CIVIL DESIGN STUDIO
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February 12, 2024

Attn: **Tom Gray, President**
Cambria Community Services District Board
1316 Tamsen Street, Suite 201
Cambria, CA 93428

Regarding: **Cambria Emergency Evacuation Route**

Subject: **Preliminary Cost Estimate**

Scope

As requested by the Cambria Community Services District, Civil Design Studio has prepared this report which includes a preliminary cost estimate for construction of an emergency access road called the “Beach Road”. The Beach road is referenced in a report prepared by Cornelius Nuworsoo, Ph.D., AICP, dated May 28, 2022. This road would run from Marine Terrace, through the Rancho Marino Preserve, Decker ranch, additional private property, and Flamm Ranch and would end at Highway 1, south of the Highway 46 intersection.

The scope of this preliminary cost estimate is limited to construction work which would be required on the Ranch Marino Preserve as well as the Decker Ranch. The itemized costs for this preliminary cost estimate include the minimum improvement recommendation based on an engineering evaluation to provide access required to comply with Cal Fire emergency access road standards. In future phases of the project, jurisdictional agencies may require the opinion of a licensed Biologist at sensitive resource locations, which may change the design and therefore the cost of the project. To mitigate the potential cost impact of future biological constraints, this cost estimate has been buffered by including 2 steel railcar bridges if they are required by the future project biologist.

Location and Environmental Constraints

The Beach Road is an existing road which was graded long ago. Satellite imagery clearly shows the road as existing in 1994. However, most likely the road was graded long before that. The entire stretch of the Beach Road lies within the jurisdiction of the California Coastal Commission. In addition, there are multiple stream crossings which will trigger environmental review by a biologist for wetlands and jurisdiction of California Fish and Wildlife. As stated in the previous section, this preliminary cost estimate does not consider biology or environmental mitigation. For a more accurate estimate, the project developer would need to hire a biologist and civil engineer to work together with San Luis Obispo County Planning to develop an accurate plan. Please see the following subheadings for a list of environmental constraints which may impact the project.

Sensitive Resource Area:
The Beach Road lies entirely within an area that the SLO County planning department has identified as a Sensitive Resource Area.

Coastal Zone:
The Beach Road also lies entirely within the Coastal Zone. Therefore, all development is appealable to the Coastal Commission. This project will be highly scrutinized due to the visibility from the coastline.

Coastal stream:
SLO County planning has identified two streams that are coastal streams, which the Beach Road would need to construct improvements through. This includes the Strawberry Canyon drainage, as well as one additional stream within Rancho Marino.

Environmental Jurisdictional Areas:
The project biologist will need to evaluate the entire length of the Beach Road to identify environmental constraints, which will include wetlands, rare plant species, and areas that the three environmental agencies will claim as their jurisdiction. Any areas with beneficial environmental uses will be identified. Therefore, it is likely that many of the drainage crossings will be identified as areas which will require environmental permitting and possibly mitigation from the development impacts.

Terrestrial Habitat:
A small portion of the Beach Road crosses into an area identified by SLO County Planning as Terrestrial Habitat.

Environmental Agencies:
Permitting will be required from the three environmental agencies listed below. The project biologist will handle reporting and permitting requirements with these agencies.

- Regional Water Quality Control Board
- Army Corps of Engineers
- CA Fish and Wildlife

Description of Work

The work required to construct the Beach Road involves permitting and construction of a 16’ all weather Cal Fire compliant access road for emergency use. As previously mentioned, this cost estimate includes improvements considered on the Rancho Marino Preserve as well as the Decker Ranch. See below for a view of the road along with a description of the road segments along the stretch of the Beach Road:

- Rancho Marino Road – White – 1.85 miles
- Decker Access Road – Yellow – 0.40 miles
- Existing Dirt Road (Not a part of this project) – Majenta – 0.60 miles
- Existing Paved Road (Flamm property) – Cyan – 2.00 miles

- Total road length for this cost estimate = 2.25 miles = 12,000 ft
- Beach Road total length = 4.85 miles

The proposed required work can be broken down into two main categories, road surface and drainage crossings.

Road surface repair work will involve grading, compaction, and importing gravel to create a stable surface that will be reliable during emergencies. Fortunately for the developer, this work is relatively inexpensive due to the close proximity of a local rock quarry, which will most likely supply the material for the road surface. An additional benefit to the project is that this road surface material import can be considered native to the area, as opposed to importing material from out of the area. This may help with the environmental permitting.

Drainage crossing repair work will vary based on the requirements of each individual drainage crossing along the road surface. The amount of work required will depend on factors such as tributary area, existing erosion, and environmental constraints. See Appendix 2 for a list of each drainage with pictures and itemized work that will be required. Many of the drainage crossings

which have had erosion over the years will require large rip rap (large rocks) to be installed to stabilize the crossing and prevent future erosion. SLO County has developed a standard detail for this work, which is shown in Appendix 3. These large rocks are also available at the local quarry, which helps keep the costs down for this work. Although the rip rap installation is proposed by this preliminary engineer's cost estimate, the final method of stabilizing each crossing will be subject to the Biologist opinion as well as approval from each environmental agency. If significant resources are located within a specific drainage crossing, a bridge may be the only viable solution.

Project Cost Summary

Please see below for a description of various costs included in each section of the cost estimate (see Appendix 1).

General Project Costs:
All anticipated project costs that do not involve physical work are grouped into the general project costs category. This includes estimates for engineering, surveying, biology, environmental permitting, and environmental monitoring during construction. These project costs total approximately 19% of the construction work budget, which is higher than the average project. Due to environmental constraints, permitting within the coastal zone, and work within sensitive resource areas, it would be expected that these costs would be higher for this particular project than a typical project.

Demo and Earthwork:
The costs included in the demolition and earthwork category include costs for compacting soil, surface material import, trucking, etc. This work is required to compact the soil to support emergency vehicle loads, as well as creating a safe roadway (in terms of slope and road width). Stream crossings along the roadway are proposed to be improved with installation of rock to create a stabilized crossing that would resist erosion. These crossings are called out on the cost estimate as "rock crossing". These rock crossings would be similar to an Arizona type crossing, but constructed with an assortment of 1.5" to 4" rock instead of paving or concrete. The resulting surface would be expected to be relatively smooth, sufficient to handle passenger car traffic, as well as stable enough to prevent further erosion, and strong enough to handle vehicle loads. These rock crossings would be subject to approval by environmental agencies, as well as the project biologist.

Storm Drainage:
Project costs in the storm drainage category include cost estimates to install culverts at the various drainages along the roadway. These culvert sizes will need to be verified by a civil engineer by conducting a hydrology study for each drainage. However, for the purposes of this report, estimated sizes are proposed, based on engineering judgement. If a culvert is proposed, the rock crossing mentioned in the Demo and Earthwork section would not be necessary, because the road surface will be above the culvert. As mentioned, the drainage solution at each crossing will need to be determined by the project biologist, in conjunction with the judgement of a Civil engineer.

Walls / Structures:
The quantity of cattleguards and bridges proposed is based on a conservative attempt to quantify the potential cattleguard locations as well as potential streams with environmental constraints that cannot be mitigated. As previously stated, the actual minimum requirement of structures for the road will be determined by the project biologist and environmental agencies.

Cattleguards are proposed to be installed at this preliminary cost estimate stage of the project to conservatively include all potential project costs. The project developer will need to coordinate with all landowners to determine if cattleguards are required or allowed on the emergency access road. Cattleguard installation would allow the access road to be utilized during emergency events without closing any gates. The cost estimate includes a line item for "cattleguard with gate". This includes the cattleguard for vehicle use, as well as an adjacent gate that would be utilized to transport livestock from one fenced area to another. Therefore, the potential benefits of installing cattleguards would include emergency access without utilizing gates and prevention of cattle movement during emergencies. The potential downside of cattleguards would be the installation cost.

Bridge installation may be required if the project biologist determines that construction of a road would be detrimental to sensitive resources, and mitigation of impacts cannot be considered. For the purposes of this report, used rail car bridges are proposed. The ocean air environment is clearly not optimal for installation of a steel bridge without protection. Therefore, the steel railcar bridge that is included in this cost estimate is anticipated to have extra rust protection including epoxy paint and sacrificial anode.

Erosion Control:
All projects require erosion control measures. The majority of the cost for erosion control for this project would be dedicated to hydroseeding disturbed soil areas.

Value Engineering

At this preliminary planning level, Cal Fire has requested a road width of 16' for the proposed Beach Road. However, as noted by Cornelius Nuworsoo, Ph.D., AICP, the Beach Road is anticipated as a one way evacuation road. Therefore, the project developer may work with Cal Fire to reduce the road with to the minimum Cal Fire allowed width for a one way road, which is 12'. Cal Fire may require turnouts at regular intervals along the road, but overall there should be savings from a reduced road width, as well as reduced environmental impacts. If the road width is reduced to 12', CDS calculates an approximate savings of $180,000 from the proposed cost estimate.

Summary

Please see Appendix 1 for a preliminary cost estimate for the work described in this report. As noted previously, this cost estimate is applicable to the work required on the Rancho Marino Preserve, as well as the Decker Ranch. The proposed work is based on engineering judgement, without the opinion of a project biologist, which will likely impact the scope of the work in the

jurisdictional areas. With inclusion of a 10% contingency and potential inflation, the total preliminary cost estimate for this project is approximately **$2.55M**

Please contact me if you have any questions or require further clarification.

Regards,

Monte Soto, PE, QSD
Principal Engineer

Appendix 1
Preliminary Cost Estimate

CIVIL DESIGN STUDIO
CIVIL ENGINEERING | PLANNING | PERMITTING
P.O. Box 199
Cambria, CA 93428
805.706.0401

Date: February 2024
Job Number: 23-071
Job Name: Cambria Emergency Access Road

Engineers Estimate

ITEM	QUANT	UNIT	$/UNIT	% REMAIN.	$	DESCRIPTION
GENERAL PROJECT COSTS						
MOBILIZATION / OVERHEAD	1	LS	20000.00	100	$20,000	
SWPPP	1	LS	6000.00	100	$6,000	FILE NOI, PREPARE DOCUMENTS
QSP SERVICES	1	LS	30000.00	100	$30,000	1 YEAR
ENGINEERING	1	LS	50000.00	100	$50,000	
SURVEYING	1	LS	15000.00	100	$15,000	AERIAL
SOILS ENGINEERING	1	LS	30000.00	100	$30,000	REPORT, SPECIAL INSPECTIONS
CONSTRUCTION SURVEYING	1	LS	20000.00	100	$20,000	IF REQUIRED
BIOLOGY AND ENVIRONMENTAL	1	LS	150000.00	100	$150,000	
ARCHAEOLOGY MONTOR	1	LS	50000.00	100	$50,000	ASSUMED
			GENERAL PROJECT COSTS	**SUBTOTAL:**	**$371,000**	
DEMO & EARTHWORK						
CLEARING & GRUBBING	6	AC	10000.00	100	$60,000	LIGHT DENSITY
RIP AND COMPACT 12"	240,000	SF	0.63	100	$150,000	20' WIDE
6" REDROCK IMPORT	192,000	SF	1.25	100	$240,000	
MASS GRADING AT DRAINAGE	6	EA	25000.00	100	$150,000	ROUGH GRADING FOR ROAD
LARGE RIP RAP INSTALL	1	EA	150000.00	100	$150,000	
TYPICAL RIP RAP INSTALL	4	EA	50000.00	100	$200,000	
ROCK CROSSING	7	EA	20000.00	100	$140,000	CONFIRM WITH BIOLOGIST
			DEMO & EARTHWORK	**SUBTOTAL:**	**$1,090,000**	
STORM DRAIN						
18" HDPE CULVERT	3	EA	5000.00	100	$15,000	30 FT LONG WITH ROCK OUTFALL
36" HDPE CULVERT	3	EA	10000.00	100	$30,000	30 FT LONG WITH ROCK OUTFALL
48" HDPE CULVERT	1		15000.00	100	$15,000	30 FT LONG WITH ROCK OUTFALL
			STORM DRAIN	**SUBTOTAL:**	**$60,000**	
WALLS / STRUCTURES						
CATTLE GUARD WITH GATE	5	EA	20000.00	100	$100,000	
RAIL CAR BRIDGE	2	EA	250000.00	100	$500,000	INSTALL ANODE
			WALLS / STRUCTURES	**SUBTOTAL:**	**$600,000**	
EROSION CONTROL						
GRAVEL BAG	400	EA	8.00	100	$3,200	
FIBER ROLLS	300	LF	10.00	100	$3,000	
HYDROSEED SLOPES	240,000	SF	0.80	100	$192,000	
			EROSION CONTROL	**SUBTOTAL:**	**$198,200**	

AC ACRE
CY CUBIC YARD
EA EACH
LF LINEAR FOOT
LS LUMP SUM
SF SQUARE FOOT
HR HOUR

	SUBTOTAL:	2,319,200
CONTINGENCIES & INFLATION %:	10	231,920
ENGINEERING ADMINISTRATION %:		
TOTAL:		2,551,120

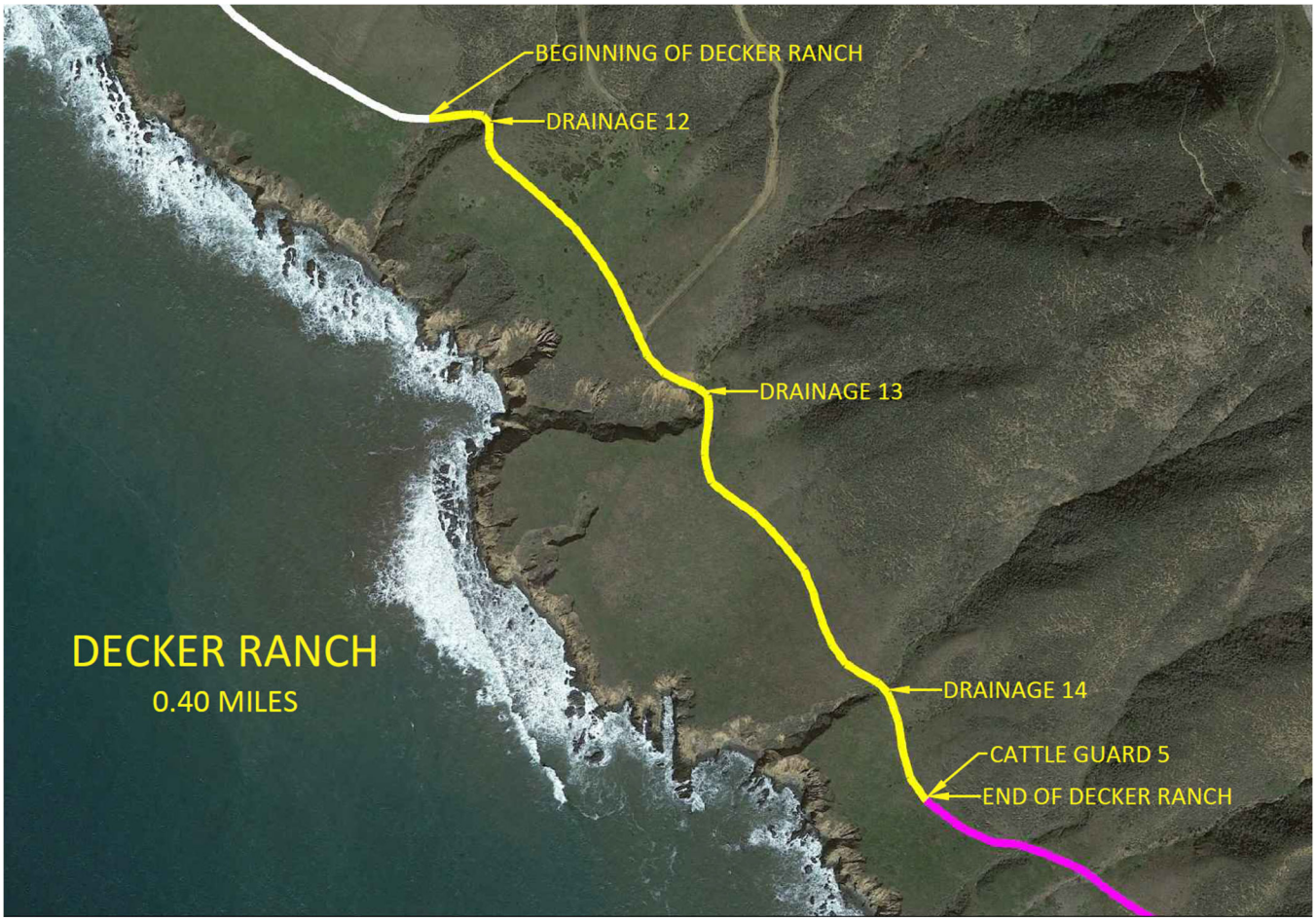
NOTES:

1 This estimate has been prepared for preliminary estimating purposes only
2 The unit prices in this estimate are derived using an estimate of 2024 construction pricees
3 In the event that additional items are encountered during the bidding process, contact the engineer for clarification.

Appendix 2
List of Drainages

Overview of Beach Road through various properties

Rancho Marino Preserve summary of drainage locations and proposed cattleguards



Decker Ranch summary of drainage locations and proposed cattleguards

Site Photographs with locations and description of work required

Drainage 1	
Description: Existing 36” squashed culvert drains Strawberry Creek Canyon	
Improvements: Replace culvert with 48”	

Drainage 2	
Description: Existing 12” culvert drains long flat stretch of road	
Improvements: Replace culvert with 18”	

Drainage 3	(no picture)
Description: Existing 12” culvert	
Improvements: Replace culvert with 18”	

Drainage 4	
Description: Existing 24” culvert	
Improvements: Replace culvert with 36”	

Cattleguard 1	
Description: Existing Cattle Guard	
Improvements: Replace Cattleguard	

Drainage 5	(no picture)
Description: Existing small culvert	
Improvements: Replace culvert with 18”	

Cattleguard 2	
Description: Existing ranch gate	
Improvements: Upgrade to Cattleguard and add cattle gate on side	

Drainage 6	
Description: Existing crossing that has washed out in the past. Filled with debris, concrete rubble	
Improvements: Clean up debris Install typical rip rap Install rock crossing	

Cattleguard 3	
Description: Existing ranch gate	
Improvements: Upgrade to Cattleguard and add cattle gate on side	

Drainage 7	
Description: Smaller drainage with minimal flow or erosion	
Improvements: Mass Grading at Drainage Install typical rip rap Install rock crossing	

Drainage 8	
Description: Stock pond upstream. Site has been graded to prevent runoff from upstream. No drainage is anticipated here.	
Improvements: Mass Grading at Drainage Install rock crossing	

Drainage 9	
Description: Outlet flow from stock pond flows through here. Wood debris filled on downstream slope. Medium to larger drainage area	
Improvements: Mass grading at Drainage Install typical rip rap Install rock crossing Remove wood debris	

Drainage 10	
Description: Medium to larger drainage area	
Improvements: Mass grading at drainage Install typical rip rap Install rock crossing	

Drainage 11	
Description: Smaller drainage area. No existing erosion	
Improvements: Mass grading at drainage Install rock crossing	

Cattleguard 4	
Description: Property line fence between Norris Rancho Marino and Decker ranch.	
Improvements: Upgrade to Cattleguard and add cattle gate on side	

Drainage 12	
Description: Medium sized drainage area, massive erosion problem. Existing crossing is not passable.	
Improvements: Mass grading at drainage Install large rip rap Install rock crossing	

Drainage 13	
Description: Large culvert, oversized	
Improvements: Replace culvert with 36”	

Drainage 14	
Description: Large culvert, oversized	
Improvements: Replace culvert with 36”	

Cattleguard 5	
Description: Property line fence between Decker ranch and Southern Boundary.	
Improvements: Upgrade to Cattleguard and add cattle gate on side	

Appendix 3
SLO County Standard R-5, Rip Rap Installation

NOTES:

1. REPAIR EXISTING ROADWAY IN ACCORDANCE WITH STANDARD DRAWINGS R-2 AND A-1 SERIES, OR AS DIRECTED BY THE DEPARTMENT.
2. PLACE EMBANKMENT MATERIAL IN CONFORMANCE WITH SECTION 19-2.03F OF THE STATE STANDARD SPECIFICATIONS HAVING A MINIMUM SAND EQUIVALENT OF 30.
3. PLACE GEOSYNTHETIC FIBER AT 3-FEET INTERVALS, OR AS DIRECTED BY THE DEPARTMENT.
4. PLACE FILTER FABRIC AT TOP AND ALL SIDES OF FINISHED GRADE (BELOW RSP) PER SECTION 96 OF THE STATE STANDARD SPECIFICATIONS.
5. CONSTRUCT 5-FEET BY 5-FEET KEYWAY OR AS DIRECTED BY THE DEPARTMENT.
6. PLACE 1-4 TON ROCK SLOPE PROTECTION (RSP), METHOD 'A' PLACEMENT PER SECTION 72-2 OF THE STATE STANDARD SPECIFICATIONS.
7. SMOOTH TOP OF SLOPE (HINGE POINT), PLACE BIODEGRADABLE, ROLLED EROSION CONTROL SLOPE PROTECTION ALONG ALL DISTURBED AREAS AND HYDROSEED PER COUNTY SEED MIX, OR AS DIRECTED BY THE DEPARTMENT.
8. WHEN ADJACENT TO A CREEK, STREAM OR OTHER DRAINAGE COURSE PLACE WILLOW CUTTINGS INTO RSP KEYWAY AND IN OTHER AREAS WHERE WATER CONDITIONS ARE FAVORABLE, AS DIRECTED BY THE DEPARTMENT.
9. WHEN ADJACENT TO CREEK, STREAM OR OTHER DRAINAGE COURSE OBTAIN ANY NECESSARY PERMITS PRIOR TO CONSTRUCTION.