 months before the mineral designation to 24 months after, the value of 0.59 is greater than our 0.2 threshold. Therefore, the analysis determines that there is a statistically significant difference between the two means.

¹⁰ Austin P. C. (2009). Balance diagnostics for comparing the distribution of baseline covariates between treatment groups in propensity-score matched samples. *Statistics in medicine*, 28(25), 3083–3107. <https://doi.org/10.1002/sim.3697>

¹¹ Ibid.

These results are not surprising when referring to Figure 2 which shows that median home values have been steadily increasing since about 2012 (when the financial market had time to recover after the housing crisis in 2008). Although there is no difference between the 12-month period before and after the designation, it is understandable the two means are systematically different when the analysis increases the sample size.

Figure 4 - Standardized Difference values for both a 12- and 24-month window before and after the mineral designation in July of 2015¹²

	Mean Sales before Designation	Mean Sales after Designation	Standardized Difference
San Joaquin County (July 2014- June 2016)	\$287,053	\$312,793	0.18
San Joaquin County (July 2013 – June 2017)	\$273,469	\$355,211	0.59

Simply comparing statistical differences between means of 12- and 24-month windows before and after the mineral designation can be misleading for several reasons. As previously alluded to, there has been a steady increase in home prices for more than a decade- the larger the window of time observed, the more likely there will be a statistical difference. Also, analyzing the standardized differences before and after a mineral designation does not imply that there is a causal impact. The analysis is limited in this facet and does not control for the many other factors that likely affect home prices such as interest rates, GDP, or locational data. The purpose of comparing median home values in Sacramento and San Joaquin counties in Figure 2, and the standardized differences in Figure 4 is to simply suggest that there would likely be no negative impact on housing prices in Sacramento as a result of the proposed regulations.

4.2. Qualitative Benefits

Although the quantification of benefits associated with the proposed regulations is beyond the scope of this Economic Impact Assessment, there are many potential qualitative benefits. By designating areas to be of regional significance, it enables land planners to best utilize the land's resources. The

¹² A technical clarification must be made about the utilization of standardized differences here. The comparison of means across the two groups requires the arithmetical mean which in theory would aggregate all sales and divide this value by the number of units sold to calculate the true mean. The analysis is limited as the only data available from CAR are monthly mean values (without individual data points). Therefore, the analysis took a mean of these monthly means to best mimic the true arithmetical mean. Although the two values should in theory be significantly close in value and would likely not alter the standardized difference interpretation, it is worth making this clarification.

process of designation provides land planners with the information necessary to make sound decisions about how to best use land; this aids in decision making regarding mining, development, or any other utilization of land. When land planners are informed with such information, it likely minimizes the risk of investing money in an incompatible land use.

The point of improving decision making about land uses coincides with another environmental benefit about aggregate mining. All five of the subject matter experts that the analysis interviewed about the costs and benefits of a mineral designation mentioned the importance that designations have on transportation costs of aggregate. Designating areas of land as regional significance allows new aggregate construction sites to be chosen in a location that is economically efficient. This has many associated environmental benefits.

For example, a significant portion of construction costs and aggregate mining result from the transportation of aggregate.¹³ The transportation of aggregate is particularly costly because of two main reasons. The first is the carbon dioxide emissions associated with large trucks transporting these heavy materials. The other is the damage to the roads that occurs from aggregate trucking. The damaging of roads creates an externality for residents of California as roads are repaired with public funds. Also, one SME that the analysis interviewed postulated that the damaged roads from aggregate trucking are further exacerbated by floods and natural disasters which has been an increasing challenge in California.

Lastly, the streamlining of the California Environmental Quality Act (CEQA) was another qualitative benefit that was discussed by multiple SMEs who were interviewed by the analysis. Among many things, CEQA is intended to minimize damage to the environment through development of project alternatives, mitigation measures, and mitigation monitoring.¹⁴ CEQA maintains transparency with the public and the process of designation better informs land use planners with the information needed to convey the pertinence of such environmental implications.

5. COST IMPACT IN CALIFORNIA

The analysis estimates that the overall impact of the proposed regulations on California's economy would be negligible. In total, direct costs to lead agencies

¹³ According to Peter Berck in the paper, "A note on the Environmental Costs of Aggregates", the cost of aggregates usually a tenth or less of the cost of a construction project.

¹⁴ [https://wildlife.ca.gov/Conservation/Environmental-Review/CEQA#:~:text=The%20California%20Environmental%20Quality%20Act%20\(CEQA\)%20services%20to%3A&text=Prevent%20or%20minimize%20damage%20to,mitigation%20measures%2C%20and%20mitigation%20monitoring.](https://wildlife.ca.gov/Conservation/Environmental-Review/CEQA#:~:text=The%20California%20Environmental%20Quality%20Act%20(CEQA)%20services%20to%3A&text=Prevent%20or%20minimize%20damage%20to,mitigation%20measures%2C%20and%20mitigation%20monitoring.)

are \$70,000 to \$130,000 in Year 1 and \$0 to \$60,000 in Year 2. Therefore, the Board does not foresee the regulations significantly affecting the economy on either a macro or micro scale. The Board projects that all additional work created by the regulations would be absorbed by positions already employed. So, it is assumed that no new jobs will be created or eliminated within the State of California as a result of the regulations. Similarly, the regulations would not expand businesses, create new businesses or eliminate existing businesses within California. Although the lead agencies would bear the burden of \$70,000 to \$130,000 in Year 1 and \$0 to \$60,000 in Year 2, the designation of numerous regions in the GSA is expected to provide qualitative benefits as discussed in the previous section.

6. CONCLUSION

The designation of numerous regions in the GSA would have a miniscule impact on California's economy of \$70,000 to \$130,000 in Year 1 and \$0 to \$60,000 in Year 2. Given these ranges, the Board forecasts that the proposed regulations would not have significant fiscal impacts on individuals, businesses, or the government. The proposed regulations equip land planners with tools to improve their decision making about the utilization of land and provide various other benefits to the State of California.