#### **INITIAL STUDY/MITIGATED NEGATIVE DECLARATION**

#### NORTH MARIN WATER DISTRICT OLD RANCH ROAD TANK NO. 2 PROJECT



Prepared for

North Marin Water District

November 2019

Prepared by

Amy O. Skewes-Cox, AICP Environmental Planner

#### **INITIAL STUDY/MITIGATED NEGATIVE DECLARATION**

#### NORTH MARIN WATER DISTRICT OLD RANCH ROAD TANK NO. 2 PROJECT

Prepared for

North Marin Water District

November 2019

Prepared by

Amy O. Skewes-Cox, AICP Environmental Planner

In conjunction with

BASELINE ENVIRONMENTAL CONSULTING ENVIRONMENTAL COLLABORATIVE LSA ASSOCIATES NATALIE MACRIS TOM CAMARA GRAPHICS WORDSMITH WORD PROCESSING

#### TABLE OF CONTENTS

CHAPTER I	PROJ	ECT DESCRIPTION	1
CHAPTER II	ENVIF	RONMENTAL CHECKLIST	
	I.	AESTHETICS	
	II.	AGRICULTURAL AND FORESTRY RESOURCES	
	III.	AIR QUALITY	14
	IV.	BIOLOGICAL RESOURCES	24
	V.	CULTURAL RESOURCES	
	VI.	ENERGY	
	VII.	GEOLOGY AND SOILS	
	VIII.	GREENHOUSE GAS EMISSIONS	
	IX.	HAZARDS AND HAZARDOUS MATERIALS	
	Х.	HYDROLOGY AND WATER QUALITY	
	XI.	LAND USE AND PLANNING	
	XII.	MINERAL RESOURCES	61
	XIII.	NOISE	
	XIV.	POPULATION AND HOUSING	72
	XV.	PUBLIC SERVICES	
	XVI.	RECREATION	74
	XVII.	TRANSPORTATION	74
	XVIII.	TRIBAL CULTURAL RESOURCES	
	XIX.	UTILITIES AND SERVICE SYSTEMS	
	XX.	WILDFIRE	
	XXI.	MANDATORY FINDINGS OF SIGNIFICANCE	

#### APPENDICES

APPENDIX A:	MITIGATION MONITORING AND REPORTING PROGRAM
APPENDIX B:	AIR QUALITY TECHNICAL APPENDIX Available at offices of NMWD

#### LIST OF FIGURES

Figure 1	Site Location Map	3
Figure 2	Site Plan	4
Figure 3	Assessor Parcel Map Location and Surroundings	5
Figure 4	View of Site	6
Figure 5	Special-Status Plant Species and Sensitive Natural Communities	27
Figure 6	Special-Status Animal Species	28

#### LIST OF TABLES

Table 1	Bay Area Air Quality Management District Project-Level Thresholds of	
	Significance	16
Table 2	Project Consistency with Bay Area Air Quality Management District 2017	
	Clean Air Plan	17
Table 3	Construction Input Parameters for California Emissions Estimator Model	
	(CalEEMod)	18
Table 4	Estimated Air Emissions (Pounds per Day) During Project Construction	20
Table 5	Health Risks and Hazards from Air Emissions at Maximally Exposed Individual	
	Resident During Project Construction	22
Table 6	Definition of Acoustical Terms	63
Table 7	Typical Noise Levels from Construction Equipment (dBA)	66
Table 8	Calculated Noise Levels at Nearest Noise-Sensitive Receptors for Two	
	Noisiest Pieces of Equipment from Each Project Construction Phase (dBA)	67
Table 9	Vibration Criteria To Prevent Disturbance – RMS (VdB)	69
Table 10	Vibration Criteria To Prevent Damage To Structures - PPV (In/Sec)	70
Table 11	Reference Vibration Levels and Buffer Distances for Construction Equipment	70

#### CHAPTER I PROJECT DESCRIPTION

1. **Project Title:** North Marin Water District Old Ranch Road Tank No. 2

#### 2. Lead Agency Name and Address:

North Marin Water District 999 Rush Creek Place Novato, CA 94945

- 3. Contact Person and Phone Number: Mr. Rocky Vogler, Chief Engineer, (415) 761-8945
- 4. Project Location: Terminus of Old Ranch Road, Novato. Grant deed and easement within APN 146-310-05 (Maiero)<sup>1</sup> and easement within APN 146-310-44 (Wright). A very small portion of the existing North Marin Water District (NMWD) property (APN 146-310-23) would be used for the road turnaround.

#### 5. Project Sponsor's Name and Address:

North Marin Water District 999 Rush Creek Place Novato, CA 94945

- General Plan Designation: Agriculture (AG2) and Conservation (CON) for APN 146-310-05, Planned Residential (PR) and Very Low Density Residential (RVL) for APN 146-310-44, Open Space/RVL for APN 146-310-23.
- 7. Zoning: Agriculture and Conservation (A10) for APN 146-310-05 and Residential, Multiple Planned (RMP-0.5) for APN 146-310-44.

#### 8. Description of Project:

#### Introduction

The NMWD will serve as the lead agency for the California Environmental Quality Act (CEQA) document for the proposed project, a replacement water tank and new access road (referred to as "Tank No. 2") proposed near an existing water tank off Old Ranch Road in unincorporated Marin County near Novato, CA. After the adoption of the appropriate CEQA document, the new tank and access road can be approved.

<sup>&</sup>lt;sup>1</sup> A new Assessor Parcel Number (APN) for the Tank No. 2 parcel will be assigned by Marin County after the grant deed is recorded.

Detailed drawings can be reviewed at the NMWD offices located at 999 Rush Creek Place, Novato, CA, and by contacting Mr. Rocky Vogler, Chief Engineer, at (415) 761-8945.

#### **Project Location and Site Characteristics**

A project location map is provided in **Figure 1**. Access to the project site is from Indian Valley Road and Old Ranch Road (see Figure 1). The project site has access off Old Ranch Road via a locked gate that also provides access to a single-family home as well as other undeveloped parcels. The project site is heavily wooded with a mixture of oak and bay trees, with grass undergrowth. The project site adjoins primarily undeveloped lands that are wooded sloping hills.

The project site is within the jurisdiction of Marin County and outside the city limits of the City of Novato. As a water district, NMWD is exempt from local land use controls of Marin County per Government Code Section 53091.

#### **Project Characteristics**

The project includes constructing a new water tank (referred to as "Tank No. 2") within an approximately 20,000-square-foot parcel that would be created by grant within the southern corner of Assessor Parcel Number (APN) 146-310-05 (about 44 acres currently). The planned improvements also include constructing a new road to provide access to Tank No. 2. The proposed tank location and access road are shown in **Figure 2**, and assessor's parcels are mapped in **Figure 3**. **Figure 4** shows a photo view of the new water tank site.

#### Proposed Water Tank Size and Capacity

The new tank would be 28 feet in diameter and 26 feet tall (22 feet to overflow) and made of welded steel. It would have a storage capacity of approximately 100,000 gallons.

#### Proposed Disturbed Area and Site Grading

The proposed site for the replacement water tank and the access road would require grading. The disturbed area would encompass 0.62 acre, including 0.17 acre of the Maiero Grant Deed, 0.28 acre of the Maiero Easement, 0.16 acre of the Wright Easement, and 0.01 acre of the NMWD parcel.

Site grading for the building pad would consist primarily of excavation. The tank pad would be constructed at elevation 516 feet, and cuts of up to 12 feet are anticipated to achieve finished grades at the tank site. Cut slopes no steeper than 1.5:1 would be used to complete the planned excavations.

The access road alignment was selected to minimize cut and fill including grades not to exceed 18 percent slope. As such, the alignment would encroach on APN 146-310-05 to the north and APN 146-310-44 to the south. The parties owning these parcels have agreed to provide access and utility easements in these areas.



#### SOURCE: Miller Pacific Engineering Group, 2018

#### Figure 1 SITE LOCATION MAP

AMY SKEWES~COX ENVIRONMENTAL PLANNING

AMY SKEWES~COX ENVIRONMENTAL PLANNING

SOURCE: NMWD, 2019

## SITE PLAN



Figure 2



# ASSESSOR PARCEL MAP LOCATION AND SURROUNDINGS

SOURCE: NMWD, 2019





View of site for new replacement water tank showing oak woodland and grass.

SOURCE: A. Skewes-Cox, 2019

AMY SKEWES~COX ENVIRONMENTAL PLANNING Figure 4

As shown in Figure 2, the total estimated cut volume would be 1,911 cubic yards (CY), and the total estimated fill volume would be 1,281 CY, resulting in off-haul of about 630 CY of soil. Accounting for the "swell factor" of 1.25,<sup>2</sup> the off-haul would be about 788 CY. The cut slopes would be no steeper than 1.5:1 and fill slopes would be 2:1.

#### Proposed Access Road and Utilities

New pavement, surface drainage improvements, underground utilities, and other ancillary improvements are included as part of the project.

Typically, the paved area of the road would be 10 feet wide with 1-foot-wide shoulders on each side of the road, for a total width of 12 feet. The road would be paved with 0.25 foot asphalt concrete (AC) over a 7-inch layer of compacted Class 2 aggregate base (AB). During construction, NMWD would have a geotechnical engineer determine if the Class 2 AB layer thickness can be reduced.

In addition, there would be a 24-foot-wide-by-95-foot-long compacted earth staging area between the new access road and the southern boundary of APN 146-310-05 to reduce off-site hauling and for use as a staging area during tank construction. Properly sized runoff ditches, drainage pipes, and associated structures would be installed.

#### Proposed Vegetation Clearance

To construct the new tank and access road, existing vegetation including trees would have to be cleared. It is estimated that the project would require removal of 71 trees (62 oaks, 4 madrones, and 5 California bay trees).

#### Proposed Locked Gate

A locked gate would be placed at the access road where it would connect to Old Ranch Road. The gate would be about 15 to 20 feet from the intersection of Old Ranch Road and the tank access road.

#### Plans for Existing Water Tank Site

An existing 50,000-gallon redwood water tank on APN 146-310-23 that is located south of the proposed tank site would remain during construction and would likely be decommissioned and removed after construction and commissioning of the new tank. Currently, there are 20 customers served by the existing redwood tank, which was constructed in 1963 and is reaching the end of its life.

The new tank would approximately match the existing tank base elevation, but the overflow level would be 6 feet higher to provide better system hydraulics and minimize tank footprint. The increase in the tank size was driven by fire flow goals as discussed and agreed upon with Novato Fire District personnel. New future development may warrant additional storage requirements beyond the planned

<sup>&</sup>lt;sup>2</sup> In a natural state, soil is dense. Soil loaded into a truck takes more space than soil in a natural state. Swell factor accounts for this volume expansion.

100,000 gallons, and a second tank could be constructed at a future date at the existing tank site. Any such construction would be subject to a separate future environmental review.

#### **Timing of Construction**

Construction of the Tank No. 2 project is expected to begin in Spring 2020 and to be completed by 2021. The project would begin with clearing, grubbing, and site/road preparation, followed by foundation construction and tank construction.

- **9. Surrounding Land Uses and Setting:** The project is located in a wooded area of western Novato within the jurisdiction of Marin County. Single-family homes on large parcels are located near the access road and water tank site, but much of the area is undeveloped wooded hillsides.
- **10.** Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.) NMWD is the lead agency that will approve the CEQA document. No other permits are expected to be required for the project. The project site is within Marin County boundaries. As a water district, NMWD projects are exempt from local land use controls.
- 11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code Section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.? No consultation has been requested.

#### REFERENCES

Marin County, 2019. Community Development Agency. Available at: https://www.marincounty.org/ depts/cd/divisions/planning/projects/novato/claves\_trust\_dr\_up\_p2309\_no, accessed on August 19, 2019.

#### **Environmental Factors Potentially Affected:**

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.



#### Determination.

On the basis of this initial evaluation:

- □ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- □ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- □ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- □ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Rocky Vogler Signature

Date

North Marin Water District For

**Printed Name** 

This page intentionally left blank

#### CHAPTER II ENVIRONMENTAL CHECKLIST

#### INTRODUCTION

The Checklist below addresses 20 environmental topics. Whenever a potentially significant impact is identified, a mitigation measure is identified. A summary of the identified mitigation measures (Mitigation Monitoring and Reporting Program) is included as **Appendix A**. At the end of each mitigation measure, the level of significance of the impact after mitigation is shown as "Less than Significant" (LTS) or "Potentially Significant" (PS).<sup>3</sup>

			Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I.	AES 210	STHETICS. Except as provided in Public Resources Code Section 199, would the project:				
	a)	Have a substantial adverse effect on a scenic vista?				
	b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?				
	c)	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			•	
	d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				

#### IMPACT EVALUATION

a) Would the project have a substantial adverse effect on a scenic vista?

#### Less Than Significant Impact

The project site is located within a heavily wooded area in the eastern portion of Novato but outside the city limits. Due to the thick vegetative cover, the site is not visible from many locations. Site grading for

NMWD\_CEQAChecklist\_FINAL (10/23/19)

<sup>&</sup>lt;sup>3</sup> This Mitigated Negative Declaration (MND) includes a discussion of impacts of the environment on the project, which, pursuant to recent California Supreme Court authority, are not California Environmental Quality Act (CEQA) impacts. NMWD has included this discussion based on traditional checklist questions in order to be more thorough in the overall analyses.

the new tank and the new access road would require removal of about 71 trees, many of which are small oaks (see more detailed discussion in Section IV, Biological Resources, below). However, this activity would not have a substantial effect on a scenic vista. The project site is not visible from public viewing locations that would be negatively affected. Therefore, the project would have a less-than-significant impact related to scenic vistas.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

#### No Impact

The project site is not located within a State scenic highway.

c) In non-urbanized areas, would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

#### Less Than Significant Impact

The project site is located in a non-urbanized area, and the only publicly accessible vantage points for the site are from Old Ranch Road. During construction, the removal of existing trees and the required grading for the access road would affect the existing visual character of the area, but this impact would be temporary. Following construction, new vegetation would grow at the edges of the access road and would lessen this visual impact. The impact would therefore be less than significant.

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

#### No Impact

No lighting would be associated with the project; thus, no light or glare impacts would result.

#### REFERENCES

Site work by CEQA team.

Potentially Significant Impact Less Than Significant with Mitigation Incorporated

Less Than Significant Impact

No

Impact

II. AGRICULTURAL AND FORESTRY RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
on a reso ager of Fo land Lega meth Reso	griculture and farmland. In determining whether impacts to forest ources, including timberland, are significant environmental effects, lead noises may refer to information compiled by the California Department orestry and Fire Protection regarding the state's inventory of forest , including the Forest and Range Assessment Project and the Forest acy Assessment project; and forest carbon measurement nodology provided in Forest Protocols adopted by the California Air ources Board. Would the project:				
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to a non-agricultural use?				
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?				
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?				•
d)	Result in the loss of forest land or conversion of forest land to non- forest use?				
e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?				

#### IMPACT EVALUATION

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to a non-agricultural use?

#### No Impact

The project site is not designated as Prime Farmland or other important farmland category in the State of California's Farmland Mapping and Monitoring Program. The Marin County Important Farmland Map 2016 (California Department of Conservation, 2018) shows the site area as "Urban and Built-Up Land" and "Other Land." Thus, no conversion of Farmland to non-agricultural use would occur with the project.

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

#### No Impact

While a portion of the project site is zoned Agriculture and Conservation (A10), no agricultural uses occur at the site and the steepness of the terrain, which is generally about 32 percent slopes, makes the area unsuitable for agricultural use. No Williamson Act contracts apply to the site. The project therefore would not conflict with existing zoning for agricultural use or a Williamson Act contract. In addition, NMWD is exempt from local land use controls.

c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

#### No Impact

The site is not zoned for timberland production.

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

#### No Impact

The site is not designated or used as forest land and thus no significant impacts related to forest land would result from the project.

e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

#### No Impact

Refer to the discussion above for Items (a) through (d).

#### REFERENCES

California Department of Conservation, 2018. Marin County Important Farmland Map 2016.

Less Than	
Significant	
with	Less Than
Mitigation	Significant
Incorporated	Impact
	Less Than Significant with Mitigation Incorporated

No

Impact

III. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Conflict with or obstruct implementation of the applicable air quality plan?				
b)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard?		•		
c)	Expose sensitive receptors to substantial pollutant concentrations?				
d)	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?				

The project site is located in the San Francisco Bay Area Air Basin (SFBAAB), which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). In the SFBAAB, the primary criteria air pollutants of concern are ground-level ozone formed through reactions of nitrogen oxides (NO<sub>x</sub>) and reactive organic gases (ROG), and suspended particulate matter (i.e., respirable particulate matter [PM<sub>10</sub>] and fine particulate matter [PM<sub>2.5</sub>]). The BAAQMD's CEQA Air Quality Guidelines (BAAQMD, 2017a) include thresholds of significance to assist lead agencies in evaluating and mitigating air quality impacts under CEQA. The BAAQMD's thresholds established levels at which emissions of ozone precursors (ROG and NO<sub>x</sub>), PM<sub>10</sub>, PM<sub>2.5</sub>, carbon monoxide (CO), toxic air contaminants (TACs), and odors could cause significant air quality impacts. The scientific soundness of the thresholds is supported by substantial evidence presented in the BAAQMD's Revised Draft Options and Justification Report (BAAQMD, 2009). The BAAQMD's thresholds that relate to the analysis of the project's impacts on the environment are used in this CEQA analysis in conjunction with the BAAQMD's current CEQA Air Quality Guidelines (BAAQMD, 2017a). The thresholds of significance used in this CEQA analysis are summarized in **Table 1**.

#### IMPACT EVALUATION

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

#### Less Than Significant Impact

In accordance with the federal Clean Air Act and California Clean Air Act, the BAAQMD is required to prepare and update an air quality plan that outlines measures by which both stationary and mobile sources of pollutants can be controlled in order to achieve federal and state ambient air quality standards. In April 2017, the BAAQMD adopted the 2017 Clean Air Plan: Spare the Air, Cool the Climate (2017 Clean Air Plan), which includes 85 control measures to reduce ROG, NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, TACs, and greenhouse gases (GHGs). The 2017 Clean Air Plan was developed based on a multipollutant evaluation method that incorporates well-established studies and methods for quantifying the health benefits of air quality regulations, computer modeling and analysis of existing air quality monitoring data and emission inventories, and growth projections prepared by the Metropolitan Transportation Commission and the Association of Bay Area Governments (BAAQMD, 2017b).

Impact Analysis	Pollutant	Threshold of Significance
	ROG	54 pounds/day (average daily emission)
	NO <sub>x</sub>	54 pounds/day (average daily emission)
Regional Air Quality	Exhaust PM <sub>10</sub>	82 pounds/day (average daily emission)
	Exhaust PM <sub>2.5</sub>	54 pounds/day (average daily emission)
	Fugitive Dust (PM <sub>10</sub> and PM <sub>2.5</sub> )	Best Management Practices
	ROG	54 pounds/day (average daily emission) 10 tons/year (maximum annual emission)
Regional Air Quality	NO <sub>x</sub>	54 pounds/day (average daily emission) 10 tons/year (maximum annual emission)
(Operation)	Exhaust PM <sub>10</sub>	82 pounds/day (average daily emission) 15 tons/year (maximum annual emission)
	Exhaust PM <sub>2.5</sub>	54 pounds/day (average daily emission) 10 tons/year (maximum annual emission)
	CO	9.0 ppm (8-hour average) 20.0 ppm (1-hour average)
Local Community Risks	Exhaust PM <sub>2.5</sub> (project)	0.3 μg/m <sup>3</sup> (annual average)
and Hazards (Operation and/or	Exhaust PM <sub>2.5</sub> (cumulative)	0.8 μg/m <sup>3</sup> (annual average)
Construction)	TACs (project)	Cancer risk increase > 10 in 1 million Chronic hazard index > 1.0
	TACs (cumulative)	Cancer risk > 100 in 1 million Chronic hazard index > 10.0

_ /				•
	BAY AREA AIR (JUALIT)	MANAGEMENT DISTRICT	PROJECT-I EVEL TH	RESHOLDS OF SIGNIFICANCE

Notes: ROG = reactive organic gases; NO<sub>x</sub> = nitrogen oxides; PM<sub>10</sub> = respirable particulate matter; PM<sub>25</sub> = fine particulate matter; CO = carbon monoxide; TACs = toxic air contaminants; ppm = part per million;  $\mu g/m^3$  = micrograms per cubic meter

Source: BAAQMD, 2017a.

Based on the BAAQMD's current CEQA Air Quality Guidelines (BAAQMD, 2017a), the following criteria should be considered to determine if a project would conflict with or obstruct implementation of the 2017 Clean Air Plan:

- Does the project include applicable control measures from the air quality plan?
- Does the project disrupt or hinder implementation of any air quality plan control measures?
- Does the project support the primary goals of the air quality plan?

The 2017 Clean Air Plan includes control measures that aim to reduce air pollution and greenhouse gases (GHGs) from stationary, area, and mobile sources. The control measures are organized into nine categories: stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, water, and super-GHG pollutants (e.g., methane, black carbon, and fluorinated gases).

As described in **Table 2**, the project would be consistent with applicable control measures from the 2017 Clean Air Plan. Because the project would not result in any significant and unavoidable air quality impacts related to emissions, ambient concentrations, or public exposures (see Items (b) through (d) below and Section VIII, Greenhouse Gas Emissions, of this Initial Study), the project would support the

#### TABLE 2 PROJECT CONSISTENCY WITH BAY AREA AIR QUALITY MANAGEMENT DISTRICT 2017 CLEAN AIR PLAN

2017 Clean Air Plan Control Measures	Proposed Project Consistency
Stationary Sources	The stationary source measures are enforced by the Bay Area Air Quality Management District (BAAQMD) pursuant to its authority to control emissions from permitted facilities. The project would not include any new stationary sources, such as an emergency diesel generator. Therefore, the stationary sources control measures of the 2017 Clean Air Plan are not applicable to the project.
Transportation	The transportation control measures are designed to reduce vehicle trips, use, miles traveled, idling, or traffic congestion for the purpose of reducing vehicle emissions. The project operation would not generate any additional vehicle trips compared to existing conditions. Therefore, the project would be consistent with the transportation control measures of the 2017 Clean Air Plan.
Energy	The energy control measures are designed to reduce emissions of criteria air pollutants, toxic air contaminants (TACs), and greenhouse gases (GHGs) by decreasing the amount of electricity consumed in the Bay Area, as well as decreasing the carbon intensity of the electricity used, by switching to less GHG-intensive fuel sources for electricity generation. Since these measures apply to electrical utility providers and local government agencies (and not individual projects), the energy control measures of the 2017 Clean Air Plan are not applicable to the project. Furthermore, project operation would require minimal consumption of electricity during tank inspection (once a week) and tank cleaning (once every five years) (Baseline Environmental Consulting, 2019). Therefore, the energy control measures of the 2017 Clean Air Plan are not applicable to the project.
Buildings	The BAAQMD has authority to regulate emissions from certain sources in buildings such as boilers and water heaters, but has limited authority to regulate buildings themselves. Therefore, the building control measures focus on working with local governments that have authority over local building codes to facilitate adoption of best GHG control practices and policies. The proposed project does not include construction of new buildings. Therefore, the building control measures of the 2017 Clean Air Plan are not applicable to the project.
Agriculture	The agriculture control measures are designed primarily to reduce emissions of methane. Since the project does not include any agricultural activities, the agriculture control measures of the 2017 Clean Air Plan are not applicable to the project.
Natural and Working Lands	The control measures for the natural and working lands sector focus on increasing carbon sequestration on rangelands and wetlands, as well as encouraging local governments to adopt ordinances that promote urban tree plantings. Since the project does not include the disturbance of any rangelands or wetlands, the natural and working lands control measures of the 2017 Clean Air Plan are not applicable to the project.
Waste Management	The waste management measures focus on reducing or capturing methane emissions from landfills and composting facilities, diverting organic materials away from landfills, and increasing waste diversion rates through efforts to reduce, reuse, and recycle. The project would generate a minimal amount of waste from tank cleaning every five years. Therefore, the waste management measures are not applicable to the project.
Water	The water control measures to reduce emissions from the water sector will reduce emissions of criteria pollutants, TACs, and GHGs by encouraging water conservation, limiting GHG emissions from publicly owned treatment works (POTWs), and promoting the use of biogas recovery systems. The proposed project would replace an existing water tank and upgrade the infrastructure, increase the water storage capacity, and improve the system hydraulics in the project vicinity. Because the project would improve operations of the POTW water distribution system, the project would be consistent with the water control measures of the 2017 Clean Air Plan.
Super GHGs	The super-GHG control measures are designed to facilitate the adoption of best GHG control practices and policies through the BAAQMD and local government agencies. Since these measures do not apply to individual projects, the super-GHG control measures of the 2017 Clean Air Plan are not applicable to the project.

primary goals of the 2017 Clean Air Plan. Therefore, based on the BAAQMD's CEQA Air Quality Guidelines (BAAQMD, 2017a), the project would not conflict with or obstruct implementation of the applicable air quality plan, and the impact would be less than significant.

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard?

#### Less Than Significant with Mitigation Incorporated

#### **Construction Emissions**

Construction of the project would generate criteria pollutant emissions that could potentially affect regional air quality. The primary pollutant emissions of concern would be ROG, NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> from the exhaust of off-road construction equipment and on-road construction vehicles (worker vehicles, vendor trucks, and haul trucks). In addition, fugitive dust emissions of PM<sub>10</sub> and PM<sub>2.5</sub> would be generated by soil disturbance activities, and fugitive ROG emissions would result from paving activities.

The BAAQMD recommends using the most recent version of the California Emissions Estimator Model (CalEEMod Version 2016.3.2) to estimate construction and operational emissions of pollutants for a proposed project. CalEEMod uses widely accepted models for emission estimates combined with appropriate default data for a variety of land use projects that can be used if site-specific information is not available. The default data (e.g., power of construction equipment) are supported by substantial evidence provided by regulatory agencies and a combination of statewide and regional surveys. The primary input data used to estimate emissions associated with construction of the proposed project are provided by NMWD and contain information on construction phase duration, off-road construction equipment associated with each phase and the number of workers on-site during each phase. A summary of construction input parameters for estimating construction emissions is provided in **Table 3**. Construction information provided by NMWD and a copy of the CalEEMod report for the proposed project, which summarizes the input parameters, assumptions, and findings, are provided in **Appendix B**. To determine if project construction emissions could substantially contribute to existing violations of federal and/or state ambient air quality standards in the SFBAAB, the project's emissions are compared to the BAAQMD's thresholds of significance, below.

CalEEMod Input Category	Construction Assumptions and Changes to Default Data
Construction Phase	Construction phases include clearing, grubbing, site/road preparation, foundation construction, and tank construction. Duration of each phase is provided by the North Marin Water District (NMWD) and is included in Appendix B.
On-Site Construction Equipment	The on-site construction equipment list was modified according to site-specific construction information provided by NMWD (see Appendix B).
Material Movement	Approximately 800 cubic yards of soil export and 330 cubic yards of soil import are anticipated during site/road preparation.
Worker and Vendor Trips	The default worker trips were modified according to information provided by NMWD (see Appendix B).

TABLE 3	CONSTRUCTION INPUT PARAMETERS FOR CALIFORNIA EMISSIONS ESTIMATOR MODEL	CALEEMOD)
		•/ .===::•••

Note: Default CalEEMod data used for all other parameters not described. Source: CalEEMod (see Appendix B).

#### Construction Fugitive Dust Emissions

### <u>Impact AIR-1</u>: Fugitive dust emissions during project construction could result in a cumulatively considerable net increase in particulate matter concentrations for which the region is non-attainment under federal and State of California ambient air quality standards. (PS)

Project grading and material hauling activities during construction could generate fugitive dust PM<sub>10</sub> and PM<sub>2.5</sub> emissions that could result in a potentially significant impact in relation to ambient air quality standards. The BAAQMD does not have a quantitative threshold of significance for fugitive dust PM<sub>10</sub> and PM<sub>2.5</sub> emissions; however, the BAAQMD considers implementation of dust control measures during construction sufficient to reduce air quality impacts from fugitive dust to a less-than-significant level. More specifically, the BAAQMD recommends that all construction projects implement the Basic Construction Mitigation Measures from the BAAQMD's CEQA Air Quality Guidelines (BAAQMD, 2017a) to reduce emissions of fugitive dust (regardless of the estimated emissions). The BAAQMD's Basic Construction Mitigation Measures for controlling dust are included in Mitigation Measure AIR-1, below.

<u>Mitigation Measure AIR-1</u>: During project construction, the contractor shall implement a dust control program that includes the following measures recommended by the Bay Area Air Quality Management District (BAAQMD):

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- Track-out control mats shall be used to contain and minimize mud and dirt track-out onto adjacent public roads. Any remaining visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers, if necessary. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- A publicly visible sign shall be posted with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD phone number shall also be visible to ensure compliance with applicable regulations.

In addition, North Marin Water District (NMWD) staff or an independent construction monitor shall conduct periodic site inspections, but in no event fewer than four total inspections, during the course of construction to ensure these mitigation measures are implemented and shall issue a letter report documenting the inspection results. Reports indicating non-compliance with

#### construction mitigation measures shall be cause to issue a stop-work order until such time as compliance is achieved. (LTS)

#### Construction ROG, NOx, and Exhaust PM10 and PM2.5 Emissions

Estimates of construction emissions were averaged over the total working days and compared to the BAAQMD's thresholds of significance in **Table 4**. The project's estimated emissions of ROG, NO<sub>x</sub>, and exhaust  $PM_{10}$  and  $PM_{2.5}$  were below the applicable thresholds. Therefore, project construction would not result in a considerable net increase in ozone or particulate matter concentrations for which the region is non-attainment under federal and state ambient air quality standards, and the associated impact would be less than significant.

TABLE 4	ESTIMATED AIR EMISSIONS (F	OUNDS PER DAY	DURING PROJECT CONSTRUCTION
---------	----------------------------	---------------	-----------------------------

	ROG	NOx	Exhaust PM10	Exhaust PM <sub>2.5</sub>
Unmitigated Construction Emissions	2.9	25.5	1.3	1.2
BAAQMD's Thresholds of Significance	54	54	82	54
Exceed Threshold?	No	No	No	No

Notes: BAAQMD = Bay Area Air Quality Management District; ROG = reactive organic gases; NO<sub>x</sub> = nitrogen oxides;  $PM_{10}$  = respirable particulate matter;  $PM_{2.5}$  = fine particulate matter

Source: CalEEMod (see Appendix B).

#### **Operational Emissions**

Operation of the proposed water tank, the new access road, and other ancillary improvements would not generate criteria pollutant emissions except for vehicular emissions from tank inspection and cleaning. Because tank inspection would only occur once a week and tank cleaning would only occur once every five years (Baseline Environmental Consulting, 2019), criteria pollutant emissions from project operations would be negligible. Therefore, project operation would not result in a considerable net increase in ozone or particulate matter concentrations for which the region is non-attainment under federal and state ambient air quality standards, and the associated impact would be less than significant.

#### c) Would the project expose sensitive receptors to substantial pollutant concentrations?

#### Less Than Significant Impact

The term "sensitive receptor" refers to a location where individuals are more susceptible to poor air quality. Sensitive receptors include schools, convalescent homes, and hospitals because the very young, the old, and the infirm are more susceptible than the rest of the public to air quality-related health problems. Residential areas are also considered sensitive to poor air quality because people are often at home for extended periods, thereby increasing the duration of exposure to potential air contaminants. The BAAQMD recommends evaluating the potential impacts on sensitive receptors

located within 1,000 feet of a project. The project's potential impacts on sensitive receptors from emissions of CO and TACs are discussed below.

#### Localized Carbon Monoxide Concentrations

The occurrence of localized CO concentrations, also known as "hotspots," can affect sensitive receptors in local communities. Local CO emissions are often associated with heavy traffic congestion, which most frequently occurs at signalized intersections of high-volume roadways. The BAAQMD's threshold of significance for local CO concentrations is equivalent to the 1- and 8-hour California Ambient Air Quality Standards (CAAQS) of 20.0 and 9.0 parts per million, respectively, because these represent levels that are protective of public health.

Operation of the proposed project would include infrequent vehicle trips associated with a weekly tank inspection and five-year tank cleaning (Baseline Environmental Consulting, 2019). According to the BAAQMD CEQA Guidelines (BAAQMD, 2017a), since operation of the proposed project would not generate more than 44,000 vehicles per hour at the affected intersections, the project would not be expected to increase local CO levels above the CAAQS. Therefore, the project would have a less-than-significant impact on nearby sensitive receptors exposed to local CO concentrations.

#### **Toxic Air Contaminants from Construction**

Project construction would generate diesel particulate matter (DPM) and PM<sub>2.5</sub> emissions from off-road diesel construction equipment and on-road vehicles traveling to and from the project site, and these emissions could affect nearby sensitive receptors. The annual average concentrations of DPM and PM<sub>2.5</sub> concentrations were estimated within 1,000 feet of the proposed project using the U.S. Environmental Protection Agency (EPA) Industrial Source Complex Short Term (ISCST3) air dispersion model (EPA, 1995). For this analysis, emissions of exhaust PM<sub>10</sub> were used as a surrogate for DPM. Because less than 1 percent of the total construction emissions of DPM and PM<sub>2.5</sub> would be generated by on-road vehicles (worker, vendor, and haul trucks) traveling to and from the project site, only the off-road diesel construction equipment was included in the analysis. The input parameters and assumptions used for estimating emission rates of DPM and PM<sub>2.5</sub> from off-road diesel construction equipment are included in the Appendix B, which is available at NMWD's offices.

The exhaust from off-road equipment was represented in the ISCST3 model as a series of volume sources with a release height of 5 meters to represent the mid-range of the expected plume rise from frequently used construction equipment. Dispersion of air pollutants from off-road construction equipment was modeled using the  $\chi/Q$  ("chi over q") method, such that each source has a unit emission rate (e.g., 1 gram per second for volume sources). The annual average concentration profiles from the air dispersion model were then scaled according to the ratio between the unit emission rate and the actual emission rate from each source. Actual emission rates for off-road equipment were based on the actual hours of work and averaged over the entire duration of construction. Daily emissions from construction were assumed to occur from 8:00 AM to 5:00 PM Monday through Friday (Baseline Environmental Consulting, 2019).

A uniform grid of receptors spaced 10 meters apart with receptor heights of 1.8 meters was encompassed around the project site as a means of developing isopleths (i.e., concentration contours) that illustrate the air dispersion pattern from the various emission sources. Terrain variation on and near the project site was incorporated in the ISCST3 model to assign elevations to the emission sources and receptors, based on the National Aeronautics and Space Administration Shuttle Radar Topography Mission Version 3.0 elevation data at 1-second resolution. The ISCST3 model input parameters included three years of BAAQMD meteorological data at the Sonoma Baylands weather station located about 7.6 miles northeast of the project site.

Based on the results of the air dispersion model (see Appendix B), potential health risks were evaluated for the maximally exposed individual resident (MEIR) located at a single-family home about 160 feet south of the project site. In accordance with guidance from the BAAQMD (2016) and the Office of Environmental Health Hazard Assessment (OEHHA) (OEHHA, 2015), a health risk assessment was conducted to calculate the incremental increase in cancer risk and chronic hazard index (HI) to the MEIR from DPM emissions during construction. Analysis of acute non-cancer health hazards from construction activity is not recommended by the BAAQMD, nor has a reference exposure level been approved by OEHHA and the California Air Resources Board (CARB). The annual average concentration of DPM at the MEIR was used to conservatively assess potential health risks to nearby sensitive receptors. At the MEIR location, the incremental increase in cancer risk from on-site DPM emissions during construction was assessed for a young child exposed to DPM for 10 months starting from in utero in the third trimester of pregnancy. This exposure scenario represents the most sensitive individuals who could be exposed to adverse air quality conditions in the vicinity of the project site. The input parameters and results of the health risk assessment are included in Appendix B.

Estimated health risks at the MEIR from DPM and PM<sub>2.5</sub> concentrations during construction of the proposed project are summarized and compared to the BAAQMD's thresholds of significance in **Table 5**. The estimated excess cancer risk, the chronic HI, and the annual average PM<sub>2.5</sub> concentrations at the MEIR were below the BAAQMD's thresholds of significance. Therefore, construction of the proposed project would have a less-than-significant impact related to the exposure of sensitive receptors to DPM and PM<sub>2.5</sub> concentrations.

	Diesel Particulate Matter (DPM)		Exhaust PM <sub>2.5</sub>	
	Cancer Risk (per million)	Chronic Hazard Index	Annual Average Concentration (µg/m³)	
Exposure of Maximally Exposed Individual Resident (MEIR) during Project Construction	6.8	0.01	0.05	
Thresholds of Significance	10	1	0.3	
Exceed Thresholds?	No	No	No	

#### TABLE 5 HEALTH RISKS AND HAZARDS FROM AIR EMISSIONS AT MAXIMALLY EXPOSED INDIVIDUAL RESIDENT DURING PROJECT CONSTRUCTION

Notes:  $PM_{2.5}$  = fine particulate matter;  $\mu$ g/m<sup>3</sup> = micrograms per cubic meter Source: See Appendix B.

#### **Toxic Air Contaminants from Operation**

Project operations would not introduce a new stationary source of TAC emissions. Therefore, project operations would have no impact on nearby sensitive receptors related to substantial pollutant concentrations.

#### Cumulative TAC Emissions

The project site is located in a rural area. There is no existing stationary source or foreseeable future source of TACs within 1,000 feet of the MEIR according to the BAAQMD and the County of Marin, respectively (BAAQMD, 2019; County of Marin, 2019). Therefore, the cumulative impact on nearby sensitive receptors from exposure to TAC and PM<sub>2.5</sub> emissions during construction of the proposed project would be less than significant.

d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

#### Less Than Significant Impact

Project construction and operation would not be expected to generate significant odors because the project would not include handling or generation of noxious materials. Therefore, project impacts related to odors would be less than significant.

#### REFERENCES

- Baseline Environmental Consulting, 2019. Email correspondence re: NMWD Tank Request for Information to Ivy Tao from Carmela Chandrasekera, August 19.
- Bay Area Air Quality Management District (BAAQMD), 2009. Revised Draft Options and Justification Report; California Environmental Quality Act Thresholds of Significance, October.
- Bay Area Air Quality Management District (BAAQMD), 2016. Air Toxics NSR Program, Health Risk Assessment Guidelines, December.
- Bay Area Air Quality Management District (BAAQMD), 2017a. CEQA Air Quality Guidelines, May.
- Bay Area Air Quality Management District (BAAQMD), 2017b. 2017 Clean Air Plan: Spare the Air, Cool the Climate, April 19.
- Bay Area Air Quality Management District (BAAQMD), 2019. Permitted Stationary Sources 2017. Available at: https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id= 2387ae674013413f987b1071715daa65, accessed on August 26, 2019.
- California Air Pollution Control Officers Association, 2016. California Emissions Estimator Model (CalEEMod). Version 2016.3.2.

NMWD\_CEQAChecklist\_FINAL (10/23/19)

- County of Marin, 2019. Map of Planning Projects. Available at: https://www.marincounty.org/depts/cd/ divisions/planning/projects, accessed on August 26, 2019.
- Office of Environmental Health Hazard Assessment (OEHHA), 2015. Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments, February.
- U.S. Environmental Protection Agency (EPA), 1995. Industrial Source Complex Short Term (ISCST3) Air Dispersion Model.

			Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV.	BIOL	OGICAL RESOURCES. Would the project:				
	a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		•		
	b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?				
	c)	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				•
	d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			•	
	e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				
	f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan?				

Information regarding biological and wetland resources for the project site is based on the review of available information, including project designs and the occurrence records of the California Natural Diversity Data Base (CNDDB) of the California Department of Fish and Wildlife (CDFW). A systematic survey for rare plants was conducted on June 24, 2019, and a follow-up field reconnaissance survey was conducted by the Initial Study biologist on August 28, 2019, to confirm existing conditions and assess the potential impacts of the proposed project.

The project site is located in an area of relatively dense woodlands and savanna, which is dominated by several species of oak and other native tree species. Tree species present on the site include black

oak (*Quercus kelloggii*), valley oak (*Q. lobata*), coast live oak (*Q. agrifolia*), blue oak (*Q. douglasii*), California bay (*Umbellularia californica*), and madrone (*Arbutus menziesii*). Where the woodland canopy is closed, understory vegetation is generally sparse, composed of poison oak (*Toxicodendron diversilobum*), coyote brush (*Baccharis pilularis*), toyon (*Heteromels arbutifolia*) green leaved manzanita (*Arctostaphylos manzanita* ssp. *manzanita*), and other shrub and groundcover species. Where the canopy is open or sparse, the understory is dominated by a relatively dense cover of nonnative grassland species and scattered shrubs. Common species are generally not native and include slender oats (*Avena barbata*), bromes (*Bromus* spp.), filaree (*Erodium* ssp.), and common vetch (*Vicia sativa* ssp. *sativa*). The grasslands contain native grasses and forbs, such as blue wild rye (*Elymus glaucus*), California oat grass (*Danthonia californica*), Torrey melic (*Melica californica*), smooth mule ears (*Wyethia glabra*), and bedstraw (*Galium* spp.) but these native species do not occur in densities that would qualify as a native grassland. Invasive Spanish broom (*Spartium junceum*) and French broom (*Genista monspessulana*) are beginning to spread through the woodland, contributing to fire fuel loads and replacing native cover, which is a common problem in undeveloped areas of Marin County.

The woodlands and open grasslands provide denning, nesting, and foraging opportunities for numerous species of small mammals, reptiles, and birds. Mammals and reptiles found in the project site vicinity likely include deer mouse, woodrat, stripped skunk, grey squirrel, western skink, newts, ensatina, ring-necked snake, and rubber boa. Larger mammals such as black-tailed deer and predatory species such as grey fox, mountain lion, and coyote most likely forage throughout the woodlands and open savanna. The trees provide nesting cavities, perching and foraging opportunities, and nesting substrate for numerous species of birds, including jays, woodpeckers, kinglets, and bushtits. Several species of raptors use the mature trees for roosting and possibly nesting with foraging in the understory and areas of open grassland. These raptor species include red-tailed hawk, Cooper's hawk, white-tailed kite, turkey vulture, great-horned owl, and barn owl.

#### IMPACT EVALUATION

a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

#### Less Than Significant with Mitigation Incorporated

A record search conducted by the CNDDB and the other relevant information sources indicate that numerous plant and animal species with special status have either been recorded from or are suspected to occur in the Novato vicinity and northeastern Marin County area. Special-status species<sup>4</sup>

<sup>&</sup>lt;sup>4</sup> Special-status species include:

<sup>•</sup> Officially designated (rare, threatened, or endangered) and candidate species for listing identified by the CDFW;

Officially designated (threatened or endangered) and candidate species for listing identified by the U.S. Fish and Wildlife Service (USFWS);

Species considered to be rare or endangered under the conditions of Section 15380 of the California Environmental Quality Act (CEQA) Guidelines, such as those with a rank of 1 or 2 in the *Inventory of Rare and Endangered Plants of California* maintained by the California Native Plant Society (CNPS); and

are plants and animals that are legally protected under the State of California and/or federal Endangered Species Acts<sup>5</sup> or other regulations, as well as other species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts, and other essential habitat. Species protected by the California Endangered Species Act (CESA) and federal Endangered Species Act (FESA) often represent major constraints to development, particularly when the species are wide-ranging or highly sensitive to habitat disturbance and where proposed development would result in a "take"<sup>6</sup> of these species.

**Figures 5** and **6** show the distribution of special-status plant and animal species, respectively, as reported by the CNDDB within approximately 5 miles of the project site. According to CNDDB records, no special-status plant or animal species have been reported from the project site, but a general occurrence of Townsend's big-eared bat (*Corynorhinus townsendii*) extends over the southwest area of Novato. Townsend's big-eared bat is one of several native bat species recognized as "Species of Special Concern" (SSC) by the CDFW. It is known to establish day roosts in rock outcrops, mines, caves, building, bridges, and tree cavities. Inspection of the trees on the project site did not indicate any cavities that would allow for roosting by Townsend's or other special-status bat species, which typically avoid areas of human activity.

Most of the special-status species reported from the Novato vicinity occur in natural habitats such as coastal salt marsh, riparian woodlands, and forest habitats, all of which are absent from the project site. A number of special-status plant species are known from open woodlands and grasslands of eastern Marin County, but none were detected during the systematic survey of the site or are believed to be present. With the exception of possible presence of nesting birds that would be protected under state and federal regulations when the nests are in active use, no special-status species are suspected to occur on the project site.

Nests of most bird species are protected under the Migratory Bird Treaty Act (MBTA) when the nests are in active use, and nests of raptors (birds-of-prey) are also protected under the California Fish and Game Code when the nests are in active use. No nesting or roosting locations have been identified by the CNDDB for the project site or immediate vicinity, or were observed during the field surveys. However, trees on the project site contain suitable nesting substrate for some bird species recognized as SSC by the CDFW, as well as more common species, and new nests could be established in the future. The MBTA prohibits killing, possessing, or trading in migratory birds, except in accordance with

Possibly other species that are considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those with a rank of 3 and 4 in the CNPS *Inventory* or identified as animal "Species of Special Concern" (SSC) by the CDFW. Species of Special Concern have no legal protective status under the CESA but are of concern to the CDFW because of severe decline in breeding populations in California.

<sup>&</sup>lt;sup>5</sup> The federal Endangered Species Act (FESA) of 1973 declares that all federal departments and agencies shall utilize their authority to conserve endangered and threatened plant and animal species. The California Endangered Species Act (CESA) of 1984 parallels the policies of the FESA and pertains to native California species.

<sup>&</sup>lt;sup>6</sup> "Take" as defined by the FESA means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect" a threatened or endangered species. "Harm" is further defined by the USFWS to include the killing or harming of wildlife due to significant obstruction of essential behavior patterns (i.e., breeding, feeding, or sheltering) through significant habitat modification or degradation. The CDFW also considers the loss of listed species habitat as take, although this policy lacks statutory authority and case law support under the CESA.

# AMY SKEWES-COX Environmental planning

## SPECIAL-STATUS PLANT SPECIES AND SENSITIVE NATURAL COMMUNITIES

Figure 5

SOURCES: California Natural Diversity Database accessed on August 15, 2019; USGS base map by ESRI and NGS. Map produced by www.digitalmappingsolutions.com on 8/15/2019.





USGS base map by ESRI and NGS. Map produced by www.digitalmappingsolutions.com on 8/16/2019. SOURCES: California Natural Diversity Database accessed on August 15, 2019;





Figure 6

regulations prescribed by the Secretary of the Interior; this prohibition includes whole birds, parts of birds, and bird nests and eggs. Tree removal and other construction activities during the breeding season could result in the incidental loss of fertile eggs or nestlings or nest abandonment. This would be considered a potentially significant impact.

A standard method to address the potential for nesting birds is either to initiate construction during the non-nesting season, which in Marin County is typically from September 1 to January 31, or to conduct a nesting survey within 14 days prior to initial tree removal and construction to determine whether any active nests are present that must be protected until any young have fledged and are no longer dependent on the nest. Protection of the nests, if present, would require that construction setbacks be provided during the nesting and fledging period, with the setback depending on the type of bird species, degree to which the individuals have already acclimated to other ongoing disturbance, and other factors. Without these controls, tree removal and construction activities could have a potentially significant impact on nesting birds. The following measure is recommended to fully mitigate the potentially significant impacts of the project on special-status species.

#### <u>Impact BIOLOGY-1</u>: Removal of trees and other activities during project construction may result in the inadvertent loss of bird nests in active use unless appropriate precautions are followed. (PS)

<u>Mitigation Measure BIOLOGY-1</u>: Adequate measures shall be taken to avoid inadvertent take of raptor nests and other nesting birds protected under the Migratory Bird Treaty Act when in active use. This shall be accomplished by taking the following steps:

- If construction is proposed during the nesting season (February through August), a focused survey for nesting raptors and other migratory birds shall be conducted by a qualified biologist within 14 days prior to the onset of tree removal or construction, in order to identify any active nests on the project site and in the vicinity of proposed construction.
- If no active nests are identified during the survey period, or if development is initiated during the non-breeding season (September through February), construction may proceed with no restrictions.
- If bird nests are found, an adequate setback shall be established around the nest location and construction activities restricted within this no-disturbance zone until the qualified biologist has confirmed that any young birds have fledged and are able to function outside the nest location. Required setback distances for the no-disturbance zone shall be based on input received from the California Department of Fish and Wildlife (CDFW), and may vary depending on species and sensitivity to disturbance. As necessary, the no-disturbance zone shall be fenced with temporary orange construction fencing if construction is to be initiated on the remainder of the construction area.
- A report of findings shall be prepared by the qualified biologist and submitted to the North Marin Water District (NMWD) for review and approval prior to initiation of construction within the no-disturbance zone during the nesting season (February through August). The report

either shall confirm absence of any active nests or shall confirm that any young within a designated no-disturbance zone have fledged and construction can proceed.

Implementation of Mitigation Measure BIOLOGY-1 would reduce potentially significant impacts on nesting birds to a less-than-significant level. (LTS)

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

#### No Impact

Sensitive natural communities are community types recognized by the CDFW and other agencies because of their rarity. In the Novato vicinity, sensitive natural community types include coastal salt marsh, brackish water, freshwater marshlands, and native grasslands, among other community types. While the grassland cover in the open woodlands on the project site includes some clumps of native grasses, such as Torrey melic and California oat grass, these do not occur in high enough densities or special area to be considered a sensitive natural community type. Thus, sensitive natural community types are absent from the site and vicinity of proposed construction, and no adverse impacts are anticipated. No significant impacts are expected and no mitigation is required.

c) Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

#### No Impact

Although definitions vary to some degree, wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and flood waters, and water recharge, filtration, and purification functions.

The CDFW, U.S. Army Corps of Engineers (Corps), and California Regional Water Quality Control Board (RWQCB) have jurisdiction over modifications to wetlands and other "waters of the United States." Jurisdiction of the Corps is established through provisions of Section 404 of the Clean Water Act, which prohibits the discharge of dredged or fill material without a permit. The RWQCB jurisdiction is established through Section 401 of the Clean Water Act, which requires certification or waiver to control discharges in water quality, and the State Porter-Cologne Act. Jurisdictional authority of the CDFW over wetland areas is established under Sections 1600-1607 of the California Fish and Game Code, which pertain to activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream.

A preliminary wetland assessment was conducted during the field reconnaissance survey. No indications of any jurisdictional waters, including headwater drainages, were observed on the project
site. As part of the project, Standard Best Management Practices (BMPs) would be used to prevent any sedimentation or erosion, preventing any potential for water quality degradation to downgradient waters, as discussed further under Section X, Hydrology and Water Quality, below. No direct or indirect impacts on the jurisdictional waters are anticipated, and no mitigation is required.

d) Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

# Less Than Significant Impact

The proposed project would not have any significant adverse impacts on wildlife movement opportunities or adversely affect native wildlife nursery sites. The project site would remain open to movement opportunities by terrestrial wildlife and dispersing birds following construction of the access road and water tank. Grading and construction would temporarily disrupt wildlife use of the immediate vicinity, but this would be a relatively short-term effect on common wildlife species, which could continue to use the surrounding undeveloped hillside for foraging and other activities. Pre-construction surveys recommended in Mitigation Measure BIOLOGY-1 would ensure avoidance of any nesting birds if new nests become established before construction is initiated. No substantial disruption of movement corridors or access to native wildlife nursery sites is anticipated. Potential impacts on wildlife movement opportunities would be less than significant and no mitigation is required.

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

# Less Than Significant Impact

Policies in the National Resources Element of the *Marin Countywide Plan* address the protection of sensitive biological and wetland resources, including creeks, significant habitat for fish, wildlife and flora, and natural features. With the exception of trees of protected size under the Marin County Tree Protection Ordinance, there are no other sensitive biological resources on the project site. No impacts on creeks, special-status species, or sensitive natural communities are anticipated as a result of the project; appropriate measures would be taken to minimize damage or loss of trees, and BMPs would be followed to prevent sediment and other construction-generated pollutants from reaching downstream waters. Preconstruction surveys for possible nesting birds would be conducted as recommended in Mitigation Measure BIOLOGY-1, which would ensure avoidance of any nesting birds if new nests become established before construction is initiated. No substantial conflicts with the *Marin Countywide Plan* are anticipated as a result of the project.

Chapter 22.27, Native Tree Protection and Preservation, of the Marin County Code provides for the protection of native trees that qualify as "protected" or "heritage" size. The minimum size for trees that qualify as "protected" under the code varies from either 6 or 10 inches diameter at breast height (DBH), with oaks and madrone having a minimum size of 6 inches and California bay having a minimum size of 10 inches. Trees that qualify as "heritage" under the code also vary in size, with oaks and madrone having a minimum size of 18 inches DBH and California bay having a minimum size of 30 inches. The

ordinance prohibits the removal of any protected or heritage tree without a permit for individuals and organizations subject to its provisions, defines the process for securing a tree removal permit, and identifies exemptions and options for addressing tree loss where avoidance is infeasible.

The project would be located in an area of open woodland, and numerous young trees would be removed or could be damaged as a result of project construction. Based on mapping prepared by NMWD's engineer, a total of 66 trees with trunk diameters ranging from 6 to 15 inches DBH would be removed to accommodate the proposed new road and water tank. These consist of 62 oaks and 4 madrones that would meet the minimum trunk size to qualify as a "protected" tree under the Marin County Code. An additional five California bay trees with trunk diameters of 6 to 8 inches would also be removed, but these are below the minimum to qualify as "protected" under the Marin County Code. The health of these trees varies, but most are in good to poor condition, growing in a relatively dense woodland where native regeneration is considerable. Numerous younger sapling trees also occur within the limits of grading and on the surrounding hillside, and are adding to the density of trees growing in the woodland. This density is most likely due to the absence of domestic grazing in the area, fire prevention, and absence of any vegetation management on the site.

As a public water district, NMWD is not subject to the provisions of the Marin County Code, although it typically strives to comply with the intent of these regulations. In this case, potential conflict with the Marin County Code is considered less than significant, for the following reasons. First, while the number of trees to be removed would be considerable, the proposed alignment for the new road and location of the new tank have generally been sited to minimize tree removal. Providing replacement plantings for trees to be removed would contribute to further densification of the existing conditions in the woodlands on the site, and it is unlikely these trees would thrive. Providing replacement plantings also may create overcrowded conditions that compromise the health of the existing established trees in the area. Natural regeneration will continue in the area, as is currently taking place, and new trees will eventually become established along the margins of the new maintenance road where their survival is possible. For these reasons, no major conflicts with the intent of the Marin County Code are anticipated; the impact would be considered less than significant, and no mitigation is necessary.

f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan?

# No Impact

There are currently no adopted Habitat Conservation Plans or Natural Community Conservation Plans for the project site or surrounding areas. No adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other conservation plan applies to the project site, no impacts regarding possible conflicts with an adopted plan are anticipated, and no mitigation is required.

# REFERENCES

- California Department of Fish and Wildlife (CDFW), Biogeographic Information Services, 2019. California Natural Diversity Data Base (CNDDB) GIS data accessed online on August 15, 2019.
- U.S. Fish and Wildlife Service (USFWS), Sacramento Endangered Species Division, 2019. Critical Habitat database accessed online on August 15, 2019.

V.	CUI	TURAL RESOURCES. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
	a)	Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?				
	b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?				
	c)	Disturb any human remains, including those interred outside of dedicated cemeteries?				

# **IMPACT EVALUATION**

a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

#### Less Than Significant with Mitigation Incorporated

For a cultural resource to be considered a historical resource (i.e., eligible for listing in the California Register of Historical Resources [CRHR]), it generally must be at least 50 years old. Under CEQA, historical resources can include pre-contact (i.e., Native American) archaeological deposits, historic-period archaeological deposits, historic buildings, and historic districts.

To identify historical resources at the project site, the following tasks were completed for this Initial Study: 1) a records search was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System;<sup>7</sup> 2) geologic and historical maps and information were reviewed to assess the potential for buried historic-period and pre-contact Native American archaeological deposits; and 3) a qualified archaeologist surveyed the project site to identify surface evidence of archaeological deposits. Based on the results of these tasks—which are described below—the project would have a potentially significant impact on archaeological historical resources unless mitigation is incorporated.

NMWD\_CEQAChecklist\_FINAL (10/23/19)

<sup>&</sup>lt;sup>7</sup> The NWIC is an affiliate of the State of California Office of Historic Preservation (OHP) and is the official State repository of cultural resources records and reports for Marin County.

#### **Records Search**

The NWIC records search was conducted on August 12, 2019, and included the project site and a 0.25-mile search radius.

The NWIC database indicates that there are no recorded cultural resources at, or previous cultural resource studies of, the project site. There are no recorded cultural resources within 0.25 mile of the project site.

#### Map Review

The surface geology of the project site is Franciscan Complex sandstone and shale (KJfs) (Rice et al., 2002). The Franciscan Complex formed during the late Mesozoic era, long before human occupation of North America. Buried pre-contact archaeological deposits are not anticipated at the project site due to the age of the Franciscan Complex and absence of a depositional environment that could have buried former living surfaces. Pre-contact archaeological materials—should these occur at the project site—would be expected to occur at or near the present-day ground surface.

The historical maps reviewed do not indicate a potential for historic-period archaeological deposits or features. Sanborn Fire Insurance maps do not provide coverage of the project site or vicinity, indicating that physical development was too sparse to warrant inspection by the insurance industry in the late 19th and early 20th centuries. Historical topographic maps published between 1914 and 1968 indicate no buildings or structures at or near the project site (U.S. Army Corps of Engineers, 1942; U.S. Geological Survey, 1914, 1954, 1968).

# **Field Survey**

A Registered Professional Archaeologist surveyed the project site on August 28, 2019. The length of the project site was walked twice in spaced, parallel, zig-zag transects. A hoe was used intermittently to scrape surface vegetation to inspect the underlying rocky loam for archaeological materials.

No archaeological cultural resources were identified during the survey.

There is a redwood water tank near the project site that is over 50 years old. NMWD has determined that the existing water tank is not a historical resource for purposes of CEQA.

#### Summary

The NWIC records search and field survey did not identify cultural resources at the project site. The map review indicates a low potential for buried pre-contact and historic-period archaeological historical resources. Although the potential for identifying archaeological historical resources during project ground disturbance is low, the presence of such resources cannot be entirely discounted. The dense surface vegetation encountered during the field survey, for example, could have obscured archaeological deposits that could be uncovered during project implementation. Should such deposits be encountered during project ground disturbance, a substantial adverse change in the significance of

a historical resource would occur from the resource's demolition, destruction, relocation, or alteration such that the significance of the resource would be materially impaired (CEQA Guidelines Section 15064.5(b)(1)) (see Impact CULTURAL-1 and Mitigation Measure CULTURAL-1 below).

# <u>Impact CULTURAL-1</u>: The project could unearth archaeological deposits, thereby causing a substantial adverse change in the significance of a historical resource as defined in California Environmental Quality Act (CEQA) Guidelines Section 15064.5. (PS)

<u>Mitigation Measure CULTURAL-1</u>: Should an archaeological deposit be encountered during project subsurface construction activities, all ground-disturbing activities within 25 feet shall be redirected and a qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology contacted to assess the situation, determine if the deposit qualifies as a historical resource, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. If the deposit is found to be significant (i.e., eligible for listing in the California Register of Historical Resources [CRHR]), the North Marin Water District (NMWD) shall be responsible for funding and implementing appropriate mitigation measures. Mitigation measures may include recording of the archaeological deposit, data recovery and analysis, and public outreach regarding the scientific and cultural importance of the discovery. Upon completion of the selected mitigations, a report documenting methods, findings, and recommendations shall be prepared and submitted to NMWD for review, and the final report shall be submitted to the Northwest Information Center (NWIC) at Sonoma State University. Significant archaeological materials shall be submitted to an appropriate local curation facility and used for future research and public interpretive displays, as appropriate.

NMWD shall inform its contractor(s) of the sensitivity of the project area for archaeological deposits and shall verify that the following directive has been included in the appropriate contract documents:

"The subsurface of the construction site may be sensitive for Native American archaeological deposits and associated human remains. If archaeological deposits are encountered during project subsurface construction, all ground-disturbing activities within 25 feet shall stop and a qualified archaeologist contacted to assess the situation and make recommendations for the treatment of the discovery. Project personnel shall not collect or move any archaeological materials. Archaeological deposits can include shellfish remains; bones; flakes of, and tools made from, obsidian, chert, and basalt; and mortars and pestles. Contractor acknowledges and understands that excavation or removal of archaeological material is prohibited by law and constitutes a misdemeanor under California Public Resources Code, Section 5097.5."

With implementation of this mitigation measure, the potential impact on historical and archaeological resources would be reduced to a less-than-significant level. (LTS)

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

#### Less Than Significant with Mitigation Incorporated

According to the CEQA Guidelines, "When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource" (CEQA Guidelines Section 15064.5(c)(1)). Those archaeological sites that do not qualify as historical resources shall be assessed to determine if these qualify as "unique archaeological resources" (California Public Resources Code Section 21083.2). Archaeological deposits identified during project construction must be treated by NMWD—in consultation with a qualified archaeologist meeting the *Secretary of the Interior's Professional Qualifications Standards for Archeology*—in accordance with Mitigation Measure CULTURAL-1.

<u>Impact CULTURAL-2</u>: The project could unearth archaeological deposits, thereby causing a substantial adverse change in the significance of an archaeological resource as defined in California Environmental Quality Act (CEQA) Guidelines Section 15064.5. (PS)

<u>Mitigation Measure CULTURAL-2</u>: Mitigation Measure CULTURAL-1 shall be implemented. (LTS)

c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

#### No Impact

There are no known historic-period human burials at the project site. Background research and a cultural resources field survey conducted for this Initial Study (see discussion under Item (a) above) did not identify recorded Native American skeletal or cremated remains at the project site.

In the event that human remains are identified during project construction, these remains would be treated in accordance with Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the California Public Resources Code, as appropriate.

Section 7050.5 of the California Health and Safety Code states that, in the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the remains are discovered has determined whether or not the remains are subject to the coroner's authority. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission (NAHC) within 24 hours of this identification. The NAHC will identify a Native American Most Likely Descendant (MLD) to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods.

Section 5097.98 of the Public Resources Code states that the NAHC, upon notification of the discovery of Native American human remains pursuant to Health and Safety Code Section 7050.5, shall immediately notify those persons (i.e., the MLD) it believes to be descended from the deceased. With permission of the landowner or a designated representative, the MLD may inspect the remains and any associated cultural materials and make recommendations for treatment or disposition of the remains and associated grave goods. The MLD shall provide recommendations or preferences for treatment of the remains and associated cultural materials within 48 hours of being granted access to the site.

With these regulations in place, no impact on human remains is anticipated, and no mitigation is necessary.

#### REFERENCES

- Rice, Salem R., Theodore C. Smith, Rudolph G. Strand, David L. Wagner, Carolyn E. Randolph-Loar, Robert C. Witter, and Kevin B. Clahan, 2002. *Geologic Map of the Novato 7.5' Quadrangle, Marin and Sonoma Counties, California: A Digital Database*. California Department of Conservation, Sacramento.
- U.S. Army Corps of Engineers (Corps), 1942. *California Petaluma Quadrangle*. 15-minute topographic quadrangle.
- U.S. Geological Survey (USGS), 1914. *California Petaluma Quadrangle*. 15-minute topographic quadrangle.
- U.S. Geological Survey (USGS), 1954. Novato, California. 7.5-minutes topographic quadrangle.
- U.S. Geological Survey (USGS), 1954. *Novato, California*. 7.5-minutes topographic quadrangle. Photo revised 1968.

			Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI.	EN	ERGY. Would the project:				
	a)	Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?				
	b)	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				

# **IMPACT EVALUATION**

a) Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

#### No Impact

During project construction, energy would be needed for fuel for construction equipment in the site preparation and construction activities. However, this would be a short-term energy demand that would not be wasteful or inefficient. During project operation, energy would be required for the pumping of water to the tank. However, this energy demand similarly would not be wasteful or inefficient, especially given that 1) the project is relatively small, and 2) the energy demand would be similar to that associated with the existing water tank that would likely be decommissioned. Energy for pumping would be provided by the Pacific Gas & Electric Company (PG&E), which provides electricity and natural gas to customers in the City of Novato.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

#### No Impact

The project would not conflict with any state plan for renewable energy or energy efficiency. The project is exempt from local plans related to energy efficiency. However, it is assumed that NMWD would use energy-efficient pumps and other elements for the project as there would be cost savings by doing so.

#### REFERENCES

City of Novato, 2009. 2009 Climate Change Action Plan, City of Novato, December.

				Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII.	GE	DLOGY	AND SOILS. Would the project:				
	a)	Direct incluc	tly or indirectly cause potential substantial adverse effects, ding the risk of loss, injury, or death involving:				
		i) R m is s N	Rupture of a known earthquake fault, as delineated on the nost recent Alquist-Priolo Earthquake Fault Zoning Map ssued by the State Geologist for the area or based on other ubstantial evidence of a known fault? Refer to Division of lines and Geology Special Publication 42.			•	
		ii) S	trong seismic ground shaking?				
		iii) S	eismic-related ground failure, including liquefaction?				
		iv) L	andslides?				
	b)	Resu	It in substantial soil erosion or the loss of topsoil?				

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c)	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?		•		
d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?			•	
e)	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of wastewater?				
f)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		-		

The project site is located within the central portion of the Coast Ranges geomorphic province, which includes numerous active faults identified by the California Geological Survey (CGS) under the Alquist-Priolo Earthquake Fault Zoning Act. CGS defines an active fault as one that has ruptured during the Holocene Epoch (i.e., the last 11,000 years).

The nearest known active faults are the Rodgers Creek Fault, located approximately 10 miles northeast of the project site, and the San Andreas Fault, located approximately 10 miles southwest of the project site. Mapping by CGS also shows the Burdell Mountain Fault approximately 4 miles northeast of the project site. The Burdell Mountain Fault is categorized as a Quaternary fault; however, the age of displacements along the fault is undifferentiated (CGS, 2010). This fault is not considered "active" under the Alquist-Priolo Earthquake Fault Zoning Act.

a) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42;
 ii) Strong seismic ground shaking; iii) Seismic-related ground failure, including liquefaction; iv) Landslides?

# Less Than Significant with Mitigation Incorporated

#### Fault Rupture

Surface rupture occurs when the ground surface is broken due to fault movement during an earthquake. Surface rupture generally occurs along an existing (usually active) fault trace. Areas susceptible to surface fault rupture are delineated by the CGS Alquist-Priolo Earthquake Fault Zones and require specific geological investigations prior to development to reduce the threat to public health and safety and to minimize the loss of life and property posed by earthquake-induced ground failure. There are no Alquist-Priolo Earthquake Fault Zones mapped in the vicinity of the project site (CGS, 2019); therefore, the project would result in a less-than-significant impact related to fault rupture.

#### Strong Seismic Ground Shaking

Seismic ground shaking generally refers to all aspects of motion of the Earth's surface resulting from an earthquake and is normally the major cause of damage in seismic events. The extent and severity of ground shaking is controlled by the magnitude and intensity of the earthquake, distance from the epicenter, and local geologic conditions. The magnitude of a seismic event is a measure of the energy released by an earthquake; it is assessed by seismographs that measure the amplitude of seismic waves. The intensity of an earthquake is a subjective measure of the perceptible effects of a seismic event at a given point. The Modified Mercalli Intensity scale is the most commonly used scale to measure the subjective effects of earthquake intensity. It uses values ranging from I to XII.

The Association of Bay Area Governments (ABAG) and the United States Geological Survey (USGS) have mapped the likely shaking intensities in the Bay Area that would have a 10 percent chance of occurring in any 50-year period (ABAG, 2019). Based on the ABAG and USGS mapping, the project site is in an area susceptible to strong ground shaking (VII on the Modified Mercalli Intensity scale) from a major earthquake on the San Andreas Fault or Rodgers Creek Fault.

A Geotechnical Investigation (Miller Pacific Engineering Group, 2018) prepared for the project indicates that designing new structures in accordance with the provisions of the most recent version of the California Building Code and appropriate American Water Works Association (AWWA) standards or subsequent codes in effect when final design occurs would mitigate potential damage from strong seismic shaking. NMWD typically strives to comply with the intent of local land use controls and current industry design standards. However, because NMWD projects are exempt from local (Marin County) land use controls per Government Code Section 53091, there would be no permitting mechanism to ensure that the project is designed and constructed according to the California Building Code and appropriate American Water Works Association standards or subsequent codes. This issue is addressed through Mitigation Measure GEOLOGY-1 below.

# <u>Impact GEOLOGY-1</u>: Strong seismic shaking could result in potential damage to structures and improvements. (PS)

<u>Mitigation Measure GEOLOGY-1</u>: The proposed improvements shall be designed and constructed in accordance with the provisions of the most recent version of the California Building Code and appropriate American Water Works Association (AWWA) standards or subsequent codes in effect when final design occurs.

Implementation of Mitigation Measure GEOLOGY-1 would ensure that project impacts related to strong seismic ground shaking would be less than significant. (LTS)

#### Liquefaction

Soil liquefaction is a phenomenon primarily associated with saturated soil layers located close to the ground surface. During ground shaking, these soils lose strength and acquire a "mobility" sufficient to permit both horizontal and vertical movements. Soils that are most susceptible to liquefaction are clean,

loose, uniformly graded, saturated, fine-grained sands that lie relatively close to the ground surface. However, loose sands that contain a significant amount of fines (silt and clay) may also liquefy.

The project site is underlain by shallow sandstone bedrock that is not susceptible to liquefaction (Miller Pacific Engineering Group, 2018). Therefore, potential impacts associated with liquefaction would be less than significant.

#### Lateral Spreading

Lateral spreading is a phenomenon in which surficial soil displaces along a gently sloping ground surface as the result of liquefaction in a subsurface layer. Upon reaching mobilization, the surficial soils are transported downslope or in the direction of a free face by earthquake and gravitational forces. As discussed above, the project site is underlain by shallow sandstone bedrock that is not susceptible to liquefaction. Therefore, potential impacts associated with lateral spreading would be less than significant.

#### Seismically Induced Settlement

Seismically induced settlement can occur when non-saturated, cohesionless soil is densified by earthquake vibrations. Varying degrees of settlement can occur, resulting in differential settlement of structures founded on such deposits. The Geotechnical Investigation for the project indicates that the planned excavation would likely expose bedrock at the finished surface throughout the building pad for the proposed water tank, and therefore the likelihood of seismically induced settlement is low (Miller Pacific Engineering Group, 2018). Therefore, potential impacts associated with seismically induced settlement would be less than significant.

# Landslides

Seismically induced landslides occur as the rapid movement of large masses of soil on unstable slopes during an earthquake. The Geotechnical Investigation for the project indicates that ravines to the west and southeast of the project site are mapped as large, debris flow-type landslides; however, scarps, cracking, or other evidence that would suggest active or recent slope movement or large-scale instability within or around the proposed tank location were not observed during the Geotechnical Investigation. The Geotechnical Investigation also indicates that the planned excavation for the tank pad would remove the weight of the existing rock and soil from the slope, which should help to improve slope stability, and the risk of damage to the proposed water tank due to slope instability is generally low provided that grading of the project site consists of primarily excavation to remove material as is currently planned. The Geotechnical Investigation includes recommendations to mitigate potential slope instability and landslides, including founding the proposed water tank on a level pad that exposes firm bedrock, minimizing the thickness of new fills, keying and benching new fill slopes, constructing new fill slopes no steeper than 2:1 (horizontal:vertical) and new excavation slopes in bedrock no steeper than 1.5:1, installing subsurface drains to reduce the potential for hydrostatic forces behind the fill, and planting new permanent fill slopes with vegetation cover following construction to reduce sloughing and erosion. The Geotechnical Investigation indicates that the actual depth and extent of

keyways, benches, and subdrains should be determined by the Geotechnical Engineer during grading, and that if grading plans are altered to include new fills or reduced excavation depths, the Geotechnical Engineer should be consulted to evaluate potential impacts on slope stability (Miller Pacific Engineering Group, 2018).

Project plans were modified following preparation of the Geotechnical Investigation. Changes to the project plans include construction of the proposed water tank farther to the northwest (which altered the amount of excavation required), modifying the proposed alignment of the access road to follow the ridgeline (which altered excavation/grading plans and would involve the placement of fill), and construction of a staging area near the east end of the proposed access road (which would require the placement of fill). The changes in project plans could result in different slope stability conditions than were analyzed in the Geotechnical Investigation.

# <u>Impact GEOLOGY-2</u>: Excavation, grading, and placement of new structural loads and fill could potentially increase slope instability and risk of landslides. (PS)

<u>Mitigation Measure GEOLOGY-2</u>: The updated project plans shall be submitted to the Geotechnical Engineer for review to determine whether additional geotechnical investigation and/or modification of geotechnical recommendations would be required to mitigate the potential for slope instability and risk of landslides. The detailed project plans shall be designed in accordance with all geotechnical recommendations. As project plans near completion, the plans and specifications shall be provided to the Geotechnical Engineer for review to confirm that geotechnical recommendations have been incorporated. During construction, the Geotechnical Engineer shall perform observation and testing of geotechnical-related work (e.g., excavation, grading, subsurface drain installations, and fill placement) to confirm that conditions are as anticipated, adjust geotechnical recommendations and design criteria if needed, and confirm that construction is performed in accordance with the project plans and specifications.

Implementation of Mitigation Measure GEOLOGY-2 would ensure that the project impacts related to slope stability and landslides would be less than significant. (LTS)

b) Would the project result in substantial soil erosion or the loss of topsoil?

# Less Than Significant with Mitigation Incorporated

Soil erosion, which is discussed in detail in Section X, Hydrology and Water Quality, could occur during project construction and operation if appropriate erosion control and stormwater control measures are not implemented.

# <u>Impact GEOLOGY-3</u>: Soil erosion and loss of top soil could occur during project construction and operation.

<u>Mitigation Measure GEOLOGY-3</u>: See Mitigation Measures HYDROLOGY-1. As described in Section X, Hydrology and Water Quality, implementation of Mitigation Measure HYDROLOGY-1, which requires preparation of and implementation of an Erosion and Stormwater Control Plan

(ESCP) during construction; and periodic inspection and maintenance of erosion and sediment control BMPs during project operation, would reduce the potential impacts related to erosion or the loss of topsoil to a less-than-significant level. (LTS)

c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

#### Less Than Significant with Mitigation Incorporated

As discussed under Item (a) above, potential impacts related to liquefaction, lateral spreading, and seismically induced settlement would be less than significant, and implementation of Mitigation Measure GEOLOGY-2 would ensure that the project impacts related to slope stability and landslides would be less than significant.

#### Subsidence

Subsidence or collapse can result from the removal of subsurface water, resulting in either catastrophic or gradual depression of the surface elevation of the project site. Groundwater was not encountered in geotechnical borings that were drilled to depths of 20 to 30 feet below ground surface at the project site (Miller Pacific Engineering Group, 2018); therefore, dewatering is not anticipated to be required and potential impacts related to subsidence or collapse would be less than significant.

#### Consolidation

Consolidation (or static settlement) of soils is a process by which the soil volume decreases as water is expelled from saturated soils under static loads. As the water moves out from the pore space of the soil, the solid particles realign into a denser configuration that results in settlement. Consolidation typically occurs as a result of new buildings or fill materials being placed over compressible soils.

The Geotechnical Investigation for the project indicates that the planned excavations would expose firm sandstone bedrock, and therefore settlement is not considered a significant hazard and expected settlements of less than 1 inch could occur across the tank diameter based on the anticipated load (Miller Pacific Engineering Group, 2018). Therefore, potential impacts related to consolidation would be less than significant.

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

#### Less Than Significant Impact

Expansive soils are characterized by the potential for shrinking and swelling as the moisture content of the soil decreases and increases, respectively. Shrink-swell potential is influenced by the amount and type of clay minerals present and can be measured by the percent change of the soil volume.

Expansive soils are capable of exerting significant pressures on building foundations, slabs, and exterior pavement, which can result in cracking and uneven surfaces.

The project site is underlain by a thin layer of sandy soils over sandstone bedrock, which is not expansive (Miller Pacific Engineering Group, 2018). Geotechnical recommendations for placement of fill also indicate that the fill should be non-expansive (Miller Pacific Engineering Group, 2018). Therefore, potential impacts associated with expansive soil would be less than significant.

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of wastewater?

#### No Impact

The project would not include the use of septic tanks or alternative wastewater disposal systems.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

#### Less Than Significant with Mitigation Incorporated

Paleontological resources include fossilized remains or traces of organisms including plants, vertebrates (animals with backbones), invertebrates (e.g., starfish, clams, ammonites, and marine coral), and microscopic plants and animals (microfossils), including their imprints, from a previous geological period. Collecting localities and the geologic formations containing those localities are also considered paleontological resources as they represent a limited, non-renewable resource and, once destroyed, cannot be replaced. The Society of Vertebrate Paleontology (SVP) has established guidelines for the identification, assessment, and mitigation of adverse impacts on non-renewable paleontological resources (SVP, 2010). The SVP has helped define the value of paleontological resources and, in particular, states that significant paleontological resources are fossils and fossiliferous deposits consisting of identifiable vertebrate fossils, large or small; uncommon invertebrate, plant, and trace fossils; and other data that provide taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 years) (SVP, 2010).

The project site is underlain by shale and sandstone bedrock of Cretaceous age (Miller Pacific Engineering Group, 2018). The results of a search of paleontological localities in the fossil collections database maintained by the University of California Museum of Paleontology identified no vertebrate, plant, or micro fossil localities and four invertebrate fossil localities in Cretaceous period geologic formations within Marin County (University of California Museum of Paleontology, 2019). Information regarding the types of invertebrate fossil specimens found is not available on the database, and therefore it is not known whether the invertebrate fossils could be uncommon. Therefore, the project site is considered to have a potentially high paleontological sensitivity.

# <u>Impact GEOLOGY-4</u>: Paleontological resources on the project site could be encountered and damaged during construction-related excavation and grading. (PS)

Adverse impacts on paleontological resources could occur during excavation into the native soil and bedrock where fossils may be buried and physical destruction of fossils could occur.

<u>Mitigation Measure GEOLOGY-4</u>: Should paleontological resources be encountered during project subsurface construction activities, all ground-disturbing activities within 25 feet of the find shall be stopped and a qualified paleontologist shall be contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. If the discovery is found to be significant and project activities cannot avoid the paleontological resources, adverse effects on paleontological resources shall be mitigated. Mitigation may include monitoring, recording of the fossil locality, data recovery and analysis, preparation of a technical report, and provision of the fossil material and technical report to a paleontological repository, such as the University of California Museum of Paleontology. Public educational outreach may also be appropriate. Upon completion of the assessment, a report documenting methods, findings, and recommendations shall be prepared and submitted to the North Marin Water District (NMWD) for review.

NMWD shall inform its contractor(s) of the sensitivity of the project area for paleontological resources and shall include the following directive in the appropriate contract documents:

"The subsurface of the construction site may be sensitive for paleontological resources. If paleontological resources are encountered during project subsurface construction, all ground-disturbing activities within 25 feet of the find shall be stopped or redirected and a qualified paleontologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. Project personnel shall not collect or move any paleontological materials. Paleontological resources include fossil plants and animals, and such trace fossil evidence of past life as animal tracks."

Implementation of Mitigation Measure GEOLOGY-4 would reduce potential impacts on paleontological resources to a less-than-significant level. (LTS)

#### REFERENCES

- Association of Bay Area Governments (ABAG), 2019. Bay Area Hazards, Shacking Scenarios, Available at: http://gis.abag.ca.gov/website/Hazards/?hlyr=northSanAndreas&co=6041, accessed on August 21, 2019.
- California Geologic Survey (CGS), 2010. Fault Activity Map of California. Available at: http://maps.conservation.ca.gov/cgs/fam/, accessed on August 20, 2019.
- California Geologic Survey (CGS), 2019. Information Warehouse: Regulatory Maps. Available at: https://maps.conservation.ca.gov/cgs/informationwarehouse/, accessed on August 21, 2019.

NMWD\_CEQAChecklist\_FINAL (10/23/19)

- Miller Pacific Engineering Group, 2018. Geotechnical Investigation, North Marin Water District, Old Ranch Road Tank, Novato, California, May 18.
- Society of Vertebrate Paleontology (SVP), 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources.
- University of California Museum of Paleontology, 2019. Collections Database, Localities Search. Available at: https://ucmpdb.berkeley.edu/loc.html, accessed on August 20, 2019.

			Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII.	GRI	EENHOUSE GAS EMISSIONS. Would the project:				
	a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?				
	b)	Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				

Climate change refers to change in the Earth's weather patterns, including the rise in temperature due to an increase in heat-trapping greenhouse gases (GHGs) in the atmosphere. An increase of GHGs in the atmosphere affects the energy balance of the Earth and results in a global warming trend. Increases in global average temperatures have been observed since the mid-20<sup>th</sup> century and have been linked to observed increases in GHG emissions from anthropogenic sources. The primary GHG emissions of concern are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O). Other GHGs of concern include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>), but their contribution to climate change is less than 1 percent of the total GHGs that are well-mixed (i.e., that have atmospheric lifetimes long enough to be homogeneously mixed in the troposphere) (Intergovernmental Panel on Climate Change [IPCC], 2013). Each GHG has a different global warming potential (GWP). For instance, CH<sub>4</sub> traps about 21 times more heat per molecule than CO<sub>2</sub>. As a result, emissions of GHGs are reported in metric tons of carbon dioxide equivalents (CO<sub>2</sub>e), wherein each GHG is weighted by its GWP relative to CO<sub>2</sub>.

According to the Intergovernmental Panel on Climate Change (IPCC), the atmospheric concentrations of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O have increased to levels unprecedented in at least the last 800,000 years due to anthropogenic sources (IPCC, 2013). Some of the potential effects of increased GHG emissions and the associated climate change may include loss in snow pack (affecting water supply), sea level rise, more frequent extreme weather events, more large forest fires, and more drought years. In addition, climate change may increase electricity demand for cooling, decrease the availability of hydroelectric power, and affect regional air quality and public health (Bay Area Air Quality Management District [BAAQMD], 2017a).

In October 2018, the IPCC published a special report on potential long-term climate change impacts based on the projected increases in temperature due to global climate change. The IPCC report found that the Earth is already seeing the consequences of global warming due to a 1 degree Celsius (°C) increase in pre-industrial levels, such as extreme weather, rising sea levels, and diminishing Arctic sea ice. Global warming is likely to reach 1.5°C above pre-industrial levels between 2030 and 2052 if it continues to increase at the current rate. Some of the impacts due to ongoing global warming could be avoided by limiting future global warming to 1.5°C compared to 2°C. For example, by limiting global warming to 1.5°C or lower, the likelihood of an Arctic Ocean free of sea ice in summer would be ten times lower compared to the likelihood under the scenario of a 2°C increase. Beyond the 1.5°C threshold, there would be significant increases in the risk associated with long-lasting or irreversible changes, such as the loss of ecosystems. The IPCC states that in order to limit the global warming to 1.5°C, rapid transitions are needed in land, energy, industry, building, transport, and urban sectors to reach the goal of carbon neutrality by 2050, which means that the Earth's production of GHG emissions each year would be removed completely through carbon offsetting, sequestration, or other means (IPCC, 2018).

In 2006, the California State Legislature passed the California Global Warming Solutions Act (Assembly Bill [AB] 32), which requires the California Air Resources Board (CARB) to develop and implement regulatory and market mechanisms that will reduce GHG emissions to 1990 levels by 2020. In 2016, the State Legislature adopted Senate Bill (SB) 32, which requires further reduction of GHG emissions to 40 percent below the 1990 level by 2030. In addition, Executive Order S-3-05 set a GHG reduction goal of 80 percent below 1990 levels by 2050. In November 2015, Marin County adopted the 2015 Climate Action Plan (CAP) (Marin County, 2015). The CAP outlines a course of action to reduce community-wide GHG emissions to 30 percent below 1990 levels by 2020, and municipal GHG emissions to 15 percent below 1990 levels by 2020. Adopting these targets put Marin County on track to meet the Executive Order S-03-5 statewide target for 2050. The CAP includes 15 local community actions and 8 local municipal actions grouped into the following strategy areas: energy efficiency and renewable energy; land use, transportation, and off-road equipment; vehicle fleet and employee commute; water conservation and wastewater treatment; waste reduction, reuse, and recycling; and agriculture.

The proposed project is located in the San Francisco Bay Area Air Basin (SFBAAB), which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). In 2010, the BAAQMD developed and adopted GHG thresholds of significance that were incorporated into the BAAQMD's 2017 CEQA Air Quality Guidelines (BAAQMD, 2017b). The GHG thresholds are designed to help lead agencies in the SFBAAB evaluate potential environmental impacts from GHG emissions for new projects and meet GHG emission reduction goals, such as those contained in AB 32. Therefore, the BAAQMD's thresholds of significance were used in this CEQA analysis.

# IMPACT EVALUATION

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

#### Less Than Significant Impact

The proposed project would generate temporary GHG emissions through construction activities, such as operation of on-site heavy construction equipment and off-site construction vehicle trips, and would generate long-term GHG emissions through project operations related to the direct and indirect use of fossil fuels such as electricity, diesel, and gasoline.

The BAAQMD does not recommend a threshold of significance for GHG emissions during construction because there is not sufficient evidence to determine a level at which temporary construction emissions are significant (BAAQMD, 2009). A construction contractor has no incentive to waste fuel during construction and, therefore, it is generally assumed that GHG emissions during construction would be minimized to the maximum extent feasible. Furthermore, the idling times for off-road construction equipment would be limited to a maximum idling time of 5 minutes, as required by the CARB's Airborne Toxic Control Measure to reduce emissions from diesel-fueled vehicles (Title 13, Section 2485 of California Code of Regulations). Therefore, GHG emissions during project construction would have a less-than-significant impact on the environment.

Operation of the proposed project would generate direct GHG emissions from vehicles traveling to and from the site for inspection and cleaning, and indirect GHG emissions from the electrical tools that may be used for tank maintenance. Because of the infrequent nature of tank inspection and cleaning (Baseline Environmental Consulting, 2019), it is unlikely that operation of the proposed project would generate any substantial amount of GHGs. Furthermore, the proposed water tank is to replace the existing tank that would likely be decommissioned and removed after the construction of the proposed project. Emission-generating activities associated with project operation would be similar in nature and frequency compared to the emission-generated activities associated with the existing water tank. Therefore, the proposed project would result in minimal change, if any, in GHG emissions compared to the existing conditions, and would have a less-than-significant impact on the environment.

b) Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

#### Less Than Significant Impact

The BAAQMD's thresholds of significance were designed to ensure compliance with the state's AB 32 GHG reduction goals, as set forth in the CARB's Climate Change Scoping Plan (California Air Resources Board, 2017). Since the GHG emissions from the proposed project would have a less-than-significant impact (see Item (a) above), it can be assumed that the project would be consistent, and not in fundamental conflict, with AB 32 GHG reduction goals and the Climate Change Scoping Plan.

The proposed project is an infrastructure improvement project. Therefore, goals, measures, and actions from the Marin County CAP are not applicable to the project. However, the increased tank size under the proposed project was driven by fire flow goals of the Novato Fire District. This is consistent with the climate adaptation option for wildfires in the CAP, which calls for the provision of water resources to put out fires (Marin County, 2015). Therefore, the proposed project would be consistent with the Marin County CAP.

In summary, the project would have a less-than-significant impact related to conflict with applicable plans, policies, and regulations adopted for the purpose of reducing GHG emissions.

# REFERENCES

- Baseline Environmental Consulting. 2019. Email correspondence re: NMWD Tank Request for Information to Ivy Tao from Carmela Chandrasekera, August 19.
- Bay Area Air Quality Management District (BAAQMD), 2009. Revised Draft Options and Justification Report, California Environmental Act Thresholds of Significance, October.
- Bay Area Air Quality Management District (BAAQMD), 2017a. Final 2017 Clean Air Plan, April 19.
- Bay Area Air Quality Management District (BAAQMD), 2017b. California Environmental Quality Act Air Quality Guidelines, May.
- California Air Resources Board, 2017. California's 2017 Climate Change Scoping Plan, November.
- Intergovernmental Panel on Climate Change (IPCC), 2013. Climate Change 2013; the Physical Science Basis; Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.
- Intergovernmental Panel on Climate Change (IPCC), 2018. IPCC Press Release, Summary for Policymakers of IPCC Special Report on Global Warning of 1.5°C Approved by Governments, October 8.

Marin County, 2015. Climate Action Plan (2015 Update), July.

X.	HAZ	ARDS AND HAZARDOUS MATERIALS. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	
	a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			•		

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		•		
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area?				•
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				
g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?				

#### **IMPACT EVALUATION**

*g)* Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

#### Less Than Significant Impact

Hazardous materials (e.g., fuel, oils, and paints) would be routinely transported, stored, and used at the project site used during construction activities. Operation of the project would not involve the routine transport, use, or disposal of hazardous materials. The routine transportation, use, and disposal of hazardous materials during construction may pose health and safety hazards to construction workers if the hazardous materials are improperly handled, or to nearby residents and the environment if the hazardous materials are accidentally released into the environment. Potential impacts associated with accidental releases of hazardous materials into the environment are discussed under Item (b) below.

The routine handling and use of hazardous materials by construction workers would be performed in accordance with Occupational Safety and Health Administration (OSHA) regulations, which include training requirements for construction workers and a requirement that hazardous materials are accompanied by manufacturer's Safety Data Sheets (SDSs). California OSHA (Cal/OSHA) regulations include requirements for protective clothing, training, and limits on exposure to hazardous materials. Compliance with these existing regulations would ensure that construction workers are protected from exposure to hazardous materials that may be used on the project site.

Compliance with the existing regulations described above would ensure that potential impacts from the routine transport, use, or disposal of hazardous materials during construction of the proposed project would be less than significant.

b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

#### Less Than Significant with Mitigation Incorporated

An accidental release of hazardous materials (e.g., oils, fuels, solvents, paints) during project construction could result in exposure of construction workers, the public, and/or the environment to hazardous materials.

# Impact HAZARDS-1: An accidental release of hazardous materials could occur during project construction. (PS)

As described in detail in Section X, Hydrology and Water Quality, the proposed project would be required to implement Mitigation Measure HYDROLOGY-1, which requires preparation and implementation of an Erosion and Stormwater Control Plan (ESCP), which would reduce the risk of spills or leaks occurring or reaching the environment. The ESCP must include hazardous materials storage requirements. For example, chemicals must be stored in watertight containers (with appropriate secondary containment to prevent any spillage or leakage) or in a storage shed (completely enclosed). The ESCP must also include procedures to address minor spills of hazardous materials. Measures to control spills, leakage, and dumping must be addressed through structural as well as non-structural BMPs. For example, equipment and materials for cleanup of spills must be available on-site, and spills and leaks must be cleaned up immediately and disposed of properly. BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

The transportation of hazardous materials must be performed by a licensed hazardous waste hauler and is subject to regulations of the United States Department of Transportation (DOT), federal Resource Conservation and Recovery Act (RCRA), and the State of California. If a discharge or spill of hazardous materials occurs during transportation, the transporter is required to take appropriate immediate action to protect human health and the environment (e.g., notify local authorities and contain the spill), and is responsible for the discharge cleanup.

<u>Mitigation Measure HAZARDS-1</u>: Mitigation Measure HYDROLOGY-1 shall be implemented. Combined with compliance with applicable existing regulations, implementation of Mitigation Measure HYDROLOGY-1 would ensure that potential impacts related to accidental releases of hazardous materials would be less than significant. (LTS) c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

#### No Impact

The project site is located in a rural area and land uses within a quarter mile of the project site include only a few residential properties; therefore, the project would have no impacts related to hazardous emissions or handling hazardous materials within a quarter mile of an existing or proposed school.

d) Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

#### No Impact

The project site is located on rural undeveloped land and is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, also known as the "Cortese List" (CalEPA, 2019).

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

# No Impact

The nearest airports to the project site are the Marin County Airport at Gnoss Field in Novato, approximately 4 miles northeast of the project site, and the San Rafael Airport, approximately 6 miles southeast of the project site. San Rafael Airport is a private use airport (AirNav, 2019) and does not have a land use plan. The project site is not located within the land use plan area for the Marin County Airport at Gnoss Field (Marin County Planning Department, 1991). There are no airports located within 2 miles of the project site. Therefore, the proposed project would have no impacts related to aviation hazards.

f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

# Less Than Significant Impact

The project would not alter existing roadways in the vicinity of the project site. During construction, no access disruptions would occur on Old Ranch Road and any evacuations along this route would be unencumbered. Therefore, the project would have a less-than-significant impact related to impeding or interfering with emergency response or evacuation plans. The increase in water storage capacity that would result from the project would have a positive impact on emergency response by providing additional water supply for fire suppression.

g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

#### Less Than Significant with Mitigation Incorporated

The project site is located in a State Responsibility Area and is identified as a moderate Fire Hazard Severity Zone as mapped by the California Department of Forestry and Fire Protection (CAL FIRE, 2007). The project site and adjacent areas include steep terrain that is covered in vegetation and trees and therefore could be susceptible to wildland fires.

Construction of the project would entail use of construction equipment that could generate sparks (e.g., vehicles, saws, mowers, acetylene torches, and welding equipment) and would involve storage and use of flammable materials (e.g., fuel and compressed gasses), which would temporarily increase fire risks. Operation of the project would also involve the use of vegetation management equipment (e.g., mowers, weed whackers, and chainsaws) that could generate sparks and increase fire risks. If vegetation on the project site is not appropriately managed, the project could increase the risk of fire occurring on the project site and spreading from the project site to surrounding areas.

# <u>Impact HAZARDS-2</u>: The proposed project could increase the risk of wildfire during construction and operation due to equipment use that could generate sparks. (PS)

<u>Mitigation Measure HAZARDS-2a</u>: Construction contractors shall ensure the following measures are implemented to minimize the potential for accidental ignition of construction materials and vegetation: 1) flammable/combustible materials shall be stored away from vegetated areas; 2) spark arrestors shall be fitted on all construction vehicles and equipment; 3) work that generates sparks, such metal cutting, torching, and welding, shall only be performed in areas where vegetation has been sufficiently cleared and the ground surface has been wetted; and 4) an adequate water source and fire extinguishers shall be available at all times for fire suppression.

<u>Mitigation Measure HAZARDS-2b</u>: The North Marin Water District (NMWD) shall develop a Vegetation Management and Fire Prevention Plan, and shall implement the plan during construction and operation of the project. The Vegetation Management and Fire Prevention Plan shall include, at a minimum, the following measures:

- Using spark arrestors on all vehicles and equipment used for vegetation management;
- Using fire-resistant plants when planting areas for erosion control;
- Pruning the lower branches of tall trees;
- Clearing out ground-level brush and debris; and
- Storing combustible materials away from vegetated areas.

Implementation of Mitigation Measures HAZARDS-2a and HAZARDS-2b would ensure that the proposed project would result in less-than-significant impacts related to wildfires. (LTS)

# REFERENCES

- AirNav, LLC, 2019. AirNav.com, CA 35, San Rafael Airport, San Rafael, California, USA. Available at: https://www.airnav.com/airport/CA35, accessed on August 22, 2019.
- California Department of Forestry and Fire Protection (CAL FIRE), 2007. Marin County Fire Hazard Severity Zones in SRA, November 7.
- California Environmental Protection Agency (CalEPA), 2019. Cortese List data Resources. Available at: https://calepa.ca.gov/sitecleanup/corteselist/, accessed on August 22, 2019.
- Marin County Planning Department, 1991. *Airport Land Use Plan, Marin County Airport Gnoss Field,* June 10.

			Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Х.	HYI	DROLOGY AND WATER QUALITY. Would the project:				
	a)	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?		•		
	b)	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?				
	c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
		(i) result in substantial erosion or siltation on- or off-site;				
		(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;				
		(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or		•		
		(iv) impede or redirect flood flows?				
	d)	In flood hazard, tsunami, or seiches zones, risk release of pollutants due to project inundation?				
	e)	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?				

The southern portion of the project site (south of the proposed access road) is located in a watershed that drains to Arroyo Avichi Creek, which is a tributary to Novato Creek. The northern portion of the project site (north of the proposed access road) is located in a watershed that drains to Warner Creek,

which is also a tributary to Novato Creek (RWQCB, 2017). There is no stormwater drainage infrastructure within the project site or its vicinity; therefore, stormwater runoff from the project site flows overland and either flows through drainage courses into the receiving waters described above, or infiltrates the ground surface.

# IMPACT EVALUATION

a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

#### Less Than Significant with Mitigation Incorporated

Construction activities related to the proposed project would involve grading of soil, including excavation and placement of fill, which could result in erosion and movement of sediments into creeks, particularly during precipitation events. The potential for chemical releases is present at most construction sites due to the use of paints, fuels, lubricants, and other hazardous materials associated with construction activities. Once released, these hazardous materials could be transported to nearby surface waterways in stormwater runoff, wash water, and dust control water, potentially reducing the quality of the receiving waters. The release of sediments and other pollutants during construction could adversely affect water quality in receiving waters.

# <u>Impact HYDROLOGY-1</u>: Project construction activities could result erosion and movement of sediments into creeks and the release of hazardous materials, which can degrade water quality. (PS)

Mitigation Measure HYDROLOGY-1: An Erosion and Stormwater Control Plan (ESCP) shall be prepared for the proposed project. The ESCP shall address potential pollutants and their sources, including erosion and exposure of construction materials to runoff, and must include a list of Best Management Practices (BMPs) to reduce the discharge of construction-related stormwater pollutants. The ESCP shall include a detailed description of controls to reduce pollutants and outline periodic maintenance and inspection procedures during construction and operation of the project. Sediment and erosion BMPs shall include, but not be limited to perimeter controls (e.g., straw wattles and silt fences) to prevent sediment from being transported off-site in surface runoff, and establishing and maintaining construction exits to avoid tracking sediment off-site onto adjacent roadways. The ESCP shall define proper building material staging and storage areas, paint and concrete washout areas, proper equipment/vehicle fueling and maintenance practices, and measures to control equipment/vehicle washing and allowable non-stormwater discharges; and shall include a spill prevention and response plan. The ESCP shall require that chemicals be stored in watertight containers (with appropriate secondary containment to prevent any spillage or leakage) or in a storage shed (completely enclosed). The ESCP shall include procedures to address minor spills of hazardous materials. Measures to control spills, leakage, and dumping shall be addressed through structural as well as non-structural BMPs. For example, equipment and materials for cleanup of spills shall be available on-site, and spills and leaks shall be cleaned up immediately and disposed of properly.

BMPs shall also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. (LTS)

The discharge of potable water would be required during construction for testing and flushing of new water pipelines that would connect to the proposed tank, and the discharge of potable water from the proposed tank may also be required for maintenance purposes during operation of the project. Discharges of potable water can result in water quality impacts as the discharged water may contain elevated levels of chlorine, and the discharge of potable water could result in erosion and sedimentation in receiving waters if the discharge is not appropriately controlled. Any discharge of potable water would be performed in accordance with the State Water Resources Control Board (State Water Board) Statewide National Pollutant Discharge Elimination System (NPDES) Permit for Drinking Water System Discharges to Waters of the United States (State Water Board, 2014). This NPDES permit requires implementation of BMPs to treat or control pollutants from potable water discharges, including the following:

- Prevent aquatic toxicity by using dechlorination chemical additions, implementing equivalent proven dechlorination methods, and/or assuring that the chlorine in the discharge dissipates naturally, such that the level of chlorine in the discharge is less than 0.019 milligrams per liter (mg/L) prior to entering a receiving water;
- Prevent riparian erosion and hydromodification by implementing flow dissipation, erosion control, and hydromodification-prevention measures; and
- Minimize sediment discharge, turbidity, and color impacts by implementing sediment, turbidity, erosion, and color control measures.

This NPDES permit requires that the discharger maintain a documented log of all BMPs implemented for its different types of discharges that enter receiving waters, and make it available to State Water Board and RWQCB staff upon request

The project would create slopes of exposed soil and bedrock as a result of excavation and placement of fill, and would also create an unpaved staging area. Post-construction stormwater runoff from the project site could therefore result in erosion and transport of sediments into creeks if appropriate post-construction erosion controls and stormwater control systems are not incorporated into the project design. The project would also result in new impervious surfaces (e.g., the water tank and paved access road), areas of reduced permeability (e.g., areas of exposed bedrock), and subsurface drainage from fill slopes, which would increase the amount of stormwater runoff from the project site compared to existing conditions.

NMWD proposes to control post-construction erosion through hydroseeding of exposed soil slopes, and by installing a storm drain with multiple discharge outlets for energy dissipation. The majority of the access road would be cross-sloped to direct runoff to the adjacent hillsides as sheet flow, which would minimize erosion and allow infiltration of stormwater runoff from new impervious surfaces into surrounding pervious areas. In addition, implementation of Mitigation Measure HYDROLOGY-1 would ensure that erosion and sediment control BMPS are periodically inspected and maintained throughout the project operation period.

Implementation of Mitigation Measure HYDROLOGY-1 and compliance with the requirements of the National Pollutant Discharge Elimination System (NPDES) Permit for Drinking Water System Discharges to Waters of the United States would ensure that the proposed project would result in less-than-significant impacts on water quality.

b) Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

#### Less Than Significant Impact

The project site is not located within a designated groundwater basin (RWQCB, 2017). The project site is located to the south and east of the Novato Valley Groundwater Basin, which is designated as a "very low priority" groundwater basin under the Sustainable Groundwater Management Act and does not have a sustainable groundwater management plan (California Department of Water Resources, 2019). The project is not anticipated to require dewatering during construction and would not increase the use of groundwater during operation. While the project would increase impervious surface area, which can reduce infiltration and groundwater recharge, stormwater runoff from the project site would be directed to surrounding pervious areas and therefore would still have the opportunity to infiltrate the ground surface and recharge groundwater. Therefore, the project would result in less-than-significant impacts related to decreasing groundwater supplies, interfering with groundwater recharge, or impeding sustainable groundwater management of the basin.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (i) result in substantial erosion or siltation on- or off-site; (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (iv) impede or redirect flood flows?

#### Less Than Significant with Mitigation Incorporated

The project would not alter the course of a river or stream. The project would create new impervious area and increase runoff as described under Item (a) above.

#### **Erosion or Siltation**

Implementation of Mitigation Measure HYDROLOGY-1, which requires implementing an ESCP during project construction and operation, would ensure that the proposed project would result in less-than-significant impacts related to erosion and sedimentation.

#### Increased Runoff Resulting in Flooding or Exceeding the Capacity of Stormwater Drainage Systems

Stormwater runoff from the project site would be directed to and infiltrate adjacent hillsides. Implementation of Mitigation Measure HYDROLOGY-1, which requires implementing an ESCP during project construction and operation would ensure that stormwater control systems and erosions control BMPS are periodically inspected and monitored to ensure that they are properly functioning and not resulting in erosion from concentrated flows due to increased runoff, therefore, the project would result in less-than-significant impacts related to increased runoff.

#### Additional Sources of Polluted Runoff

Implementation of Mitigation Measure HYDROLOGY-1, which requires implementing an ESCP during project construction and operation, would ensure that the proposed project would not result in additional sources of polluted runoff.

#### Impeding or Redirecting Flood Flows

The project site is located in an area of minimal flood hazard (i.e., not within 100-year or 500-year flood hazard zones) as mapped by the Federal Emergency Management Agency (FEMA, 2019), and the project site does not include any drainage courses or low-lying areas that could be susceptible to flooding. Therefore, potential impacts related to impeding or redirecting flood flows would not occur.

d) In flood hazard, tsunami, or seiches zones, would the project risk release of pollutants due to project inundation?

# No Impact

The project site is located inland and at an elevation that would ensure it would not be inundated by tsunamis or other coastal flooding hazards (e.g., sea level rise and extreme high tides).

A seiche is the oscillation of a body of water. Seiches occur most frequently in enclosed or semienclosed basins such as lakes, bays, or harbors. They can be triggered in an otherwise still body of water by strong winds, changes in atmospheric pressure, earthquakes, tsunamis, or tides. There are no bodies of water near the project site that could result in inundation of the project site due to a seiche.

As discussed under Item (c) above, the project site is located in an area of minimal flood hazard (i.e., not within 100-year or 500-year flood hazard zones) as mapped by FEMA (FEMA, 2019). The project site does not include any drainage courses or low-lying areas that could be susceptible to flooding. Therefore, potential impacts related to the release of pollutants during flooding inundation would not occur.

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

#### Less Than Significant with Mitigation Incorporated

As discussed under Item (b) above, the project site is not located within a designated groundwater basin (RWQCB, 2017). The project site is located to the south and east of the Novato Valley Groundwater Basin, which is designated as a "very low priority" groundwater basin under the Sustainable Groundwater Management Act and does not have a sustainable groundwater management plan (California Department of Water Resources, 2019). Therefore, the project would not conflict with or obstruct a sustainable groundwater management plan.

The applicable water quality control plan for the project site is the RWQCB's San Francisco Bay Basin Water Quality Control Plan (Basin Plan) (RWQCB, 2017). As discussed above, stormwater runoff from the project site drains to Novato Creek through Arroyo Avichi Creek (runoff south of the proposed access road) and Warner Creek (runoff north of the proposed access road). The Basin Plan identifies Arroyo Avichi Creek, Warner Creek, and Novato Creek as water bodies with beneficial uses of cold and warm water habitat, rare and endangered species habitat, wildlife habitat, and water contact and non-contact recreation. Novato Creek also has beneficial uses of municipal and domestic water supply, commercial fishing, and fish migration and spawning, and Warner Creek also has beneficial use fish migration (RWQCB, 2017). Compliance with existing regulations and implementation of Mitigation Measures HYDROLOGY-1, as described under Item (a) above, would ensure that the project would not result in significant impacts on water quality that could conflict with the water quality goals and beneficial uses of water bodies established in the Basin Plan. Therefore, the proposed project would result in less-than-significant impacts related to conflicting with or obstructing implementation of a water quality control plan.

#### REFERENCES

- California Department of Water Resources, 2019. SGMA Data Viewer, Available at: https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer, accessed on August 22, 2019.
- Federal Emergency Management Agency (FEMA), 2019. National Flood Hazard Layer Viewer, Map Number 06041C0278D, effective May 4, 2009, Available at: https://www.fema.gov/national-flood-hazard-layer-nfhl, accessed on August 22, 2019.
- Miller Pacific Engineering Group, 2018. Geotechnical Investigation, North Marin Water District, Old Ranch Road Tank, Novato, California, May 18.
- San Francisco Regional Water Quality Control Board (RWQCB), 2017. San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan). Incorporating all amendments as of May 4.
- State Water Resources Control Board (State Water Board), 2014. Order WQ 2014-0194-DWQ General Order No. CAG140001 Statewide National Pollutant Discharge Elimination System (NPDES) Permit for Drinking Water System Discharges to Waters of the United States.

NMWD\_CEQAChecklist\_FINAL (10/23/19)

			Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI.	LAN	ID USE AND PLANNING. Would the project:				
	a)	Physically divide an established community?				
	b)	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?				

#### IMPACT EVALUATION

a) Would the project physically divide an established community?

#### No Impact

The project would be constructed in an undeveloped area outside the western boundary of the City of Novato in lands that are within the jurisdiction of Marin County. The site is heavily vegetated with sloping hills nearby. Very low density residential development is located on lots near the site. The project would not divide an established community.

b) Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

#### No Impact

The General Plan designations are Agriculture (AG2) and Conservation (CON) for Assessor's Parcel Number (APN) 146-310-05, and Planned Residential (PR) and Very Low Density Residential (RVL) for APN 146-310-44. The General Plan designation for the existing NMWD parcel (APN 146-310-23) is Open Space/RVL. The zoning is Agriculture and Conservation (A10) for APN 146-310-05 and Residential, Multiple Planned (RMP-0.5) for APN 146-310-44. The zoning designation for the NMWD parcel is Open Area. The RVL designation generally requires lot sizes of 5 to 60 acres, and the PR designation requires lot sizes of 20,000 square feet to 10 acres (Marin County, 2007). Water tanks would be allowed within these General Plan designations. As a water district, NMWD is exempt from local land use controls of Marin County per Government Code Section 53091.

The *Marin Countywide Plan* addresses the need for services and facilities such as that proposed by the project. The following is a relevant implementing program from the *Marin Countywide Plan* (Marin County, 2007):

Implementing Program PFS-1.b: Plan for Service Expansion. Work with LAFCO, cities and towns, and special districts to ensure that necessary public facilities and adequate water supply are in place prior to occupancy of new development and funded at levels that reflect their true short- and long-terms costs.

The project would have no impact related to conflict with a land use plan, policy, or regulation.

# REFERENCES

Marin County, 2007. Marin Countywide Plan, adopted November 6.

			Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII.	MIN	ERAL RESOURCES. Would the project:				
	a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?				
	b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?				

#### IMPACT EVALUATION

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?

#### No Impact

No known mineral resources have been identified at the project site; therefore, no loss of such resources would occur (Marin County Community Development Agency, 2005).

b) Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

#### No Impact

Refer to Item (a) above.

#### REFERENCES

Marin County Community Development Agency, 2005. *Geology, Mineral Resources and Hazardous Material Technical Background Report.* Originally published in 2002 and updated in November 2005.

			Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII.	NO	SE. Would the project result in:				
	a)	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?		•		
	b)	Generation of excessive ground borne vibration or ground borne noise levels?				
	c)	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise				•

#### Noise Concepts and Terminology

levels?

Noise is commonly defined as unwanted sound that annoys or disturbs people and can have an adverse psychological or physiological effect on human health. Sound is measured in decibels (dB), which is a logarithmic scale. Decibels describe the purely physical intensity of sound based on changes in air pressure, but they cannot accurately describe sound as perceived by the human ear since the human ear is only capable of hearing sound within a limited frequency range. For this reason, a frequency-dependent weighting system is used and monitoring results are reported in A-weighted decibels (dBA). Technical terms used to describe noise are defined in **Table 6**.

It should be noted that because decibels are based on a logarithmic scale, they cannot be added or subtracted in the usual arithmetical way. For instance, if one noise source emits a sound level of 90 dBA, and a second source is placed beside the first and also emits a sound level of 90 dBA, the combined sound level is 93 dBA, not 180 dBA. When the difference between two co-located sources of noise is 10 dBA or more, the higher noise source dominates and the lower noise source makes no perceptible difference in what people can hear or measure. For example, if the noise level is 95 dBA, and another noise source is added that produces 80 dBA noise, the noise level will still be 95 dBA.

In an unconfined space, such as outdoors, noise attenuates with distance according to the inverse square law. Noise levels at a known distance from point sources are reduced by 6 dBA for every doubling of that distance for hard surfaces such as cement or asphalt surfaces, and 7.5 dBA for every doubling of distance for soft surfaces such as undeveloped or vegetative surfaces (Caltrans, 1998). Noise levels at a known distance from line sources (e.g., roads, highways, and railroads) are reduced by 3 dBA for every doubling of the distance for hard surfaces and 4.5 dBA for every doubling of distance for soft surfaces (Caltrans, 1998). A greater decrease in noise levels can result from the presence of intervening structures or buffers.

Term	Definition
Decibel (dB)	A unit describing the amplitude of sound on a logarithmic scale. Sound described in decibels is usually referred to as sound or noise "level." This unit is not used in this analysis because it includes frequencies that the human ear cannot detect.
Vibration Decibel (VdB)	A unit describing the amplitude of vibration on a logarithmic scale.
A-Weighted Sound Level (dBA)	The sound pressure level in decibels as measured on a sound level meter using the A- weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels noted in this analysis are A-weighted.
Equivalent Noise Level (Leq)	The average A-weighted noise level during the measurement period. For this CEQA evaluation, $L_{eq}$ refers to a 1-hour period unless otherwise stated.
Day/Night Noise Level (Ldn)	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured during the night between 10:00 PM and 7:00 AM.
Maximum Sound Level (L <sub>max</sub> )	The maximum A-weighted sound level measured by the sound level meter over a given period of time.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Peak Particle Velocity (PPV)	The maximum instantaneous peak of a vibration signal.
Root Mean Square (RMS) Velocity	The average of the squared amplitude of a vibration signal.

#### TABLE 6 DEFINITION OF ACOUSTICAL TERMS

Source: Charles M. Salter Associates Inc., 1998. Federal Transit Administration, 2018.

A typical method for determining a person's subjective reaction to a new noise is by comparing it to existing conditions. The following describes the general effects of noise on people (Charles M. Salter Associates Inc., 1998):

- A change of 1 dBA cannot typically be perceived, except in carefully controlled laboratory experiments;
- A 3-dBA change is considered a just-perceivable difference;
- A minimum of a 5-dBA change is required before any noticeable change in community response is expected; and
- A 10-dBA change is subjectively perceived as approximately a doubling (or halving) in loudness.

#### Groundborne Vibration Concepts and Terminology

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Several different methods are used to quantify vibration. Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors to vibration include structures (especially older masonry structures), people (especially residents, the elderly, and the sick), and vibration-sensitive equipment. As defined in Table 6, vibration amplitudes are usually expressed as either peak particle velocity (PPV) or the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous peak of the vibration signal. PPV is appropriate for evaluating potential

damage to buildings, but it is not suitable for evaluating human response to vibration because it takes the human body time to respond to vibration signals. The response of the human body to vibration is dependent on the average amplitude of a vibration. The RMS of a signal is the average of the squared amplitude of the signal and is more appropriate for evaluating human response to vibration. PPV and RMS are normally described in units of inches per second (in/sec), and RMS is also often described in vibration decibels (VdB).

# IMPACT EVALUATION

a) Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

#### Less Than Significant with Mitigation Incorporated

During operation, the proposed project would involve inspection once a week and tank cleaning every five years. Because operation of the proposed project would not involve many noise-generating activities and because of the infrequency of these operational activities, operation of the proposed project would not result in generation of a substantial permanent increase in ambient noise levels.

During construction, the proposed project would involve the use of heavy construction equipment for clearing, grubbing, site/road preparation, foundation, and tank construction, which would temporarily increase noise levels in the vicinity of the project site. Noise impacts related to temporary noise generated by the operation of heavy construction equipment are discussed below.

#### Exposure of Construction Workers to Noise

Construction workers could be exposed to excessive noise from the heavy equipment used during construction of the proposed project. Noise exposure of construction workers is regulated by the California Occupational Safety and Health Administration (Cal/OSHA). Title 8, Subchapter 7, Group 15, Article 105 of the California Code of Regulations (Control of Noise Exposure) sets noise exposure limits for workers and requires employers that have workers who may be exposed to noise levels above these limits to establish a hearing conservation program, make hearing protectors available, and keep records of employee noise exposure measurements. The Cal/OSHA also requires backup warning alarms that activate immediately upon reverse movement on all vehicles that have a haulage capacity of 2.5 cubic yards or more (Title 8, California Code of Regulations). The backup alarms must be audible above the surrounding ambient noise level at a distance of 200 feet. In order to meet this requirement, backup alarms are often designed to emit a sound as loud as 82 to 107 dBA Lmax at 4 feet (NCHRP, 1999). The construction contractor for the proposed project would be subject to these regulations, and compliance with Cal/OSHA regulations would ensure that the potential for construction workers to be exposed to excessive noise would be less than significant.

#### Exposure of Noise-Sensitive Receptors to Construction Noise

Noise-sensitive receptors are defined as land uses where noise-sensitive people may be present or where noise-sensitive activities may occur. As specified in the *Marin Countywide Plan* (Marin County, 2007), noise-sensitive receptors include residential land uses. Single-family homes are located near the project site. The nearest noise-sensitive receptors to the project site include 1) a single-family home located 160 feet southwest of the project site, 2) a single-family home located 180 feet southeast of the project site, and 3) a single-family home located 300 feet east of the project site.

The project site is located on undeveloped lands that include little to no noise-generating activities, and therefore the existing ambient noise levels are low. The primary noise source in the vicinity of the project site is traffic noise on Old Ranch Road. The *Marin Countywide Plan* includes noise measurements results from 2005. Ambient noise level at the nearest measurement location to the project site (Novato Boulevard near Stafford Lake, approximately 3 miles from the project site) was 65 dBA L<sub>dn</sub> in 2005. Because this location has a similar land use as the project site (recreational and residential) and because land use in the vicinity of the project site has not changed much since 2005, the 2005 noise measurement at this location is considered representative of the ambient noise level at the project site.

**Table 7** shows typical noise levels associated with various types of construction equipment that may be used at the project site. To evaluate potential construction noise impacts associated with the proposed project, this analysis quantified the noise levels that would result from the simultaneous operation of the two noisiest pieces of equipment expected to be used during each construction phase (this is a standard analytical approach used in acoustical analysis to estimate construction noise associated with proposed projects) (Federal Transit Administration, 2018). The addition of the two noisiest pieces of equipment is presented in **Table 8** to characterize the noise impact from the proposed project at the nearest noise-sensitive receptors in the vicinity of the project site.

Based on the construction noise estimates presented in Table 8, the nearest noise-sensitive receptors could be subject to noise levels of up to 75 dBA, 74 dBA, and 69 dBA, depending on distance from the project site. At the closest noise-sensitive receptor location, construction noise could be 10 dBA higher than the ambient noise levels (approximately 65 dBA  $L_{dn}$ ), which is subjectively perceived as approximately a doubling in loudness.

According to Marin County Code Section 6.70.030, Enumerated Noises, loud noise-generating construction-related equipment (e.g., backhoes, generators, jackhammers) can be maintained, operated, or serviced at a construction site for permits administered by the Marin County Community Development Agency from 8:00 AM to 5:00 PM. Monday through Friday only. The Marin County Code does not specify any quantitative standards for construction noise. The potential temporary noise impacts of construction activities would be mitigated in part by the project's compliance with the limitations on construction hours specified in the Marin County Code.

TABLE 7	TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT (DBA)	
---------	--	--

Phase	Equipment	Amount	Noise Level at 50 Feet
	Aerial Lifts	3	85
	Crawler Tractors	1	84
	Dumpers/Tenders	2	84
Clearing	Excavators	2	85
	Rubber Tired Loaders	1	80
	Skid Steer Loaders	1	80
	Tractors/Loaders/Backhoe	1	80
	Crawler Tractors	1	84
	Dumpers/Tenders	2	84
Orubbies	Excavators	2	85
Grubbing	Rubber Tired Loaders	1	80
	Skid Steer Loaders	1	80
	Tractors/Loaders/Backhoe	1	80
	Crawler Tractors	1	84
	Dumpers/Tenders	2	84
	Excavators	1	85
	Graders	1	85
Site/Road Preparation	Pavers	1	85
	Rollers	2	85
	Scrapers	1	85
	Skid Steer Loaders	1	80
	Tractors/Loaders/Backhoe	1	80
	Air Compressor	1	80
	Cement and Mortar Mixers	1	85
	Dumpers/Tenders	1	84
Foundation	Excavators	1	85
	Forklift	1	NA
	Tractors/Loaders/Backhoe	1	84
	Trenchers	1	84
Phase	Equipment	Amount	Noise Level at 50 Feet
--------------	--------------------------	--------	---------------------------
	Aerial Lifts	2	85
	Cranes	1	85
	Dumpers/Tenders	1	84
	Forklift	1	NA
Tank	Generator Sets	1	82
Construction	Pressure Washers	1	85
	Rollers	1	85
	Rough Terrain Forklifts	1	85
	Tractors/Loaders/Backhoe	1	84
	Welders	4	73

#### TABLE 7 TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT (DBA)

Notes: NA = Not available.

Forklifts are not considered heavy construction equipment and therefore their noise levels are not available. Sources: U.S. Department of Transportation (DOT), 2006. The types of construction equipment are based on the California Emissions Estimator Model (CalEEMod) equipment list.

# TABLE 8 CALCULATED NOISE LEVELS AT NEAREST NOISE-SENSITIVE RECEPTORS FOR Two Noisiest Pieces of Equipment from Each Project Construction Phase (dBA)

Phase	At 160 Feet from Project Site	At 180 Feet from Project Site	At 300 Feet from Project Site
Clearing	75	74	69
Grubbing	75	74	69
Site/Road Preparation	75	74	69
Foundation	75	74	69
Tank Construction	75	74	69

Notes: According to Table 7, the two noisiest pieces of equipment during each construction phase are 1) two of the following: three aerial lifts and two excavators (clearing); 2) two excavators (grubbing); 3) two of the following: one excavator, one grader, one paver, two rollers, or one scraper (site/road preparation); 4) one cement and mortar mixer and one excavator (foundation); and 5) two of the following: two aerial lifts, one crane, one pressure washer, one roller, or one rough terrain forklift (tank construction).

In addition, the *Marin Countywide Plan* includes the following goal, policy, and implementing program that are applicable to the proposed project:

Goal NO-1: Protection from Excessive Noise. Ensure that new land uses, transportation activities, and construction do not create noise levels that impair human health or quality of life.

Policy NO-1.3: Regulate Noise Generating Activities. Require measures to minimize noise exposure to neighboring properties, open space, and wildlife habitat from construction-related activities, yard maintenance equipment, and other noise sources, such as amplified music.

Program NO-1.*i*: Regulate Noise Sources. Sections 6.70.030(5) and 6.70.040 of the Marin County Code establish allowable hours of operation for construction-related activities. As a condition of permit approval for projects generating significant construction noise impacts during the construction phase, construction management for any project shall develop a construction noise reduction plan and designate a disturbance coordinator at the construction site to implement the provisions of the plan.

As a water district, NMWD is exempt from local land use controls of Marin County per Government Code Section 53091. However, NMWD typically strives to comply with the intent of these local land use controls.

# Impact NOISE-1: Project construction could result in significant increases in ambient noise levels. (PS)

<u>Mitigation Measure NOISE-1a</u>: Construction equipment operation shall be limited to the hours of Monday through Friday from 8:00 AM to 5:00 PM. No exception to the above limitations shall be allowed.

<u>Mitigation Measure NOISE-1b</u>: The North Marin Water District (NMWD) shall implement measures to reduce noise impacts due to construction. Noise reduction measures shall include, but not be limited to, the following:

- a) Equipment and trucks used for project construction shall use the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds), wherever feasible.
- b) Noisy operations shall be combined to occur in the same time period, if possible. The total noise level produced shall not be significantly greater than the level produced if the operations were performed separately.
- c) Stationary noise sources shall be located as far from adjacent properties as possible.

<u>Mitigation Measure NOISE-1c</u>: NMWD shall develop a set of procedures for responding to and tracking complaints received pertaining to construction noise, and shall implement the procedures during construction. At a minimum, the procedures shall include:

a) Designation of an on-site construction complaint and enforcement manager for the project;

- b) Protocols specific to receptors for receiving, responding to, and tracking received complaints; and
- c) Maintenance of a complaint log that records received complaints and how complaints were addressed.

Compliance with Mitigation Measures NOISE-1a through NOISE-1c would reduce the adverse impacts associated with construction noise to a less-than-significant level. (LTS)

b) Would the project result in generation of excessive ground borne vibration or ground borne noise levels?

#### Less Than Significant Impact

The *Marin Countywide Plan* does not provide a definition for vibration-sensitive receptors. According to the Federal Transit Administration (Federal Transit Administration, 2018), the nearby single-family homes are classified as "Category 2, Residential," which includes all residential land uses and buildings where people normally sleep. Therefore, the nearby homes are considered vibration-sensitive.

In addition, in some cases extreme vibration can cause minor cosmetic or substantial building damage. Potential vibration effects related to cosmetic or substantial building damage could also occur at the nearby homes.

Consistent with guidance from the Federal Transit Administration (FTA), vibration impacts from the proposed project would be considered potentially significant if they would exceed the FTA's recommended vibration thresholds to prevent disturbance to people from "Occasional Events" (see **Table 9**) or damage to buildings (see **Table 10**). Specifically, in this analysis, vibration would be considered a potentially significant impact if it would exceed the following thresholds: 75 VdB at nearby homes where people normally sleep, or 0.3 in/sec PPV for potential cosmetic damage at nearby homes.

#### TABLE 9 VIBRATION CRITERIA TO PREVENT DISTURBANCE – RMS (VDB)

Land Use Category	Frequent Eventsª	Occasional Events⁵	Infrequent Events⁰
Buildings where vibration would interfere with interior operations	65	65	65
Residences and buildings where people normally sleep	72	75	80
Institutional land uses with primarily daytime use	75	78	83

Notes: RMS = root mean square; VdB = vibration decibels

<sup>a</sup> More than 70 vibration events of the same kind per day or vibration generated by a long freight train.

<sup>b</sup> Between 30 and 70 vibration events of the same kind per day.

<sup>c</sup> Fewer than 30 vibration events of the same kind per day.

Source: Federal Transit Administration, 2018.

Building Category	Peak Particle Velocity
Reinforced-concrete, steel or timber (no plaster)	0.5
Engineered concrete and masonry (no plaster)	0.3
Non-engineered timber and masonry buildings	0.2
Buildings extremely susceptible to vibration damage	0.12
Notes: PPV = peak particle velocity; in/sec = inches per second	

#### TABLE 10 VIBRATION CRITERIA TO PREVENT DAMAGE TO STRUCTURES – PPV (In/Sec)

Source: Federal Transit Administration, 2018.

Construction activities associated with the proposed project would result in varying degrees of groundborne vibration, depending on the equipment type, activity, and soil conditions. Published reference vibration levels for construction equipment that could be used at the project site are presented in **Table 11**. Table 11 also presents the buffer distance that would be required to reduce vibration levels to below the 75-VdB threshold for single-family homes and the 0.3-in/sec PPV threshold for potential cosmetic damage to occur at the nearby homes. The impacts associated with vibration disturbance and vibration damage are discussed in detail below.

		Buffer Distances for Vibration Disturbance (Feet)		Buffer Distances for Vibration Damage (Feet)
Equipment	RMS at 25 Feet (VdB)ª	PPV at 25 Feet (In/Sec) <sup>5</sup>	Single-Family Homes (75 VdB Threshold)	Single-Family Homes (0.3 in/sec PPV Threshold)
Vibratory Roller	94	0.210	107	18
Large Bulldozer	87	0.089	63	8.3
Loaded Trucks	86	0.076	58	7.2
Small Bulldozer	58	0.003	7	0.4

#### TABLE 11 REFERENCE VIBRATION LEVELS AND BUFFER DISTANCES FOR CONSTRUCTION EQUIPMENT

Notes: Receptors within the buffer distance could be affected by construction-generated vibration.

Buffer distances are calculated based on the following equations:

PPV2 = PPV1 x (D1/D2)^1.1

Where:

PPV1 is the reference vibration level at the reference distance (25 feet), and PPV2 is the calculated vibration level (in this case 0.3 in/sec). D1 is the reference distance (in this case 25 feet), and D2 is the distance from the equipment to the receiver (in this case the buffer distance). RMS2 = RMS1 – 30 Log10 (D2/D1)

Where:

RMS1 is the reference vibration level at the reference distance (25 feet), and RMS2 is the calculated vibration level (in this case 75 VdB).

D1 is the reference distance (in this case 25 feet), and D2 is the distance from the equipment to the receiver (in this case the buffer distance). a RMS = root mean square, VdB = vibration decibel.

<sup>b</sup> PPV = peak particle velocity, in/sec = inches per second.

Source of Equation: Federal Transit Administration, 2018; California Department of Transportation (Caltrans), 2013.

The closest single-family home is located 160 feet southwest of the project site. Based on the buffer distances presented in Table 11, the closest single-family home is located outside of the buffer distance of 107 feet and therefore would not be exposed to vibration levels that exceed the 75-VdB disturbance threshold. The closest single-family home is also located outside of the buffer distance of 18 feet and therefore would not be exposed to vibration levels that exceed the 0.3-in/sec damage threshold. Therefore, the potential for the proposed project to result in generation of excessive ground borne vibration would be less than significant.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

# No Impact

The proposed project would not introduce new residents or users to the project site. Therefore, the proposed project would not expose people in the project area to excessive noise from any public use airport or private airstrip.

# REFERENCES

California Code of Regulations, Title 8, Subchapter 7, Group 15, Article 105.

- California Department of Transportation (Caltrans), 1998. Technical Noise Supplement-A Technical Supplement to the Traffic Noise Analysis Protocol.
- California Department of Transportation (Caltrans), 2013. Transportation and Construction Vibration Guidance Manual. September.
- Charles M. Salter Associates Inc., 1998. Acoustics Architecture, Engineering, the Environment.
- Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual, FTA Report No.0123, September.

Marin County, 2007. Marin Countywide Plan. Adopted November 6.

Marin County Code, Section 6.70.030.

- National Cooperative Highway Research Program (NCHRP), 1999. Mitigation of Nighttime Construction Noise, Vibrations, and Other Nuisances. NCHRP Synthesis 218.
- U.S. Department of Transportation (DOT), 2006. FHWA Highway Construction Noise Handbook.

			Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV.	PO	PULATION AND HOUSING. Would the project:				
	a)	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				
	b)	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				

a) Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

#### No Impact

The new replacement water tank would not result in substantial unplanned population growth. While the capacity of the new tank would be greater than the existing redwood tank that would likely be decommissioned, the increased capacity would primarily cover firefighting needs. No growth would occur from the new access road as this would only serve the tank site.

b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

#### No Impact

No people or housing would be displaced by the project.

# REFERENCES

			Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XV.	PUI	BLIC SERVICES. Would the project:				
	a)	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
		Fire protection?				
		Police protection?				
		Schools?				
		Parks?				
		Other public facilities?				

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: Fire protection, police protection, schools, parks, other public facilities?

#### No Impact

The new replacement water tank would not affect fire protection, police, schools, parks, or other public facilities. The project would improve firefighting capability for this area of Novato and Marin County, given the increased capacity provided by the new replacement tank.

# REFERENCES

XVI	RF	CREATION	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				
	b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

# No Impact

No increased recreational or park use would occur in association with the project.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

#### No Impact

The project does not include recreational facilities or have associated requirements for recreational facilities.

#### REFERENCES

			Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII.	TR/	NSPORTATION. Would the project:				
	a)	Conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?				•
	b)	Conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?				

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c)	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				
d)	Result in inadequate emergency access?				

a) Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

# No Impact

The proposed project would have no impact on transportation related to increased transit, roadway, bicycle, or pedestrian use.

b) Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?

#### No Impact

Section 15063.3, Subdivision (b) of the CEQA Guidelines addresses evaluation of a project's transportation impacts. The proposed project, a replacement water tank, would have no transportation impacts other than during construction when construction vehicles would be using local roads for access to the site and for construction of the new access road and new tank. During project operation, a minor number of vehicle trips would occur to and from the site for maintenance of the water tank. Addressing potential vehicle miles traveled would not be relevant for the proposed project.

c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

# No Impact

The new access road to the project site has been designed to minimize any hazards for vehicles entering and exiting the project site. A locked gate would limit access to the site to NMWD employees. Sight distance would be maintained so that vehicles entering and exiting the site on the access road would have adequate visibility of cars using Old Ranch Road. A turnaround area would also be included near the existing redwood water tank (see Figure 2).

d) Would the project result in inadequate emergency access?

#### No Impact

The new access road to the new replacement tank would allow adequate emergency access for fire personnel.

# REFERENCES

Project description information.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	
XVIII. TRIBAL CULTURAL RESOURCES. Would the project:					
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:					
<ul> <li>i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k); or,</li> </ul>			•		
<ul> <li>A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California</li> </ul>			•		

# **IMPACT EVALUATION**

Native American tribe.

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: (i) Listed or eligible for listing in the California Register of Historical Resources or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k); or ii) A resource determined by the lead agency, in its discretion and supported by

substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1?

# Less Than Significant Impact

#### Background

Assembly Bill (AB) 52, which became law on January 1, 2015, provides for consultation with California Native American tribes during the CEQA environmental review process and equates significant impacts on "tribal cultural resources" with significant environmental impacts.

The consultation provisions of the law require that a public agency consult with local Native American tribes that have requested placement on that agency's notification list for CEQA projects. Within 14 days of determining that a project application is complete, or a decision by a public agency to undertake a project, the lead agency must notify tribes of the opportunity to consult on the project, should a tribe have previously requested to be on the agency's notification list. California Native American tribes must be recognized by the Native American Heritage Commission (NAHC) as traditionally and culturally affiliated with the project site and must have previously requested that the lead agency notify them of projects. Tribes have 30 days following notification of a project to request consultation with the lead agency.

The purpose of consultation is to inform the lead agency in its identification and determination of the significance of tribal cultural resources. If a project is determined to result in a significant impact on an identified tribal cultural resource, the consultation process must occur and conclude prior to adoption of a Negative Declaration or Mitigated Negative Declaration, or certification of an Environmental Impact Report (Public Resources Code Sections 21080.3.1, 21080.3.2, and 21082.3).

#### **Tribal Outreach**

NAHC in West Sacramento was contacted to review its Sacred Lands File to identify registered, Native American sacred sites in or near the project site. Andrew Green, NAHC Staff Services Analyst, stated in a letter as follows: "A record search of the Native American Heritage Commission Sacred Lands File was completed for the information you have submitted for the above referenced project. The results were positive. Please contact the Federated Indians of Graton Rancheria on the attached list for more information."

The Federated Indians of Graton Rancheria (FIGR) has not requested, in writing, that NMWD inform them of its projects that are subject to CEQA, consistent with California Public Resources Code Section 21080.3.1. As a result, NMWD is not required to consult with FIGR for this project.

No pre-contact archaeological deposits or Native American human remains have been identified at or near the project site. Furthermore, although the NAHC Sacred Lands File search was "positive," the NAHC database is not necessarily site-specific. In other words, while the Sacred Lands File search indicates that a FIGR sacred site is reported in the vicinity, that sacred site is not necessarily at the

project site. Several Native American sites and human remains are reported in Indian Valley, and it is possible that the "positive" result refers to these more distant resources.

For the reasons stated above, NMWD has determined that the project site is of low sensitivity for tribal cultural resources. The project would have a less-than-significant impact on reported tribal cultural resources that are in the vicinity.

# REFERENCES

Native American Heritage Commission, 2019. North Marin Water District New Tank Project, Marin County, August 14.

			Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII.	UTIL	ITIES AND SERVICE SYSTEMS. Would the project:				
	a)	Require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?		•		
	b)	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?				
	c)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				
	d)	Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?				
	e)	Comply with federal, State, and local management and reduction statutes and regulations related to solid waste?				

# **IMPACT EVALUATION**

a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

# Less Than Significant with Mitigation Incorporated

The project itself is a replacement of a nearby water tank that was constructed in 1963 and is reaching the end of its life. This Initial Study addresses potential impacts for a variety of topics, and mitigation

measures have been identified for potentially significant impacts. Refer to other sections of this Initial Study (e.g., cultural resources, hazards, etc.).

b) Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

# Less Than Significant Impact

The project itself is a water supply and storage project and adequate water is available to serve the community served by this new water tank.

c) Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

# No Impact

No wastewater impacts are associated with the new replacement water tank.

d) Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

#### No Impact

No major solid waste generation would be associated with the replacement water tank other than general construction debris, which would be minor. Every five years, the tank cleaning may generate a small amount of solid waste.

e) Would the project comply with federal, State, and local management and reduction statutes and regulations related to solid waste?

#### No Impact

NMWD would comply with any regulations related to solid waste as associated with construction debris and tank cleaning.

# REFERENCES

			Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XX.	WIL clas	DFIRE. If located in or near state responsibility areas or lands sified as very high fire hazard severity zones, would the project:				
	a)	Substantially impair an adopted emergency response plan or emergency evacuation plan?				
	b)	Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?		•		
	c)	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?				•
	d)	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				

a) Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

# Less Than Significant Impact

The project would be constructed on an undeveloped site with a new access road connecting to Old Ranch Road. During construction, no access disruptions would occur on Old Ranch Road and any evacuations along this route would be unencumbered.

b) Due to slope, prevailing winds, and other factors, would the project exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

# Less Than Significant with Mitigation Incorporated

As addressed in the Section IX, Hazards and Hazardous Materials, of this Initial Study, the project site is located in a State Responsibility Area and is identified as a moderate Fire Hazard Severity Zone as mapped by the California Department of Forestry and Fire Protection. The project site and adjacent areas include steep terrain that is covered in vegetation and trees and therefore could be susceptible to wildland fires.

Construction of the project would entail use of construction equipment that could generate sparks (e.g., vehicles, saws, mowers, acetylene torches, and welding equipment) and would involve storage and use of flammable materials (e.g., fuel and compressed gasses), which would temporarily increase

fire risks. Operation of the project would also involve the use of vegetation management equipment (e.g., mowers, weed whackers, and chainsaws) that could generate sparks and increase fire risks. If vegetation on the project site is not appropriately managed, the project could increase the risk of fire occurring on the project site and spreading from the project site to surrounding areas.

# Impact WILDFIRE-1: The proposed project could increase the risk of wildfire. (PS)

<u>Mitigation Measure WILDFIRE-1</u>: Mitigation Measures HAZARDS-2a and HAZARDS-2b shall be implemented. (LTS)

c) Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

# No Impact

The project would require the installation of an access road connecting to Old Ranch Road. However, construction of this road would not exacerbate fire risk. Conversely, the new access road would provide new access for fire trucks in an emergency. No new overhead electrical lines or other utilities that could exacerbate fire risk would be constructed.

d) Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

#### No Impact

The project would not expose people or structures to significant post-wildfire risks. The new tank would be constructed of welded steel and would be located on a level portion of the hillside. Post-fire impacts such as slope instability or landslides would not result from the project.

# REFERENCES

			Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	
XXI.	MA	NDATORY FINDINGS OF SIGNIFICANCE.					
	a)	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?		•			

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)			•	
c)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		•		

1 . . . **T**I. . .

# **IMPACT EVALUATION**

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

# Less Than Significant with Mitigation Incorporated

No significant impacts would occur with implementation of the mitigation measures identified in this Initial Study. Potentially significant impacts on plants and wildlife would be limited to possible inadvertent loss of bird nests, which would be mitigated through measures identified in Section IV, Biological Resources, above. Potentially significant impacts on archaeological and historical resources (i.e., as-yet unidentified archaeological deposits) would be mitigated through measures identified in Section V, Cultural Resources, above.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

# Less Than Significant Impact

The only other project in the vicinity of the project is a proposed Marin County Design Review approval of a residential addition/accessory structure located at 1650 Indian Valley Road, about 0.8 mile northeast of the project site (Marin County, 2019). This project entails a 502-square-foot addition to the rear of an existing structure. Given the distance of this other project from the water tank site, and the type of impacts identified for the project, no cumulatively significant cumulative effects are expected.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

# Less Than Significant with Mitigation Incorporated

Any potential impacts of the project are able to be mitigated to less than significant and would not cause substantial adverse effects on human beings, either directly or indirectly. Refer to Appendix A for a list of all identified mitigation measures, which would be adopted as part of the Initial Study/Mitigated Negative Declaration.

# REFERENCES

Marin County, 2019. Community Development Agency. Available at: https://www.marincounty.org/ depts/cd/divisions/planning/projects/novato/claves\_trust\_dr\_up\_p2309\_no; accessed on August 19, 2019. This page intentionally left blank

# APPENDIX A MITIGATION MONITORING AND REPORTING PROGRAM

		Party Bear and it la Barty		Compliance Verification			
Mi	tigation Measure	Responsible for Ensuring Implementation	Party Responsible for Monitoring	Monitoring Timing	Initial	Date	Project/ Comments
Aif	QUALITY						
Alf inc Dis	R-1: During project construction, the contractor shall implement a dust control program that ludes the following measures recommended by the Bay Area Air Quality Management strict (BAAQMD):	Contractor	District	During construction			
•	All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.						
•	All haul trucks transporting soil, sand, or other loose material off-site shall be covered.						
•	Track-out control mats shall be used to contain and minimize mud and dirt track-out onto adjacent public roads. Any remaining visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers, if necessary. The use of dry power sweeping is prohibited.						
•	All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.						
•	All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.						
•	A publicly visible sign shall be posted with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD phone number shall also be visible to ensure compliance with applicable regulations.						
In a sha the iss wit tim	addition, North Marin Water District (NMWD) staff or an independent construction monitor all conduct periodic site inspections, but in no event fewer than four total inspections, during course of construction to ensure these mitigation measures are implemented and shall ue a letter report documenting the inspection results. Reports indicating non-compliance h construction mitigation measures shall be cause to issue a stop-work order until such e as compliance is achieved.						

	Party Posnonsible	Dente		Compliance Verification		
Mitigation Measure	for Ensuring	Party Responsible for Monitoring	Monitoring Timing	Initial	Date	Project/ Comments
BIOLOGICAL RESOURCES						
<u>BIOLOGY-1</u> : Adequate measures shall be taken to avoid inadvertent take of raptor nests and other nesting birds protected under the Migratory Bird Treaty Act when in active use. This shall be accomplished by taking the following steps:	District	District	Before and during construction			
If construction is proposed during the nesting season (February through August), a focused survey for nesting raptors and other migratory birds shall be conducted by a qualified biologist within 14 days prior to the onset of tree removal or construction, in order to identify any active nests on the project site and in the vicinity of proposed construction.						
<ul> <li>If no active nests are identified during the survey period, or if development is initiated during the non-breeding season (September through February), construction may proceed with no restrictions.</li> </ul>						
If bird nests are found, an adequate setback shall be established around the nest location and construction activities restricted within this no-disturbance zone until the qualified biologist has confirmed that any young birds have fledged and are able to function outside the nest location. Required setback distances for the no-disturbance zone shall be based on input received from the California Department of Fish and Wildlife (CDFW), and may vary depending on species and sensitivity to disturbance. As necessary, the no- disturbance zone shall be fenced with temporary orange construction fencing if construction is to be initiated on the remainder of the construction area.						
A report of findings shall be prepared by the qualified biologist and submitted to the North Marin Water District (NMWD) for review and approval prior to initiation of construction within the no-disturbance zone during the nesting season (February through August). The report either shall confirm absence of any active nests or shall confirm that any young within a designated no-disturbance zone have fledged and construction can proceed.						
Implementation of Mitigation Measure BIOLOGY-1 would reduce potentially significant impacts on nesting birds to a less-than-significant level.						
Cultural Resources						
<u>CULTURAL-1</u> : Should an archaeological deposit be encountered during project subsurface construction activities, all ground-disturbing activities within 25 feet shall be redirected and a qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology contacted to assess the situation, determine if the deposit qualifies as a historical resource, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. If the deposit is found to be significant (i.e., eligible for listing in the California Register of Historical Resources [CRHR]), the North Marin Water District	Contractor	District	During construction			

	Party				Compliance Verification		
Mitigation Measure	Responsible for Ensuring Implementation	Party Responsible for Monitoring	Monitoring Timing	Initial	Date	Project/ Comments	
(NMWD) shall be responsible for funding and implementing appropriate mitigation measures. Mitigation measures may include recording of the archaeological deposit, data recovery and analysis, and public outreach regarding the scientific and cultural importance of the discovery. Upon completion of the selected mitigations, a report documenting methods, findings, and recommendations shall be prepared and submitted to NMWD for review, and the final report shall be submitted to the Northwest Information Center (NWIC) at Sonoma State University. Significant archaeological materials shall be submitted to an appropriate local curation facility and used for future research and public interpretive displays, as appropriate.							
NMWD shall inform its contractor(s) of the sensitivity of the project area for archaeological deposits and shall verify that the following directive has been included in the appropriate contract documents:							
"The subsurface of the construction site may be sensitive for Native American archaeological deposits and associated human remains. If archaeological deposits are encountered during project subsurface construction, all ground-disturbing activities within 25 feet shall stop and a qualified archaeologist contacted to assess the situation and make recommendations for the treatment of the discovery. Project personnel shall not collect or move any archaeological materials. Archaeological deposits can include shellfish remains; bones; flakes of, and tools made from, obsidian, chert, and basalt; and mortars and pestles. Contractor acknowledges and understands that excavation or removal of archaeological material is prohibited by law and constitutes a misdemeanor under California Public Resources Code, Section 5097.5."							
With implementation of this mitigation measure, the potential impact on historical and archaeological resources would be reduced to a less-than-significant level.							
CULTURAL-2: Mitigation Measure CULTURAL-1 shall be implemented.	District	District	During construction				
GEOLOGY AND SOILS							
<u>GEOLOGY-1</u> : The proposed improvements shall be designed and constructed in accordance with the provisions of the most recent version of the California Building Code and appropriate American Water Works Association (AWWA) standards or subsequent codes in effect when final design occurs.	District	District	During final design and construction				
Implementation of Mitigation Measure GEOLOGY-1 would ensure that project impacts related to strong seismic ground shaking would be less than significant.							
<u>GEOLOGY-2</u> : The updated project plans shall be submitted to the Geotechnical Engineer for review to determine whether additional geotechnical investigation and/or modification of geotechnical recommendations would be required to mitigate the potential for slope instability	District and Geotechnical Engineer	District	During final design and construction				

	Party		-	Compliance Verification		
Mitigation Measure	Responsible for Ensuring Implementation	Party Responsible for Monitoring	Monitoring Timing	Initial	Date	Project/ Comments
and risk of landslides. The detailed project plans shall be designed in accordance with all geotechnical recommendations. As project plans near completion, the plans and specifications shall be provided to the Geotechnical Engineer for review to confirm that geotechnical recommendations have been incorporated. During construction, the Geotechnical Engineer shall perform observation and testing of geotechnical-related work (e.g., excavation, grading, subsurface drain installations, and fill placement) to confirm that conditions are as anticipated, adjust geotechnical recommendations and design criteria if needed, and confirm that construction is performed in accordance with the project plans and specifications.						
Implementation of Mitigation Measure GEOLOGY-2 would ensure that the project impacts related to slope stability and landslides would be less than significant.						
<u>GEOLOGY-3</u> : See Mitigation Measures HYDROLOGY-1. As described in Section X, Hydrology and Water Quality, implementation of Mitigation Measure HYDROLOGY-1, which requires preparation of and implementation of an Erosion and Stormwater Control Plan (ESCP) during construction; and periodic inspection and maintenance of erosion and sediment control BMPs during project operation, would reduce the potential impacts related to erosion or the loss of topsoil to a less-than-significant level.	Contractor	District	During construction and operation			
<u>GEOLOGY-4</u> : Should paleontological resources be encountered during project subsurface construction activities, all ground-disturbing activities within 25 feet of the find shall be stopped and a qualified paleontologist shall be contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. If the discovery is found to be significant and project activities cannot avoid the paleontological resources, adverse effects on paleontological resources shall be mitigated. Mitigation may include monitoring, recording of the fossil locality, data recovery and analysis, preparation of a technical report, and provision of the fossil material and technical report to a paleontological outreach may also be appropriate. Upon completion of the assessment, a report documenting methods, findings, and recommendations shall be prepared and submitted to the North Marin Water District (NMWD) for review.	District, working with Paleontologist	District	During construction			
NMWD shall inform its contractor(s) of the sensitivity of the project area for paleontological resources and shall include the following directive in the appropriate contract documents:						
"The subsurface of the construction site may be sensitive for paleontological resources. If paleontological resources are encountered during project subsurface construction, all ground-disturbing activities within 25 feet of the find shall be stopped or redirected and a qualified paleontologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. Project						

	Party Posponsible	Darte		Compliance Verification		
Mitigation Measure	Responsible for Ensuring Implementation	Party Responsible for Monitoring	Monitoring Timing	Initial	Date	Project/ Comments
personnel shall not collect or move any paleontological materials. Paleontological resources include fossil plants and animals, and such trace fossil evidence of past life as animal tracks."						
Implementation of Mitigation Measure GEOLOGY-4 would reduce potential impacts on paleontological resources to a less-than-significant level.						
HAZARDS AND HAZARDOUS MATERIALS						
<u>HAZARDS-1</u> : Mitigation Measure HYDROLOGY-1 shall be implemented. Combined with compliance with applicable existing regulations, implementation of Mitigation Measure HYDROLOGY-1 would ensure that potential impacts related to accidental releases of hazardous materials would be less than significant.	District	District	During construction and operation			
<u>HAZARDS-2a</u> : Construction contractors shall ensure the following measures are implemented to minimize the potential for accidental ignition of construction materials and vegetation: 1) flammable/combustible materials shall be stored away from vegetated areas; 2) spark arrestors shall be fitted on all construction vehicles and equipment; 3) work that generates sparks, such metal cutting, torching, and welding, shall only be performed in areas where vegetation has been sufficiently cleared and the ground surface has been wetted; and 4) an adequate water source and fire extinguishers shall be available at all times for fire suppression.	District and Contractor	District	During construction			
<ul> <li><u>HAZARDS-2b</u>: The North Marin Water District (NMWD) shall develop a Vegetation Management and Fire Prevention Plan, and shall implement the plan during construction and operation of the project. The Vegetation Management and Fire Prevention Plan shall include, at a minimum, the following measures:</li> <li>Using spark arrestors on all vehicles and equipment used for vegetation management;</li> <li>Using fire-resistant plants when planting areas for erosion control;</li> <li>Pruning the lower branches of tall trees;</li> <li>Clearing out ground-level brush and debris; and</li> <li>Storing combustible materials away from vegetated areas.</li> </ul>	District	District	During construction and operation			
Implementation of Mitigation Measures HAZARDS-2a and HAZARDS-2b would ensure that the proposed project would result in less-than-significant impacts related to wildfires.						
HYDROLOGY AND WATER QUALITY						
<u>HYDROLOGY-1</u> : An Erosion and Stormwater Control Plan (ESCP) shall be prepared for the proposed project. The ESCP shall address potential pollutants and their sources, including erosion and exposure of construction materials to runoff, and must include a list of Best Management Practices (BMPs) to reduce the discharge of construction-related stormwater pollutants. The ESCP shall include a detailed description of controls to reduce pollutants and	District	District	During construction and operation			

	Party Beenensible	Deate		Compliance Verification		
Mitigation Measure	Responsible for Ensuring Implementation	Party Responsible for Monitoring	Monitoring Timing	Initial	Date	Project/ Comments
outline periodic maintenance and inspection procedures during construction and operation of the project. Sediment and erosion BMPs shall include, but not be limited to perimeter controls (e.g., straw wattles and silt fences) to prevent sediment from being transported off-site in surface runoff, and establishing and maintaining construction exits to avoid tracking sediment off-site onto adjacent roadways. The ESCP shall define proper building material staging and storage areas, paint and concrete washout areas, proper equipment/vehicle fueling and maintenance practices, and measures to control equipment/vehicle washing and allowable non-stormwater discharges; and shall include a spill prevention and response plan. The ESCP shall require that chemicals be stored in watertight containers (with appropriate secondary containment to prevent any spillage or leakage) or in a storage shed (completely enclosed). The ESCP shall include procedures to address minor spills of hazardous materials. Measures to control spills, leakage, and dumping shall be addressed through structural as well as non-structural BMPs. For example, equipment and materials for cleanup of spills shall be available on-site, and spills and leaks shall be cleaned up immediately and disposed of properly. BMPs shall also include treatment requirements, operating procedures, and practices to control site reating the available on sufficient of the spilles of the spilla example.						
Noise						
<u>NOISE-1a</u> : Construction equipment operation shall be limited to the hours of Monday through Friday from 8:00 AM to 5:00 PM. No exception to the above limitations shall be allowed.	District	District	During construction			
<ul> <li><u>NOISE-1b</u>: The North Marin Water District (NMWD) shall implement measures to reduce noise impacts due to construction. Noise reduction measures shall include, but not be limited to, the following:</li> <li>a) Equipment and trucks used for project construction shall use the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds), wherever feasible.</li> <li>b) Noisy operations shall be combined to occur in the same time period, if possible. The total noise level produced shall not be significantly greater than the level produced if the approximate accurately.</li> </ul>	District	District	During construction			
<ul> <li>c) Stationary noise sources shall be located as far from adjacent properties as possible.</li> </ul>						
<ul> <li><u>NOISE-1c</u>: NMWD shall develop a set of procedures for responding to and tracking complaints received pertaining to construction noise, and shall implement the procedures during construction. At a minimum, the procedures shall include:</li> <li>a) Designation of an on-site construction complaint and enforcement manager for the project;</li> <li>b) Protocols specific to receptors for receiving, responding to, and tracking received complaints; and</li> </ul>	District	District	During construction			

	Party			Compliance Verification		
Mitigation Measure	Responsible for Ensuring Implementation	Party Responsible for Monitoring	Monitoring Timing	Initial	Date	Project/ Comments
<li>Maintenance of a complaint log that records received complaints and how complaints were addressed.</li>						
Compliance with Mitigation Measures NOISE-1a through NOISE-1c would reduce the adverse impacts associated with construction noise to a less-than-significant level.						
WILDFIRE						
WILDFIRE-1: Mitigation Measures HAZARDS-2a and HAZARDS-2b shall be implemented.	District	District	During construction and operation			

This page intentionally left blank

# APPENDIX B AIR QUALITY TECHNICAL APPENDIX

Appendix B can be found in the North Marin Water District offices.

North Marin Water District Tank.v1 - Marin County, Annual

# North Marin Water District Tank.v1

Marin County, Annual

# **1.0 Project Characteristics**

# 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.63	0.00	0

# **1.2 Other Project Characteristics**

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	69
Climate Zone	5			Operational Year	2020
Utility Company	Pacific Gas & Electric Com	pany			
CO2 Intensity (Ib/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity ( (Ib/MWhr)	0.006

#### 1.3 User Entered Comments & Non-Default Data

CalEEMod Version: CalEEMod.2016.3.2

#### Page 2 of 29

#### North Marin Water District Tank.v1 - Marin County, Annual

Project Characteristics - Construction would begin in Spring 2020 and be completed by 2021. Selection of utility company does not affect construction emissions.

Land Use - Select user defined land use which would not affect the construction emissions

Construction Phase - Construction phases established based on the information provided by the project applicant.

Off-road Equipment - Construction equipment based on the list provided by project applicant

Off-road Equipment - Construction equipment based on the list provided by project applicant

Off-road Equipment - Construction equipment based on the list provided by project applicant

Off-road Equipment - Construction equipment based on the list provided by project applicant

Off-road Equipment - Construction equipment based on the list provided by project applicant

Trips and VMT - Number of workers on site modified according to information provided by the project applicant.

Grading - Approximately 800 CY would be off-hauled and 330 CY of materials would be imported.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	1.00	5.00
tblConstructionPhase	NumDays	1.00	20.00
tblConstructionPhase	NumDays	100.00	15.00
tblConstructionPhase	NumDays	100.00	40.00
tblGrading	MaterialExported	0.00	800.00
tblGrading	MaterialImported	0.00	300.00
tblLandUse	LotAcreage	0.00	0.63
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

#### Page 3 of 29

# North Marin Water District Tank.v1 - Marin County, Annual

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		1 - Clearing
tblOffRoadEquipment	PhaseName		1 - Clearing
tblOffRoadEquipment	PhaseName		1 - Clearing
tblOffRoadEquipment	PhaseName		1 - Clearing
tblOffRoadEquipment	PhaseName		1 - Clearing
tblOffRoadEquipment	PhaseName		1 - Clearing
tblTripsAndVMT	WorkerTripNumber	28.00	10.00
tblTripsAndVMT	WorkerTripNumber	20.00	10.00
tblTripsAndVMT	WorkerTripNumber	28.00	14.00
tblTripsAndVMT	WorkerTripNumber	0.00	12.00
tblTripsAndVMT	WorkerTripNumber	0.00	12.00

# 2.0 Emissions Summary

Page 4 of 29

# North Marin Water District Tank.v1 - Marin County, Annual

# 2.1 Overall Construction

# **Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year					ton	s/yr							МТ	/yr		
2020	0.1283	1.1370	0.9760	1.7500e- 003	0.0299	0.0567	0.0866	4.9400e- 003	0.0537	0.0586	0.0000	149.5958	149.5958	0.0352	0.0000	150.4762
Maximum	0.1283	1.1370	0.9760	1.7500e- 003	0.0299	0.0567	0.0866	4.9400e- 003	0.0537	0.0586	0.0000	149.5958	149.5958	0.0352	0.0000	150.4762

# Mitigated Construction

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year					ton	s/yr							MT	/yr		
2020	0.1283	1.1370	0.9760	1.7500e- 003	0.0299	0.0567	0.0866	4.9400e- 003	0.0537	0.0586	0.0000	149.5957	149.5957	0.0352	0.0000	150.4761
Maximum	0.1283	1.1370	0.9760	1.7500e- 003	0.0299	0.0567	0.0866	4.9400e- 003	0.0537	0.0586	0.0000	149.5957	149.5957	0.0352	0.0000	150.4761

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

# North Marin Water District Tank.v1 - Marin County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-1-2020	5-31-2020	0.9264	0.9264
2	6-1-2020	8-31-2020	0.3312	0.3312
		Highest	0.9264	0.9264

# 2.2 Overall Operational

# Unmitigated Operational

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Area	0.0000	0.0000	1.0000e- 005	0.0000		0.0000	0.0000	1 1 1	0.0000	0.0000	0.0000	2.0000e- 005	2.0000e- 005	0.0000	0.0000	2.0000e- 005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	1.0000e- 005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000e- 005	2.0000e- 005	0.0000	0.0000	2.0000e- 005

Page 6 of 29

# North Marin Water District Tank.v1 - Marin County, Annual

# 2.2 Overall Operational

# Mitigated Operational

	ROG	NO	X	CO	SO2	Fugi PM	tive I10	Exhaust PM10	PM10 Total	Fugi PM	itive Ex 12.5 F	xhaust PM2.5	PM2.5 Total	Bio	o- CO2	NBio- CO2	Total (	CO2 (	CH4	N2O	CO	2e
Category							tons	s/yr										MT/yr				
Area	0.0000	0.00	00 1.0	0000e- 005	0.0000			0.0000	0.0000		C	0.0000	0.0000	0	.0000	2.0000e- 005	2.000 00	0e- 0. 5	0000	0.0000	2.000 00	)0e- )5
Energy	0.0000	0.00	00 0.	.0000	0.0000			0.0000	0.0000		C	0.0000	0.0000	0	.0000	0.0000	0.00	00 0.	0000	0.0000	0.00	)00
Mobile	0.0000	0.00	00 0.	.0000	0.0000	0.0	000	0.0000	0.0000	0.0	000 C	0.0000	0.0000	0	.0000	0.0000	0.00	00 0.	0000	0.0000	0.00	000
Waste	r,							0.0000	0.0000		C	0.0000	0.0000	0	.0000	0.0000	0.00	00 0.	0000	0.0000	0.00	000
Water	r,							0.0000	0.0000		C	0.0000	0.0000	0	.0000	0.0000	0.00	00 0.	0000	0.0000	0.00	000
Total	0.0000	0.00	00 1.0	0000e- 005	0.0000	0.0	000	0.0000	0.0000	0.0	000 0	0.0000	0.0000	0	.0000	2.0000e- 005	2.000 00	0e- 0. 5	0000	0.0000	2.000 00	)0e-  5
	ROG		NOx	С	0	SO2	Fugit PM	tive Exh 10 Pl	aust M10	PM10 Total	Fugitive PM2.5	e Exh PN	aust P 12.5	M2.5 Fotal	Bio- C	O2 NBio	-CO2   1	otal CO2	CH4	I N	120	CO2e
Percent Reduction	0.00		0.00	0.	00	0.00	0.0	0 00	.00	0.00	0.00	0.	.00	0.00	0.00	0.0	00	0.00	0.00	0	.00	0.00

# 3.0 Construction Detail

**Construction Phase** 

#### North Marin Water District Tank.v1 - Marin County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	1 - Clearing	Demolition	3/1/2020	3/13/2020	5	10	
2	2 - Grubbing	Site Preparation	3/14/2020	3/20/2020	5	5	
3	3 - Site and Road Preparation	Site Preparation	3/21/2020	4/17/2020	5	20	
4	4 - Foundation Construction	Building Construction	4/18/2020	5/8/2020	5	15	
5	5 - Tank Construction	Building Construction	5/9/2020	7/3/2020	5	40	

#### Acres of Grading (Site Preparation Phase): 0

#### Acres of Grading (Grading Phase): 0

#### Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
1 - Clearing	Aerial Lifts	3	8.00	63	0.31
1 - Clearing	Concrete/Industrial Saws	0	8.00	81	0.73
1 - Clearing	Crawler Tractors	1	8.00	212	0.43
1 - Clearing	Dumpers/Tenders	2	8.00	16	0.38
1 - Clearing	Excavators	2	8.00	158	0.38
1 - Clearing	Graders	0		187	0.41
1 - Clearing	Rubber Tired Dozers	1	1.00	247	0.40
1 - Clearing	Skid Steer Loaders	1	8.00	65	0.37
1 - Clearing	Tractors/Loaders/Backhoes	1	6.00	97	0.37
2 - Grubbing	Crawler Tractors	1	8.00	212	0.43
2 - Grubbing	Dumpers/Tenders	2	8.00	16	0.38

# North Marin Water District Tank.v1 - Marin County, Annual

2 - Grubbing	Excavators	2	8.00	158	0.38
2 - Grubbing	Graders	0	8.00	187	0.41
2 - Grubbing	Rubber Tired Dozers	1	1.00	247	0.40
2 - Grubbing	Skid Steer Loaders	1	8.00	65	0.37
2 - Grubbing	Tractors/Loaders/Backhoes	1	8.00	97	0.37
3 - Site and Road Preparation	Crawler Tractors	1	8.00	212	0.43
3 - Site and Road Preparation	Dumpers/Tenders	2	8.00	16	0.38
3 - Site and Road Preparation	Excavators	1	8.00	158	0.38
3 - Site and Road Preparation	Graders	1	8.00	187	0.41
3 - Site and Road Preparation	Pavers	1	8.00	130	0.42
3 - Site and Road Preparation	Rollers	2	8.00	80	0.38
3 - Site and Road Preparation	Scrapers	1	8.00	367	0.48
3 - Site and Road Preparation	Skid Steer Loaders	1	8.00	65	0.37
3 - Site and Road Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
4 - Foundation Construction	Air Compressors	1	8.00	78	0.48
4 - Foundation Construction	Cement and Mortar Mixers	1	8.00	9	0.56
4 - Foundation Construction	Cranes	0	4.00	231	0.29
4 - Foundation Construction	Dumpers/Tenders	1	8.00	16	0.38
4 - Foundation Construction	Excavators	1	8.00	158	0.38
4 - Foundation Construction	Forklifts	1	6.00	89	0.20
4 - Foundation Construction	Tractors/Loaders/Backhoes	1	8.00	97	0.37
4 - Foundation Construction	Trenchers	1	8.00	78	0.50
5 - Tank Construction	Air Compressors	2	8.00	78	0.48
5 - Tank Construction	Cranes	1	4.00	231	0.29
5 - Tank Construction	Dumpers/Tenders	1	8.00	16	0.38
5 - Tank Construction	Forklifts	1	6.00	89	0.20
5 - Tank Construction	Generator Sets	1	8.00	84	0.74
### North Marin Water District Tank.v1 - Marin County, Annual

5 - Tank Construction	Pressure Washers	1	8.00	13	0.30
5 - Tank Construction	Rollers	1	8.00	80	0.38
5 - Tank Construction	Rough Terrain Forklifts	1	8.00	100	0.40
5 - Tank Construction	Tractors/Loaders/Backhoes	1	8.00	97	0.37
5 - Tank Construction	Welders	4	8.00	46	0.45

## Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
1 - Clearing	11	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
2 - Grubbing	8	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
3 - Site and Road	11	14.00	0.00	138.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
4 - Foundation	7	12.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
5 - Tank Construction	14	12.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction** 

Page 10 of 29

## North Marin Water District Tank.v1 - Marin County, Annual

### 3.2 1 - Clearing - 2020

## Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Off-Road	8.5300e- 003	0.0960	0.0822	1.5000e- 004		4.0400e- 003	4.0400e- 003		3.7300e- 003	3.7300e- 003	0.0000	13.1520	13.1520	4.1300e- 003	0.0000	13.2554
Total	8.5300e- 003	0.0960	0.0822	1.5000e- 004		4.0400e- 003	4.0400e- 003		3.7300e- 003	3.7300e- 003	0.0000	13.1520	13.1520	4.1300e- 003	0.0000	13.2554

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	'/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e- 004	1.2000e- 004	1.1800e- 003	0.0000	3.9000e- 004	0.0000	4.0000e- 004	1.0000e- 004	0.0000	1.1000e- 004	0.0000	0.3513	0.3513	1.0000e- 005	0.0000	0.3515
Total	1.7000e- 004	1.2000e- 004	1.1800e- 003	0.0000	3.9000e- 004	0.0000	4.0000e- 004	1.0000e- 004	0.0000	1.1000e- 004	0.0000	0.3513	0.3513	1.0000e- 005	0.0000	0.3515

Page 11 of 29

## North Marin Water District Tank.v1 - Marin County, Annual

### 3.2 1 - Clearing - 2020

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Off-Road	8.5300e- 003	0.0960	0.0822	1.5000e- 004		4.0400e- 003	4.0400e- 003		3.7300e- 003	3.7300e- 003	0.0000	13.1520	13.1520	4.1300e- 003	0.0000	13.2554
Total	8.5300e- 003	0.0960	0.0822	1.5000e- 004		4.0400e- 003	4.0400e- 003		3.7300e- 003	3.7300e- 003	0.0000	13.1520	13.1520	4.1300e- 003	0.0000	13.2554

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e- 004	1.2000e- 004	1.1800e- 003	0.0000	3.9000e- 004	0.0000	4.0000e- 004	1.0000e- 004	0.0000	1.1000e- 004	0.0000	0.3513	0.3513	1.0000e- 005	0.0000	0.3515
Total	1.7000e- 004	1.2000e- 004	1.1800e- 003	0.0000	3.9000e- 004	0.0000	4.0000e- 004	1.0000e- 004	0.0000	1.1000e- 004	0.0000	0.3513	0.3513	1.0000e- 005	0.0000	0.3515

Page 12 of 29

#### North Marin Water District Tank.v1 - Marin County, Annual

### 3.3 2 - Grubbing - 2020

## Unmitigated Construction On-Site

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Fugitive Dust					3.2100e- 003	0.0000	3.2100e- 003	1.1800e- 003	0.0000	1.1800e- 003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1000e- 003	0.0445	0.0343	6.0000e- 005		2.0000e- 003	2.0000e- 003		1.8400e- 003	1.8400e- 003	0.0000	5.6401	5.6401	1.7600e- 003	0.0000	5.6842
Total	4.1000e- 003	0.0445	0.0343	6.0000e- 005	3.2100e- 003	2.0000e- 003	5.2100e- 003	1.1800e- 003	1.8400e- 003	3.0200e- 003	0.0000	5.6401	5.6401	1.7600e- 003	0.0000	5.6842

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e- 005	6.0000e- 005	5.9000e- 004	0.0000	2.0000e- 004	0.0000	2.0000e- 004	5.0000e- 005	0.0000	5.0000e- 005	0.0000	0.1756	0.1756	0.0000	0.0000	0.1757
Total	9.0000e- 005	6.0000e- 005	5.9000e- 004	0.0000	2.0000e- 004	0.0000	2.0000e- 004	5.0000e- 005	0.0000	5.0000e- 005	0.0000	0.1756	0.1756	0.0000	0.0000	0.1757

Page 13 of 29

## North Marin Water District Tank.v1 - Marin County, Annual

### 3.3 2 - Grubbing - 2020

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Fugitive Dust					3.2100e- 003	0.0000	3.2100e- 003	1.1800e- 003	0.0000	1.1800e- 003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1000e- 003	0.0445	0.0343	6.0000e- 005		2.0000e- 003	2.0000e- 003		1.8400e- 003	1.8400e- 003	0.0000	5.6401	5.6401	1.7600e- 003	0.0000	5.6842
Total	4.1000e- 003	0.0445	0.0343	6.0000e- 005	3.2100e- 003	2.0000e- 003	5.2100e- 003	1.1800e- 003	1.8400e- 003	3.0200e- 003	0.0000	5.6401	5.6401	1.7600e- 003	0.0000	5.6842

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e- 005	6.0000e- 005	5.9000e- 004	0.0000	2.0000e- 004	0.0000	2.0000e- 004	5.0000e- 005	0.0000	5.0000e- 005	0.0000	0.1756	0.1756	0.0000	0.0000	0.1757
Total	9.0000e- 005	6.0000e- 005	5.9000e- 004	0.0000	2.0000e- 004	0.0000	2.0000e- 004	5.0000e- 005	0.0000	5.0000e- 005	0.0000	0.1756	0.1756	0.0000	0.0000	0.1757

Page 14 of 29

#### North Marin Water District Tank.v1 - Marin County, Annual

### 3.4 3 - Site and Road Preparation - 2020

### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Fugitive Dust					0.0213	0.0000	0.0213	2.3000e- 003	0.0000	2.3000e- 003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0341	0.3901	0.2590	5.1000e- 004		0.0168	0.0168		0.0154	0.0154	0.0000	44.9643	44.9643	0.0143	0.0000	45.3219
Total	0.0341	0.3901	0.2590	5.1000e- 004	0.0213	0.0168	0.0380	2.3000e- 003	0.0154	0.0177	0.0000	44.9643	44.9643	0.0143	0.0000	45.3219

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Hauling	5.9000e- 004	0.0201	5.8400e- 003	5.0000e- 005	1.1600e- 003	7.0000e- 005	1.2300e- 003	3.2000e- 004	6.0000e- 005	3.8000e- 004	0.0000	5.2721	5.2721	3.1000e- 004	0.0000	5.2798
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e- 004	3.3000e- 004	3.3100e- 003	1.0000e- 005	1.1000e- 003	1.0000e- 005	1.1100e- 003	2.9000e- 004	1.0000e- 005	3.0000e- 004	0.0000	0.9836	0.9836	2.0000e- 005	0.0000	0.9842
Total	1.0800e- 003	0.0205	9.1500e- 003	6.0000e- 005	2.2600e- 003	8.0000e- 005	2.3400e- 003	6.1000e- 004	7.0000e- 005	6.8000e- 004	0.0000	6.2557	6.2557	3.3000e- 004	0.0000	6.2639

Page 15 of 29

#### North Marin Water District Tank.v1 - Marin County, Annual

### 3.4 3 - Site and Road Preparation - 2020

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Fugitive Dust					0.0213	0.0000	0.0213	2.3000e- 003	0.0000	2.3000e- 003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0341	0.3901	0.2590	5.1000e- 004		0.0168	0.0168		0.0154	0.0154	0.0000	44.9642	44.9642	0.0143	0.0000	45.3218
Total	0.0341	0.3901	0.2590	5.1000e- 004	0.0213	0.0168	0.0380	2.3000e- 003	0.0154	0.0177	0.0000	44.9642	44.9642	0.0143	0.0000	45.3218

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Hauling	5.9000e- 004	0.0201	5.8400e- 003	5.0000e- 005	1.1600e- 003	7.0000e- 005	1.2300e- 003	3.2000e- 004	6.0000e- 005	3.8000e- 004	0.0000	5.2721	5.2721	3.1000e- 004	0.0000	5.2798
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e- 004	3.3000e- 004	3.3100e- 003	1.0000e- 005	1.1000e- 003	1.0000e- 005	1.1100e- 003	2.9000e- 004	1.0000e- 005	3.0000e- 004	0.0000	0.9836	0.9836	2.0000e- 005	0.0000	0.9842
Total	1.0800e- 003	0.0205	9.1500e- 003	6.0000e- 005	2.2600e- 003	8.0000e- 005	2.3400e- 003	6.1000e- 004	7.0000e- 005	6.8000e- 004	0.0000	6.2557	6.2557	3.3000e- 004	0.0000	6.2639

Page 16 of 29

#### North Marin Water District Tank.v1 - Marin County, Annual

#### 3.5 4 - Foundation Construction - 2020

## Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Off-Road	0.0108	0.0927	0.0905	1.4000e- 004		5.9000e- 003	5.9000e- 003		5.5400e- 003	5.5400e- 003	0.0000	11.7397	11.7397	3.0000e- 003	0.0000	11.8148
Total	0.0108	0.0927	0.0905	1.4000e- 004		5.9000e- 003	5.9000e- 003		5.5400e- 003	5.5400e- 003	0.0000	11.7397	11.7397	3.0000e- 003	0.0000	11.8148

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e- 004	2.2000e- 004	2.1300e- 003	1.0000e- 005	7.1000e- 004	0.0000	7.1000e- 004	1.9000e- 004	0.0000	1.9000e- 004	0.0000	0.6323	0.6323	1.0000e- 005	0.0000	0.6327
Total	3.1000e- 004	2.2000e- 004	2.1300e- 003	1.0000e- 005	7.1000e- 004	0.0000	7.1000e- 004	1.9000e- 004	0.0000	1.9000e- 004	0.0000	0.6323	0.6323	1.0000e- 005	0.0000	0.6327

Page 17 of 29

#### North Marin Water District Tank.v1 - Marin County, Annual

#### 3.5 4 - Foundation Construction - 2020

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Off-Road	0.0108	0.0927	0.0905	1.4000e- 004		5.9000e- 003	5.9000e- 003		5.5400e- 003	5.5400e- 003	0.0000	11.7397	11.7397	3.0000e- 003	0.0000	11.8148
Total	0.0108	0.0927	0.0905	1.4000e- 004		5.9000e- 003	5.9000e- 003		5.5400e- 003	5.5400e- 003	0.0000	11.7397	11.7397	3.0000e- 003	0.0000	11.8148

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e- 004	2.2000e- 004	2.1300e- 003	1.0000e- 005	7.1000e- 004	0.0000	7.1000e- 004	1.9000e- 004	0.0000	1.9000e- 004	0.0000	0.6323	0.6323	1.0000e- 005	0.0000	0.6327
Total	3.1000e- 004	2.2000e- 004	2.1300e- 003	1.0000e- 005	7.1000e- 004	0.0000	7.1000e- 004	1.9000e- 004	0.0000	1.9000e- 004	0.0000	0.6323	0.6323	1.0000e- 005	0.0000	0.6327

Page 18 of 29

#### North Marin Water District Tank.v1 - Marin County, Annual

#### 3.6 5 - Tank Construction - 2020

### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Off-Road	0.0683	0.4923	0.4913	7.8000e- 004		0.0279	0.0279	1 1 1	0.0270	0.0270	0.0000	64.9987	64.9987	0.0116	0.0000	65.2890
Total	0.0683	0.4923	0.4913	7.8000e- 004		0.0279	0.0279		0.0270	0.0270	0.0000	64.9987	64.9987	0.0116	0.0000	65.2890

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e- 004	5.7000e- 004	5.6700e- 003	2.0000e- 005	1.8900e- 003	1.0000e- 005	1.9000e- 003	5.0000e- 004	1.0000e- 005	5.1000e- 004	0.0000	1.6861	1.6861	4.0000e- 005	0.0000	1.6871
Total	8.4000e- 004	5.7000e- 004	5.6700e- 003	2.0000e- 005	1.8900e- 003	1.0000e- 005	1.9000e- 003	5.0000e- 004	1.0000e- 005	5.1000e- 004	0.0000	1.6861	1.6861	4.0000e- 005	0.0000	1.6871

Page 19 of 29

#### North Marin Water District Tank.v1 - Marin County, Annual

#### 3.6 5 - Tank Construction - 2020

### Mitigated Construction On-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Off-Road	0.0683	0.4923	0.4913	7.8000e- 004		0.0279	0.0279		0.0270	0.0270	0.0000	64.9986	64.9986	0.0116	0.0000	65.2889
Total	0.0683	0.4923	0.4913	7.8000e- 004		0.0279	0.0279		0.0270	0.0270	0.0000	64.9986	64.9986	0.0116	0.0000	65.2889

#### Mitigated Construction Off-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e- 004	5.7000e- 004	5.6700e- 003	2.0000e- 005	1.8900e- 003	1.0000e- 005	1.9000e- 003	5.0000e- 004	1.0000e- 005	5.1000e- 004	0.0000	1.6861	1.6861	4.0000e- 005	0.0000	1.6871
Total	8.4000e- 004	5.7000e- 004	5.6700e- 003	2.0000e- 005	1.8900e- 003	1.0000e- 005	1.9000e- 003	5.0000e- 004	1.0000e- 005	5.1000e- 004	0.0000	1.6861	1.6861	4.0000e- 005	0.0000	1.6871

## 4.0 Operational Detail - Mobile

Page 20 of 29

#### North Marin Water District Tank.v1 - Marin County, Annual

### 4.1 Mitigation Measures Mobile

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

### 4.2 Trip Summary Information

	Ave	rage Daily Trip Ra	ate	Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

## **4.3 Trip Type Information**

		Miles			Trip %			Trip Purpos	e %
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

## 4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.586103	0.042797	0.200835	0.113384	0.018054	0.005119	0.010148	0.010539	0.002013	0.003657	0.005892	0.000682	0.000777

Page 21 of 29

## North Marin Water District Tank.v1 - Marin County, Annual

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated	n 11 11 11 11					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	 , , , ,	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Page 22 of 29

## North Marin Water District Tank.v1 - Marin County, Annual

## 5.2 Energy by Land Use - NaturalGas

## <u>Unmitigated</u>

	NaturalGa s Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr					ton	s/yr							MT	/yr		
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	- - - -	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

#### Mitigated

	NaturalGa s Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr					ton	s/yr							MT	/yr		
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

CalEEMod Version: CalEEMod.2016.3.2

Page 23 of 29

#### North Marin Water District Tank.v1 - Marin County, Annual

# 5.3 Energy by Land Use - Electricity

## <u>Unmitigated</u>

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr		МТ	/yr	
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

#### Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr		МТ	/yr	
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

## 6.0 Area Detail

6.1 Mitigation Measures Area

Page 24 of 29

## North Marin Water District Tank.v1 - Marin County, Annual

	ROG	NOx	со	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Mitigated	0.0000	0.0000	1.0000e- 005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e- 005	2.0000e- 005	0.0000	0.0000	2.0000e- 005
Unmitigated	0.0000	0.0000	1.0000e- 005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e- 005	2.0000e- 005	0.0000	0.0000	2.0000e- 005

## 6.2 Area by SubCategory

<u>Unmitigated</u>

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory					ton	s/yr							MT	/yr		
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e- 005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e- 005	2.0000e- 005	0.0000	0.0000	2.0000e- 005
Total	0.0000	0.0000	1.0000e- 005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e- 005	2.0000e- 005	0.0000	0.0000	2.0000e- 005

Page 25 of 29

## North Marin Water District Tank.v1 - Marin County, Annual

### 6.2 Area by SubCategory

## Mitigated

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory					ton	s/yr							МТ	/yr		
Architectural Coating	0.0000		1 1 1			0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e- 005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e- 005	2.0000e- 005	0.0000	0.0000	2.0000e- 005
Total	0.0000	0.0000	1.0000e- 005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e- 005	2.0000e- 005	0.0000	0.0000	2.0000e- 005

## 7.0 Water Detail

7.1 Mitigation Measures Water

Page 26 of 29

North Marin Water District Tank.v1 - Marin County, Annual

	Total CO2	CH4	N2O	CO2e
Category		MT	/yr	
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

# 7.2 Water by Land Use

<u>Unmitigated</u>

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal		МТ	/yr	
User Defined Industrial	0/0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

CalEEMod Version: CalEEMod.2016.3.2

Page 27 of 29

## North Marin Water District Tank.v1 - Marin County, Annual

### 7.2 Water by Land Use

## Mitigated

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal		МТ	/yr	
User Defined Industrial	0/0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

## 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

## Category/Year

	Total CO2	CH4	N2O	CO2e	
	MT/yr				
Mitigated	0.0000	0.0000	0.0000	0.0000	
Unmitigated	0.0000	0.0000	0.0000	0.0000	

CalEEMod Version: CalEEMod.2016.3.2

Page 28 of 29

#### North Marin Water District Tank.v1 - Marin County, Annual

### 8.2 Waste by Land Use

## <u>Unmitigated</u>

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons		MT	/yr	
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

#### **Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons		МТ	/yr	
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

# 9.0 Operational Offroad

Equipment Type	Number
----------------	--------

Page 29 of 29

#### North Marin Water District Tank.v1 - Marin County, Annual

## **10.0 Stationary Equipment**

## Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

#### Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

### User Defined Equipment

	Equipment Type	Number
--	----------------	--------

## 11.0 Vegetation



AERMOD View - Lakes Environmental Software

P:\Base\19217-00 ASC North Marin Water District Tank\AERMOD\AERMOD.isc

#### Summary of ISCST3 Model Parameters, Assumptions, and Results for DPM and PM<sub>2.5</sub> Emissions during Construction

ISCST3 Model Parameters and Assumptions						
Source Type	Units	Value	Notes			
Volume Source: Off-Road Equip	ment Exhaust for Const	truction				
Hours/Work Day	hours/day	9	Monday - Friday, 8 AM - 5 PM			
DPM Emission Rate	gram/second	0.01764	Exhaust PM <sub>10</sub> from off-road equipment			
Number of Sources	count	13	SMAQMD, 2015			
Emission Rate/Source	gram/second	0.001357				
Release Height	meters	5.0	SMAQMD, 2015			
Length of Side	meters	10.0	SMAQMD, 2015			
Initial Lateral Dimension	meters	2.3	ISCST3 Calculato	r		
Initial Vertical Dimension	meters	1.0	) SMAQMD, 2015			
		ISCST3 M	odel Results			
			Annual			
			Average			
Location Type	Emissions Source	Pollutant	Concentration	Notes		
Posidontial Posontor	Umitigated	DPM (µg/m <sup>3)</sup>	0.05	Offsite MEIR (Ground level residential receptor)		
Residential Receptor	Construction	PM <sub>2.5</sub> (μg/m <sup>3)</sup>	0.05	Offsite MEIR (Ground level residential receptor)		

Notes:

DPM = diesel particulate matter

PM<sub>10</sub> = particulate matter with aerodynamic resistance diameters equal to or less than 10 microns

PM<sub>2.5</sub> = particulate matter with aerodynamic resistance diameters equal to or less than 2.5 microns

 $\mu g/m^3$  = micrograms per cubic meter

Sacramento Metropolitan Air Quality Management District (SMAQMD), 2015. Guide to Air Quality Assessment in Sacramento County . June.

#### Health Risk Assessment for DPM Emissions during Construction

Inhalation Cancer Risk Assessment		Age Group			
for DPM	Units	3rd Trimester	0-2 Years	Notes	
DPM Concentration (C)	μg/m <sup>3</sup>	0.053	0.053	ISCST3 Annual Average	
Daily Breathing Rate (DBR)	L/kg-day	361	1090	95th percentile (OEHHA, 2015)	
Inhalation absorption factor (A)	unitless	1.0	1.0	OEHHA, 2015	
Exposure Frequency (EF)	unitless	0.96	0.96	350 days/365 days in a year (OEHHA, 2015)	
Dose Conversion Factor (CF <sub>D</sub> )	mg-m³/µg-L	0.000001	0.000001	Conversion of $\mu g$ to mg and L to m <sup>3</sup>	
Dose (D)	mg/kg/day	0.000018	0.000055	C*DBR*A*EF*CF <sub>D</sub> (OEHHA, 2015)	
Cancer Potency Factor (CPF)	(mg/kg/day) <sup>-1</sup>	1.1	1.1	OEHHA, 2015	
Age Sensitivity Factor (ASF)	unitless	10	10	OEHHA, 2015	
Annual Exposure Duration (ED)	years	0.25	0.83	From spring 2020 to end of 2020	
Averaging Time (AT)	years	70	70	70 years for residents (OEHHA, 2015)	
Fraction of time at home (FAH)	unitless	0.85	0.85	OEHHA, 2015	
Cancer Risk Conversion Factor (CF)	unitless	1000000	1000000	Chances per million (OEHHA, 2015)	
Cancer Risk	per million	0.61	6.14	D*CPF*ASF*ED/AT*FAH*CF (OEHHA, 2015)	
Total Cancer Risk	per million	6.	8	At Offsite MEIR location	

Hazard Index for DPM	Units	Value	Notes
Chronic REL	μg/m <sup>3</sup>	5.0	OEHHA, 2015
Chronic Hazard Index	unitless	0.011	At Offsite MEIR location

Notes:

DPM = diesel particulate matter

REL = reference exposure level

 $\mu g/m^3$  = micrograms per cubic meter

L/kg-day = liters per kilogram-day

 $m^3/L$  = cubic meters per liter

(mg/kg/day)<sup>-1</sup> = 1/milligrams per kilograms per day

MEIR = maximum exposed individual resident

Office of Environmental Health Hazard Assessment (OEHHA), 2015. Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. February.